

**TURKEY**

**RENEWABLE ENERGY INTEGRATION PROJECT  
(P144534)**

***'FINAL REVISED'***

**ENVIRONMENTAL REVIEW FRAMEWORK**

**TEIAS**

**(TURKISH ELECTRICITY TRANSMISSION COMPANY)**

**Date: February 26, 2014**

**Revision Date: March 21, 2014**

# **Framework for Environmental Assessment Procedures for Renewable Energy Integration Project Financed by World Bank in Turkey**

## **1. Introduction**

The REI project is expected to strengthen the transmission system by increasing its capacity and expanding the automation of control, management, and protection systems to maintain high voltage grid stability and counteract the propagation of large disturbances. This includes constructing new sub-stations for integrating wind energy, upgrading the Supervisory Control and Data Acquisition (SCADA) system software expanding the number of Remote Telemetry Units and Communication Equipment; modernizing the Human Machine Interface, a new National Control Centre with a renewable dispatch console; constructing a submarine and underground power cable, and Gas-insulated substations (GIS).

The REI project consists of the following components and the project components are expected to help alleviate the key barriers that inhibit faster development of wind energy in Turkey.

### ***Component-1: Upfront development of transmission infrastructure to facilitate faster development of WPPs***

Within the Aegean and Marmara regions that hold the highest wind energy potential in Turkey, the provinces of Izmir, Canakkale and Istanbul rank the highest with installed wind capacity of 877 MW, 407 MW and 382 MW respectively. The wind power investments in these three provinces together constituted nearly 70 percent of the installed wind capacity in Turkey in 2012. Due to their high wind potential, these provinces will continue to attract more investments in WPPs. Availability of upfront transmission infrastructure to cater to growing needs of new WPPs in these provinces could enable faster implementation of wind energy projects.

The first component of this project would therefore develop three highly digitalized sub-stations with associated grid connection structures for evacuation of wind power in the provinces of Can, Izmir and Hamitabat. The proposed structures would include high voltage (HV) substations, HV grid interfacing equipment, smart-metering systems, feeders (underground cables), tele-metered dispatch systems, digital protection systems, supervisory systems, and automatic voltage control systems.

### ***Component-2: Smart-grid investments to strengthen grid operation and management in face of higher wind energy generation***

These investments will enable TEIAS to monitor network status in real-time and operate entire network reliably and securely. It would enable TEIAS to handle the increasing amounts of wind energy. It consists of:

- (i) Upgrade of SCADA system in two national control centers and the addition of Renewable Energy Resource (RER) Operator Desk on SCADA system to manage rapidly increasing WPP.
- (ii) Remote Terminal Unit (RTU) installation to substations and power plants to monitor and control them from dispatching centers.
- (iii) Digital Protection Relay deployment which will make faster fault clearing in order to minimize network disturbance and outage area.

- (iv) Shunt Reactor installation to bulk-transmission network to control load flow and to secure appropriate system voltage among network.

***Component-3: Lapseki-Sutluce 380 kV Submarine Power Cable to better inter-connect wind energy locations with other parts of Turkey***

As the second double-circuit submarine cable route having 4.35 km length across the Dardanelles strait, this cable will connect Anatolian side and Thrace side of Turkey with a capacity of 2 GW. Along with the first submarine cable being implemented under APL-6, the aggregate submarine cable capacity across the Dardanelles strait will be 4 GW, connecting wind power sub-stations in provinces of Can, Izmir and Istanbul. As a result of this sub-component, the 380kV bulk-transmission network to Istanbul across the Bosphorus and Dardanelles straits will form a secure strong loop network around Marmara Sea.

***Component-4: Strengthening of Transmission Networks to cater to growing demand and supply of electricity in Turkey***

This component will cater the investment needs for 380 kV bulk-transmission and 154 kV sub-transmission network expansions to meet rapidly increasing demand and supply. This component consists of the 380 kV Yeni Ambarli – Yeni Bosna single-circuit underground cable (route length 16.7 km), 4 substations, and four 154 kV single-circuit underground cable (total route length is 31.2 km). For the sake of urgent requirement, procurement of the 380 kV Yeni Ambarli – Yeni Bosna underground cable has been initiated under APL-6 though most of the investment will be financed by this REIP.

***Support for implementation of smart-grid technologies and for strengthening wind energy markets and regulation***

In addition to the above four components, support would be needed for: (i) design, implementation and capacity building for smart-grid technologies, (ii) simplification of market and regulatory processes for allocation of licenses for wind power (and other renewable energy) development, (iii) strengthening the wind energy markets, and (iv) strengthening environmental and social safeguards in wind power projects (especially from the perspective of cumulative impact assessment). These aspects are being largely covered through the EU-IPA 2012 program – except for some aspects of safeguards. The EU-IPA 2012 program is supported by the EU funds and will be administered by the World Bank in Turkish energy sectors agencies. The renewable energy component of this program is planned for helping MENR accelerate renewable energy development including through the review of regulatory framework, legislation, tariff mechanism, and principles and procedures regarding the site selection of the renewable energy plants; streamlining of licensing processes and permits; and preparation of a renewable energy road map and action plan. As regards the safeguard review of wind power plants connecting to assets funded by this project, TEIAS would conduct a preliminary safeguards assessment from its own resources. Any additional need for Technical Assistance (TA) funds – especially to strengthen the safeguard assessment of wind power plants at a systemic level – would be explored and addressed separately.

The procedures presented in this Framework Document detail actions, which will be taken to ensure compliance with Turkish Environmental Regulations and Procedures and the World Bank Environmental Safeguard Policies and Procedures as specified in the World Bank Operational Policy OP/BP/GP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats) and OP/BP 4.11 (Physical Cultural Resources), since these 3 policies are the environmental policies triggered during the project design.

## **2. BACKGROUND INFORMATION ABOUT WB'S OPERATIONAL POLICIES ON ENVIRONMENTAL ASSESSMENT, NATURAL HABITATS, PHYSICAL AND CULTURAL RESOURCES**

### **2.1. World Bank Environmental Assessment Policy**

Under the World Bank EA system (OP. 4.01) projects are classified as Category A, Category B or Category C depending upon estimated potential environmental risk.

Category A project is likely to have significant adverse environmental impacts on human populations or environmentally important areas-including wetlands, forests, grasslands, and other natural habitats, that are sensitive, diverse, unprecedented and/or irreversible. These impacts may affect an area broader than the sites or facilities subject to physical works. Category B project has potential adverse environmental impacts are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects.

Category B can include different projects with a broad range of potential environmental issues: from projects with quite limited potential environmental issues to projects with potentially important environmental issues that need special consideration to manage properly. In effect, Category B covers any project which is not sufficiently complex and risky to require a full, comprehensive EIA (addressing a wide range of potential issues and including up-to-date environmental baseline data and a detailed analysis of alternatives), but does require some analysis of potential environmental impacts in order to be able to identify appropriate mitigation measures and monitoring indicators. According to the significance of the limited impacts of Category B projects different types of EA documentation could be required. For very simple construction/rehabilitation type of projects a basic EMP or an EMP checklist could suffice, however for the projects which have limited but significant impacts a partial EA (format will be similar to a detailed EMP) could be necessary.

Category C projects either do not include any activities which could negatively affect the environment or includes only activities whose potential impacts are easily avoided through application of standard regulations for good construction practices.

As the screening systems differ when compared to national EIA regulation, it is not technically very easy to cross-match the project screening among national and WB system. For example, it cannot be assumed that Annex I under the national system equates directly with World Bank Category A or Annex II with Category B. The differences in the two systems may arise, and it is possible for some Annex I projects to be considered Category B, or conversely, some Annex II projects to be considered Category A if for example they are planned in sensitive areas. Likewise, some No Annex projects may be screened as Category B especially if they could lead to modest negative impacts to the human or natural environment and the impacts confined to a small region and are temporary or short-lived and these impacts are easy and inexpensive to control (e.g. most of the construction activities).

According to the proposed list of the sub-projects, it was agreed that the underground cables, and the substations will be of Category B<sup>1</sup> nature, as the types of potential impacts are limited and should be relatively easy to assess and mitigate through careful siting and good construction practices.

Details of the EA documentation, public consultation, and implementation arrangements are detailed in the sections below.

## **2.2. World Bank Cultural Heritage Policy**

Cultural resources are important as sources of valuable historical and scientific information, as assets for economic and social development and therefore should be considered during project implementation. World Bank has developed safeguard policy OP 4.11 with aim of preserving cultural resources and ensuring that Cultural Heritage assets will not be adversely affected by bank financed projects. Potential impacts are addressed as integral part of the environmental assessment process (EA).

As part of the screening process (for triggering) it should be determined:

- a) if project would involve significant excavations, demolition, movement of earth, flooding or other environmental changes;
- b) will be located in, or in the vicinity of, a physical cultural resources site recognized by Ministry of Culture and Tourism;
- c) or is designed to support management of physical cultural resources.

Relevant requirements of Turkish legislation and procedures for identifying and mitigation potential impacts on physical cultural resources should be recognized during screening process.

As an integral part of the environmental assessment process when adverse impacts could be expected a physical cultural resources management plan containing measures for avoiding negative impacts on physical cultural resources, provisions for managing chance finds, necessary measures for strengthening institutional capacity, and a monitoring system of these activities should be developed. Specific measures related to physical and cultural resources should be consistent with the Turkey's overall policy framework and national legislation and these measures should be integrated into the sub project partial EA documents.

Since many physical cultural resources are not documented or protected by law consultation with project-affected groups, concerned governmental authorities and relevant non-governmental organizations is used as a tool for identifying such resources, potential impacts and mitigation options.

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<sup>1</sup> REI project is categorized as environment category B, because a category A subproject is not expected to be financed by the loan. In the case that a category A subproject is proposed to be financed, the Bank should be consulted and the loan agreements for REI project will need to be restructured.

The findings and recommendations of the EA are subject of revision including components of psychical cultural resources, corresponding management plan and where appropriate capacity for implementation of proposed measures.

### **2.3. World Bank Natural Habitats Policy**

All natural habitats have important biological, social, economic, and existence value and therefore their protection, maintenance, rehabilitation and functions are actively supported through Natural Habitat Policy (OP 4.04 – Natural Habitats). The conservation of natural habitats is essential for long-term sustainable development. Natural habitats are land and water areas where:

- the ecosystems' bio-logical communities are formed largely by native plant and animal species,
- human activity has not essentially modified the area's primary ecological functions.

Natural Habitats Policy promotes natural habitat conservation, improved land use, the conservation of natural habitats, the maintenance of ecological functions and the rehabilitation of degraded natural habitats.

Relevant natural habitat issues for regional and sectorial environmental assessment (EA) should be identified in the initial Project Information Document and in the early versions of the Environmental Data Sheet. The Project Appraisal Document indicates: the types and estimated areas (in hectares) of affected natural habitats; the significance of the potential impacts; the project's consistency with national and regional land use; environmental planning initiatives; conservation strategies; legislation; and the mitigation measures.

As part of the environmental assessment process and environmental screening process it should be determined:

- a) If project has the potential for significant conversion or degradation of critical or other natural habitats the project will be classified as Category A.
- b) Otherwise projects involving natural habitats are classified as Category A or B, depending on the degree of their ecological impacts.

Overall, projects involved in the significant conversion or degradation of critical natural habitats are not supported unless such projects have feasible alternatives and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs.

If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project should include mitigation measures:

- Minimizing habitat loss (e.g., strategic habitat retention and post-development restoration)
- Establishing and maintaining an ecologically similar protected area.

Other forms of mitigation measures could be accepted only when they are technically justified.

The views, roles, and rights of groups, including local nongovernmental organizations and local communities, affected by projects involving natural habitats, should be involved in planning, designing, implementing, monitoring, and evaluating of project. Involvement may include identifying appropriate conservation measures, managing protected areas and other natural habitats, and monitoring and evaluating specific projects.

Environmental objectives of the project would be assessed during project implementation including natural habitat conservation.

### **3. Project Screening, Documentation, Consultation**

#### **3.1. Screening**

TEIAS's Survey and Planning Department determines the routes of the underground cables and also the locations of the substations. During the planning phase, TEIAS contacts all relevant government agencies (Ministry of Culture and Tourism, Ministry of Environment and Urbanization, etc.) regarding the locations and the routes of right-of-ways. According to the official correspondences TEIAS tries to avoid passing through any protected sites, archaeological sites, etc. The Environment, Estate and Expropriation Directorate of TEIAS conducts all environmental assessment requirements which include obtaining the EIA Certificate from Ministry of Environment and Urbanization (MoEU) as being requirement of Turkish EIA Regulation.

According to Turkish EIA Regulation (Annex 1 Projects in the Regulation) a full EIA report and process is required for the power transmission line projects of 154 kV or above that has a length of more than 15 km.

Annex 2 of the Turkish EIA Regulation lists the projects where a Project Information File (Project Information File is the simpler form of an Environmental Impact Assessment report summarizing the main characteristics of the project, project location and proposed mitigation measures) is required by the MoEU in order to screen these projects, that is to decide if a full EIA is necessary or not. This Annex includes power transmission lines of 154 kV voltage and more, which has a length more than 5 km and shorter than 15 km.

The EA studies of the sub-projects are conducted by the Environment Estate and Expropriation Directorate of TEIAS which has an EIA Competency Certificate obtained from MoEU.

In parallel with preparing the environmental assessment requirements in line with national EIA Law, the same environmental department of TEIAS is responsible for determining the environmental category of the project according to OP 4.01, of course in consultation with the WB. As mentioned earlier, this REI project is classified as a Category B project<sup>2</sup>, and if during implementation any sub-projects appear to have more significant issues and are classified as A, either TEIAS will drop this project from WB financing or the REI project will need to be restructured.

### **3.2. Documentation**

Partial EA and/or Environmental Management Plans (EMPs) for sub-projects will be prepared by TEIAS and submitted to WB for review.

A sample format for preparing EMPs is provided in Annex A (Sample Format for an Environmental Management Plan) of this document. The format will be revised and expanded based on site-specific characteristics. It should be also noted here that the sub-project EAs should cover not only the substation footprint area but also the access roads, and the energy transmission lines (ETLs) from the substation to the national grid. For projects which may need a partial EA, the format will be similar to an elaborated EMP. The project description section, impacts and mitigation sections should be more detailed in order to provide clear explanation about the significant of the impacts and the residual impacts after mitigation. The necessity of preparing a partial EA instead of an EMP and the format of a partial EA will be decided by consulting the WB.

The national environmental clearances (EIA positive decision, EIA not required decision, out of EIA scope decision) should also be included in the partial EA/EMPs. The no-objection from WB will be a pre-requisite before TEIAS goes out for tendering process of a sub-project.

If it is decided that the project is Category C, no EA Documentation is required.

#### **Potential Impacts and Mitigation Measures for the REI Project**

The potential impacts related to this REI project will arise from the substations (both evacuating power from wind power projects and other substations which are receiving energy from all different sources) and underground cables. Both types of projects will have similar impacts and relevant mitigation and monitoring measures. The impacts will be related to dust, noise, solid waste, wastewater generation during construction activities, habitat loss for the footprint of the substations (for the underground cables this is not a major issue), etc. Occupational health and safety and managing traffic and pedestrian safety during construction phase is also a critical issue. Impacts during the operational phase are mostly related to SF6 gas management, disposal of waste oils generating from the maintenance works of the substations, etc.

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<sup>2</sup> Details about the Category A requirements will not be provided in this document.

Impact, mitigation measures and monitoring requirement for the proposed project activities are presented in details as a 'Sample Mitigation and Monitoring Table' as Annex B. This sample table should be used as a guidance tool and the sub-project EMPs should be site specific and may have additional/less mitigation and monitoring requirements.

The phase II Lapseki-Sutluce undersea cable has started under APL6 project and the environmental management plan has been cleared and integrated into the bidding documents. It is included in this framework document since during implementation it could be financed under REIP. But the impact and mitigation tables did not include the undersea cable, since there is an approved detailed EMP for the project and the compliance with the EMP will be monitored continuously by TEIAS as soon as the construction starts.

#### *Addressing Physical-Cultural Resources and Natural Habitats Related Issues in the Environmental Assessment Process*

The environmental assessment document prepared for the sub-projects should include the baseline and impact assessment regarding the Physical-Cultural Resources (OP 4.11) and Natural Habitats (OP 4.04) policies. This means that in case of a cultural property exist in the project's right of way or within the project's impact area, the EA should discuss the sensitivity of the asset, the official correspondences between Ministry of Culture and Tourism and TEIAS, estimated impacts, agreed mitigation measures and monitoring arrangements. If the estimated impact on the physical-cultural asset is serious, WB could ask TEIAS to prepare a detailed Physical-Cultural Asset Management Plan in addition to the environmental assessment document although this is not a requirement under Turkish laws and regulations.

For the chance-find procedures, the national legislation, as they are in line with WB's policies,' could be followed. Briefly, in case any historical, cultural or archeological asset in encountered during excavation, the work at the site shall be stopped and the Provincial/Municipal Directors of Culture and Information Services shall be immediately informed thereof. No persons are permitted to remove articles or disturb the area: such action is grounds for dismissal or contract cancellation. The construction work will be resumed after inspection and written approval by the authorities.

For all sub-projects, whether or not they are in historic areas, any sub-project EMP/Mitigation Plan/Checklist will include procedures and responsibilities for managing accidentally discovered or chance find cultural artifacts.

During the discussions regarding the impacts of substations it was decided that the area of influence for the substations to be financed under this project will not be limited to the substation footprints. Since, the substations are intended for connecting the energy produced by wind power plants to the national grid, the sub-project EAs will also cover the project area description, potential impacts, mitigation, monitoring measures of these

wind power plants and the transmission lines (from WPP to substation and from substation to grid) on environment.

In order to form a basis for screening high risk areas (regarding OP 4.04) a Rapid Ecological Assessment (as a part of Environmental and Social Due Diligence Study) was conducted. Results of the assessment is to guide TEIAS to finance substations which are receiving energy from wind power plants that are not creating any significant adverse impacts on natural habitats and that are not placed in critical natural habitats. Issues related to natural habitats will be detailed in the EAs and EMPs that will be prepared for the substations.

Environmental and Social Due Diligence Study (ESDD) and Findings

Within the scope of the above mentioned ESDD Study 4 proposed substation locations; Can, Izmir, Hamitabat, and Catalca Basins 380 kV substations, including associated facilities (access roads and electric transmission lines) and the Wind Power Plant (WPP) projects planned to be connected to these substations were visited. The list of the WPP projects planned to be connected to these substations is provided in Table 1 below.

Table 1. The WPP Projects to be connected to Can, Catalca, Hamitabat and Izmir (380 kV) Substations

Name of the WPP	Substation Region/Basin	Installed Capacity (MW)	Company	Status
Ucpinar	Can	99	Derbent	Licensed
Kocalar	Can	26	Isider	Licensed
Koru	Can	50	Eskoda	Licensed
Istanbul	Catalca*	200	Universal Wind	Licensed
Mahyadag**	Hamitabat	30	MB Elektrik	Licensed
Evrencik	Hamitabat	120	Evrencik	Licensed
Airres	Hamitabat	55	Airres	Licensed
Vize 2	Hamitabat	75		Licensed
Bergres	Izmir	70	Bergres	Licensed
Kinik	Izmir	50	Esinti	Licensed

\*: Catalca substation financing was withdrawn from REI Project due to the critical habitat features

\*\* : TEIAS decided to connect Mahyadag WPP to Pınarbaşı Substation (which is already existing) not to Hamitabat substation which is under the scope of REI Project.

The assessment showed that among the 4 substation regions visited the most sensitive one is Catalca. In the other regions there are also certain areas that have some ecological sensitivity. However, they are more local (specific to a certain location) and impacts on those areas could be avoided or managed by proper planning (e.g. siting of turbine sites, electric transmission line routes, etc.) and taking relevant mitigation/management measures during construction and operation phases of the projects. The effectiveness of these measures should be followed by monitoring.

There is no area or land with protection status inside and around the planned Izmir Substation Project area or planned and existing WPP project areas. In accordance with Turkish Regulation, planned Musacali and Kapikaya Dam and Reservoir Project areas are “no go places” in the region. These dams would serve for supplying drinking and irrigation water to the region. Izmir Substation area is not at a location that would affect these no go areas. These no go places should be considered while locating the wind turbines of the Kinik WPP project and selecting the routes for the ETLs.

Catalca Substation Area and Istanbul WPP Project area, which is the only WPP to be connected to this substation, are within the borders of the Cilingoz Wild Life Development Area. In the region there are also other areas of protection such as Protection Forest, Natural SIT Area, Water Basin Reserve Area. In addition, Terkos Basin is an Important/Key Biodiversity Area with Terkos Lake being a Key Bird Area and Terkos-Istranca Mountains zone being classified as Key Plants Area. Thus, all the study area can be classified as “**no go place**” due to its critical habitat properties and the current various protection statuses in the region in line with Turkish legislation and international norms.

Hamitabat Substation area and vicinity has no protection status. When the study area is considered, there are no official protection areas including the proposed project sites. Only Mahyadag WPP Project area shows natural and critical natural habitat characteristics and is on the border of Istranca Mountains Important Nature Area and Terkos-Istranca Key Plants Area. It has no legal protection status, but due to the habitat characteristics and closeness to important biodiversity areas it can be classified as “no go place.”

The study area for Can Substation (including the WPP sites) is not in the borders of any official protection area. Can Substation Area is in the vicinity of Karakoca Irrigation Reservoir which would not be affected from the substation. The proposed WPP sites are located in the borders of Biga Mountains Important Nature Area.

**According to the findings of the assessment, TEIAS team agreed to withdraw Catalca substation from REI project scope and also decided to connect Mahyadag WPP to an already existing substation (not the new substation to be financed by WB).**

**For the substations to be financed from REI Project, TEIAS will prepare site specific partial EAs/EMPs and they can use the findings of the rapid ecological assessment as an input for these EAs/EMPs. TEIAS will stay away from the no-go places defined in the rapid ecological assessment while determining the routes of the energy transmission lines (both between WPPs and the substation and from substation to national grid).** The full Environmental and Social Due Diligence (ESDD) report is submitted to TEIAS for guidance during the substation (and associated ETL) partial EA preparation and for routing studies of the ETLs which will connect WPPs to substations. The detailed mitigation/management measures for each project and project site (substations and WPPs) are provided in relevant sections of the ESDD Report. A summary table (Table 2) including the management measures for the potential impacts on natural habitats (in the projects study area) for the proposed substations of TEIAS and the WPPs to be connected to those is provided below.

Table 2. Summary of Threats/Impacts and Suggested Mitigation Measures for Substations

Site Code and Name	Threats/Impacts	Suggested Mitigation Measures	Responsible Agency (RA)	Timing
Izmir Substation, Izmir	Construction of substation would cause habitat loss at the land take area.  Road networks are danger for wildlife.	<ul style="list-style-type: none"> <li>• Conduct further monitoring studies for wildlife and birds movements during planning, construction, and operation phases.</li> <li>• Use existing road network to the extent possible so that potential impacts of new road construction is minimized.</li> <li>• Follow the succession dynamics and develop and apply reinstatement procedures after completion of construction.</li> </ul>	<ul style="list-style-type: none"> <li>• TEIAS</li> </ul>	<ul style="list-style-type: none"> <li>• Planning, construction and operation phases</li> <li>• Seasonal monitoring</li> </ul>
Hamitabat Substation (TM), Hamitabat	Impacts of the ETLs to connect the WPP to the TM	<ul style="list-style-type: none"> <li>• Project specific EIAs would be prepared for those ETLs including further mitigation and monitoring measures</li> <li>• Routes should be selected not to pass from critical natural habitats</li> </ul>	<ul style="list-style-type: none"> <li>• TEIAS</li> </ul>	<ul style="list-style-type: none"> <li>• Planning phase</li> </ul>
Can 380 kV TM, Can	Impacts of the ETLs to connect the WPPs to the TM.	<ul style="list-style-type: none"> <li>• Project specific EIAs would be prepared for those ETLs including further mitigation and monitoring measures.</li> <li>• Routes should be selected not to pass from critical natural habitats and minimizing the need for tree cutting.</li> <li>• A forest fire risk assessment should be conducted and a forest fire management plan should be developed and implemented.</li> </ul>	<ul style="list-style-type: none"> <li>• TEIAS</li> </ul>	<ul style="list-style-type: none"> <li>• Planning, construction and operation phases</li> </ul>

In addition, the ESDD report defines some measures both for TEIAS and also for other stakeholders. Details related to conservation of natural habitats during planning, construction and operation phases are presented in the ESDD Report. TEIAS will share the ESDD document together with the final EMF with 3 regional directorates of TEIAS. Moreover, TEIAS conducted 2 public consultation meetings, one in Ankara on November 1, 2013 and one in Izmir on November 7, 2013, in order to exchange ideas with public and other stakeholders on the project and the environmental review framework.

### 3.3. Consultation

In order not introduce a time limitation for information of the public regarding Category B projects that require EMP and partial EA, brochures describing the planned project must be distributed in coordination with TEIAS Group Directorates, as has been to date; comments and suggestions of people must be collected for minimum 15 days by leaving contact information to village headman's offices; and all these procedures must be included in the EMP together with any comments and suggestions conveyed.

Project information must be made public through brochures or newspaper announcements, with a note stating that comments and suggestions could be conveyed to the related headman's office. Thus, time limitation for comments and suggestions should be eliminated and communication with public should be facilitated in a broader timeframe. As necessary, detailed meetings should be planned to inform the public.

After preparing the draft EMP (or partial EA) documents of the sub-projects, they will be sent to the village headman's offices together with brochures describing the project. At the same time, the following text will be posted on the website of TEİAŞ:

'The brochure and/or draft EMP document regarding TEİAŞ's X Project is disclosed for your comments at X village headman's office and can be downloaded from the link below. You can convey your comments and ideas directly to the headman's office in the field, to the related Transmission and Facilities Operation Group Directorate of TEİAŞ or the Environment and Expropriation Department of TEİAŞ.'

Thus, the stakeholders (public institutions and organizations, NGOs, local people, universities, etc.) having a view about the project can easily reach and express their requests for more detailed information about the project or EMP and/or their requests for holding a meeting.

#### **4. EA Review and Approval**

For all Category B sub-projects Turkish and English versions of the final EMP/partial EA will be submitted to the World Bank by TEİAS for review and approval. A sample format of an EMP/partial EA is shown in Annex A. The Bank's comments, and/or the "No objection" for the submitted EMP are expected to be sent to TEİAS within 2 weeks. If the Bank needs more time to complete its review, it will inform TEİAS within this timeframe. The MoEU will not be a part of review or approval process for these final EMP/partial EAs.

There is no environmental review and/or approval procedure for Category C sub-projects (SCADA, etc.)

#### **5. Disclosure**

The final Turkish Language EMP/partial EA will be opened to public access in the local TEİAS offices, where it will be convenient to the people living in or near the area where the project is to be implemented. TEİAS will make it available in its website on the internet as well. The Turkish / English language version will be sent to the Bank for disclosures in the World Bank Infoshop.

If there is a separate physical-cultural asset management plan, it should also be disclosed in Turkish as mentioned above and also should be shared in Infoshop in English.

#### **6. Implementation Conditions/Obligations**

The EMPs/partial EAs are commitments by TEIAS to the World Bank regarding its' legal obligation under the Loan Agreement to implement them throughout the life of the project. Thus, prior to contract award to the construction contractor, the Environment Estate and Expropriation Directorate of TEIAS will ensure that all bid documents contain conditions (or articles) specifying that the approved EMP are a part of the conditions to be complied with and must be included in all bid documents and contracts.

The monitoring of the performance of the contractor during construction will be carried out by the responsible parties specified in the monitoring plan. Environment Estate and Expropriation Directorate of TEIAS will be the authority to make the final check with regard to the performance of the Contractor with regard to the relevant specifications in the bid documents and EMP. For the case of an EIA report (in accordance with Turkish EIA Regulation), TEIAS will have "first line" responsibility for assurance compliance with conditions of the EMP. So in case the EA document prepared for WB is different than the EA document for MoEU, MoEU is the ultimate responsible agency for auditing and ensuring that the conditions in the Turkish EIA report are complied with, and TEIAS will be monitoring the works against both Turkish EA and the WB EMP/partial EA.

Regarding the transmission lines which will connect the future WPPs (the ones planned/licensed after the ESDD report was completed) to substations funded by REI Project, again the no-go places defined in the ESDD report should be considered by TEIAS and since the route determination is under the responsibility of TEIAS's survey department, it is expected to be a valuable input. Moreover, it is advised that TEIAS shares the national EA documents (EIAs and PIFs) prepared for the future transmission lines with WB team for information.

## **7. Environmental Standards/Guidelines**

TEIAS will use Turkish or World Bank environmental standards (which ever is stricter) for the sub- projects. These standards are basically related, but not limited, to the following:

- Environmental impact assessment
- Solid and hazardous waste management
- Noise levels (during construction)
- Electric and magnetic field intensities at ground level (transmission/distribution) or at the fence line (transformer substation)
- Polychlorinated biphenyls (PCBs) are to be prohibited from use in any equipment purchases (e.g. transformers, capacitors) or any replacement components
- Right-of-way selection
- Environmental auditing
- Health and safety
- Pesticide use for land clearance
- Cultural Heritage
- Natural Habitats

The criteria and standards for the above mentioned issues, and any other relevant issue can be found in the Turkish Regulations, the Pollution Prevention and Abatement Handbook (PPAH) of the World Bank and International Finance Corporation (IFC) Environmental Health and Safety Guidelines (EHSG). With regard to these issues the requirements of Turkish Regulations will be certainly complied with. If there are no standards or requirements in Turkish Regulations or if the standards of the World Bank are stricter these will be used in construction and operation. The major World Bank documents related to these issues are Bank Safeguard Policies, EA Sourcebook and Updates, and the above mentioned PPAH and EHSG, which are available from the website of the World Bank.

## **8. Institutional Arrangements for Environmental Management**

During construction, the Environment Estate and Expropriation Directorate of TEIAS, in cooperation with the regional offices, will check the performance of the contractor to assure the works reflects the requirements specified in the EMPs. With this regard quarterly reports will be required from the construction contractors and on-site checks will be carried out if found necessary.

During operation, the Environment Estate and Expropriation Directorate of TEIAS, will assist the operations department and review their performance with regard to the obligations specified in the EMP for the operation phase of the projects. The representatives of the Environment Estate and Expropriation Directorate of TEIAS will review the environmental management performance of the regional offices of TEIAS with respect to the projects of concern.

TEIAS will submit the Monitoring Reports (prepared according to the approved Environmental Management Plans) for all Category B sub-projects to the WB to be reviewed in a quarterly basis.

**ANNEX A: SAMPLE FORMAT FOR AN ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

Project Description

Present a brief description of the subproject. Include the nature of the investment, the location, and any characteristics of the specific project site and area that are listed in Annex A, e.g. near a protected area, area of environmental, cultural, historical, religious interest etc. Also, very briefly describe the general land use characteristics (farming, small industry etc.), and the location(s) of the nearest population centers. If available, a simple map should be included.

1. MITIGATING PLAN

Phase	Issue*	Mitigating Measure	Responsibility**
Construction	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>		
Operation	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>		

\* Issues and mitigating measures included will be site-specific, based on the assessment of the location or routing.

\*\* Items indicated to be the responsibility of the contractor shall be specified in the bid documents

## 2. MONITORING PLAN

<b>Phase</b>	<b>What</b> <i>parameter is to be monitored?</i>	<b>Where</b> <i>is the parameter to be monitored?</i>	<b>How</b> <i>is the parameter to be monitored/ type of monitoring equipment?</i>	<b>When</b> <i>is the parameter to be monitored- frequency of measurement or continuous?</i>	<b>Why</b> <i>Is the parameter to be monitored?</i>	<b>Cost</b>	<b>Responsibility</b>
Construct							
Operate							

**NOTE:** Any item identified in the mitigation plan must have a corresponding entry in the monitoring plan. For example, if noise is an issue presented in then mitigating plan, than noise should be an item in the monitoring plan

### 3. SCHEDULE

Present (preferably in Chart Form) Start Dates and Finish Dates for:

- Mitigation Activities
- Monitoring Activities

### 4. INSTITUTIONAL ARRANGEMENTS

A narrative discussion supported by organizational charts detailing:

- Institutional responsibilities and procedures for mitigation and monitoring and how they are linked for environmental management
- Environmental information flow (reporting—from who and to who and how often)
- Decision making chain of command for environmental management (to take action, to authorize expenditures, to shut down, etc.)

*In short, how is all the monitoring data going to be used to maintain sound environmental performance—who collects the data, who analyzes it, who prepares reports, who are the reports sent to and how often, and who does that person send it to, or what does he/she do with the information—who has the authority to spend, shutdown, change operations etc.*

The full Environmental and Social Due Diligence (ESDD) report is submitted to TEIAS for guidance during the substation (and associated ETL) partial EA preparation and for routing studies of the ETLs which will connect WPPs to substations.

### 5. CONSULTATION WITH LOCAL NGOs AND PROJECT-AFFECTED GROUPS

*Provide documentation of the following:*

- *Date(s) consultation(s) was (were) held*
- *Location(s) consultation(s) was (were) held*
- *Who was invited – if an official meeting was held*  
Name, Organization or Occupation, Telephone/Fax/e-mail number/address  
(home and/or office)
- *Who attended- – if an official meeting was held*  
Name, Organization or Occupation, Telephone/Fax/e-mail number/address  
(home and/or office)

What is to be presented and by whom

- Summary Meeting Minutes (Comments, Questions and Response by Presenters), including the name(s) of member(s) who participated in the Consultation
- Any agreed actions or necessary follow-on work and agreed schedule

**ANNEX B. SAMPLE MITIGATION AND MONITORING PLAN FOR SUBSTATIONS and UNDERGROUND CABLES**

MITIGATION TABLE						
Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
<b>CONSTRUCTION</b>	Cultural and Historical Assets	<ul style="list-style-type: none"> <li>In case of coinciding with any cultural asset, the construction will be stopped immediately and the Cultural and Natural Assets Protection Committee will be informed.</li> <li>Until the response is taken, any action will not be done at the site.</li> <li>After taking the positive response (no cultural assets) the construction will continue.</li> </ul>	No additional cost	Contractor	Start of Construction Works	Completion of construction works
	Dismantling of the existing substation (valid for substations)	<ul style="list-style-type: none"> <li>All redundant equipment and waste will be collected separately and whenever possible, these materials will be recycled by a licensed firm.</li> <li>Asbestos containing materials will be disposed of by the firms licensed for hazardous waste disposal</li> </ul>	Included in the construction contract	Contractor	Start of the dismantling works	Completion of the dismantling works
	Dust – Particulate Matter	<ul style="list-style-type: none"> <li>The regulated limit value of Dust/Particulate matter emission being 3 mg/Nm<sup>3</sup> (Industrial Air Pollution Control Regulation) is not to be exceeded.</li> <li>Watering will be done in the dry seasons</li> <li>Loading and unloading will be carried out with care and without scattering. In order not to lead to scattering, loading/unloading works will be performed in an area allocated for loading/unloading and water sprays will be used in loading/unloading area. Moreover, the workers are warned being careful about loading/unloading activities. Windy weathers will not be selected for loading/unloading if it is applicable.</li> <li>The trucks will be covered with canvas, etc. and speed limitation will be applied. Speed limit on trucks is 30 km/hr (at project site) and 50 km/hr (outer of the project site – within the city)</li> <li>Only vehicles with emission stickers will be used</li> <li>Tires of the trucks will be cleaned where necessary to prevent dirt being carried onto the roads</li> </ul>	Included in the construction contract	Contractor	Start of the excavation work	Completion of the excavation works

**MITIGATION TABLE**

	MITIGATION TABLE					
Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
<b>CONSTRUCTION</b>	Noise	<ul style="list-style-type: none"> <li>All construction works will be done between 7am and 7pm. If it is required to work after 7 pm, local authorities and public will be informed about these working hours.</li> <li>People, living at the population centers around, will be informed about the working durations</li> <li>The continuous work-site noise (day times) will be ensured to be under 70 dBA (according to the Turkish Regulation on Assessment and Management of Environmental Noise.</li> </ul> <p>To satisfy this;</p> <ul style="list-style-type: none"> <li>The construction machines (vehicles) inspection, maintenance and oiling will be done in time and periodically, and the items resulting in noise will be replaced.</li> </ul>	No additional cost	Contractor	Start of Construction Works	Completion of construction works
	Wastewater	<ul style="list-style-type: none"> <li>Wastewaters due to work-site will be given to the sewerage system of the Province by the connection to the sewerage system.</li> </ul>	Included in the construction contract	Contractor	Start of Construction Works	Completion of construction works
	Excavation, solid and hazardous wastes due to construction	<ul style="list-style-type: none"> <li>Excavation wastes will be deposited to the excavation waste disposal area licensed by the relevant municipality.</li> <li>Solid wastes (construction materials such as metal, wood) and packaging wastes (plastic, paper, glass etc.) will be systematically and separately collected and it will be ensured to be taken by Municipality or a licensed recycle firm.</li> <li>Organic domestic wastes due to worker/personnel will be collected separately and it will be ensured to be taken by Relevant Municipality and disposed to Solid Waste Disposal Area locating near Village.</li> <li>Hazardous wastes such as oil, dye etc. will be collected separately in leak proof, metal and labeled containers and it will be ensured to be taken by a licensed firm ensured by the Contractor</li> </ul>	Not high (changing by depending on municipalities and/or licensed recovery plant)	Contractor	Start of Construction Works	Completion of construction works

**MITIGATION TABLE**

	MITIGATION TABLE					
Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
	Wastes due to vehicle parking	<ul style="list-style-type: none"> <li>Maintenance of the vehicles will not be done at the project site unless there is an emergency situation</li> <li>Waste oil due to construction machines and vehicles will be collected in rustless barrels and will be sent to a licensed firm by the contractor.</li> <li>The barrels will be placed onto an impermeable ground to protect them from rain and sun and all necessary precautions against fire will be taken. The area where the barrels are placed will be surrounded with the warning sign. Firefighting set (bucket, axe, shovel, pickaxe, and anchor) will be at that area.</li> <li>Batteries, tires and similar items due to construction machines and vehicles will be sent to a licensed firm for final disposal.</li> </ul>	Not High	Contractor	Start of Construction Works	Completion of construction works
<b>CONSTRUCTION</b>	Health and Safety	<ul style="list-style-type: none"> <li>All necessary protective equipments (hard hat, safety belt, protective clothes, gloves, glasses etc.) will be provided to the workers</li> <li>Proper notification signs will be placed to maintain the security of the public and local people</li> <li>The personnel will be trained on “labor health and occupational safety” issues. Information about the safety rules that must be obeyed within the work-site area during the construction works, risks and related regulations will be provided to all workers before the construction works start.</li> </ul>	Within project budget	Contractor	Start of Construction Works	Completion of construction works
	Landscape	<ul style="list-style-type: none"> <li>The work-site will be restored.</li> <li>No hazardous, solid, liquid, construction wastes will be left at the site.</li> </ul>	Within project budget	Contractor	Completion of construction works	Taking the substation into operation

**MITIGATION TABLE**

	MITIGATION TABLE					
Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
<b>CONSTRUCTION</b>	Habitats (flora/fauna)	<ul style="list-style-type: none"> <li>All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities.</li> <li>A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided</li> <li>Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences</li> <li>There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.</li> </ul>	Within project budget	Contractor	Start of construction works	Taking the substation into operation
<b>CONSTRUCTION</b>	Traffic and Pedestrian Safety	<p>In compliance with national regulations the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to:</p> <ul style="list-style-type: none"> <li>Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards</li> <li>Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes.</li> <li>Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement</li> <li>Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.</li> <li>Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.</li> </ul>	Within project budget	Contractor	Start of construction works	Taking the substation into operation

**MITIGATION TABLE**

Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
OPERATION	Noise	<ul style="list-style-type: none"> <li>The limit values (<math>L_{\text{daytime}}:65 \text{ dBA}</math>, <math>L_{\text{nighttime}}:55 \text{ dBA}</math>) regulated in Turkish Environmental Noise Evaluation and Control Regulation will not be exceeded. To satisfy this limits;</li> <li>Equipments forming the substation shall be specified in the bid documents and supplied in accordance with the International Electrotechnical Commission (IEC) 60076-10 and other international standards (For 154 kV transformers <math>\leq 60 \text{ dBA}</math> at source/For 380 kV transformers <math>\leq 70 \text{ dBA}</math> at source).</li> </ul>	Within the operation budget	TEIAS Transmission Network Operation Maintenance Department	Taking the substation into operation	Completion of the economic life of the substation
OPERATION	Electro-Magnetic Field (EMF)	<ul style="list-style-type: none"> <li>The limit values (5 kV/m for electric field/for public, 1000 mG for magnetic field (24 hours/day); 10 kV for electric field/for labors, 5000 mG for magnetic field (8 hours/day)) mentioned in International Commission on Non-Ionizing Radiation Protection (ICNIRP) will be complied with. In order to satisfy this limits the following will be conducted;</li> <li>As specified in the bid documents, all the equipments of the substation (transformer, disconnecter, circuit breaker, surge-arrester, current transformer, voltage transformer etc.) will be taken according to the International Electrotechnical Commission (IEC) and other international standards and the controls and maintainance (strengthening by renewal) will be done in accordance with IEC.</li> <li>The substation will be surrounded by the wall and fence. Therefore, entrance, approach, and settlement would be avoided.</li> <li>The substation building, equipments, wall and fence will be grounded. In any case of sign of a failure (such as failure in the operation of an equipment, increasing the contact current, electrical arc, local warming etc.) the grounding resistance will be measured and according to the measurement results the grounding of the ones having the problem will be strengthened by local rehabilitation, maintaining the continuity of the connections etc.</li> </ul>	Within the operation budget	TEIAS	Taking the substation into operation	Completion of the economic life of the substation

MITIGATION TABLE						
Phase	Subject	Mitigation Measures**	Cost	Responsible Institution*	Start Date	Finish Date
OPERATION	Health and Safety	<ul style="list-style-type: none"> <li>The personell will be selected from the people having trained in first aid, electric safety, working at high levels for the maintainace of the substation</li> <li>The warning signs and climbing barriers will be placed around the substation.</li> </ul>	Not high (as a part of operation budget)	TEIAS TEIAS District Office	Taking the substation into operation	After the completion of the economic life of the substation
	SF6	<ul style="list-style-type: none"> <li>SF6 gas will be monitored continuously with presure measurement and gas leakages will be controlled. In the case of gas leakge (before SF6 gas density drops below the critic level), the bay will be shut down (closed) and that part will be out-of service until the problem is solved.</li> </ul>	Not high (as a part of operation budget)	TEIAS Transmission Network Operation Maintenance Department	Taking the substation into operation	After the completion of the economic life of the substation
	Fire Risk	<ul style="list-style-type: none"> <li>The substation which will be established as to the fire safety elements in the "Electric Intensive Current Plant Regulation" shall be controlled regularly and all equipment shall be controlled, maintained, tested, rehabilitated and renewed (in terms of the parameters like bushing, SF6, isolation oil, cable ends and gas leakage).</li> <li>All equipments will be tested according to the national and international standarts againts arc and sparks.</li> </ul>	Not high (as a part of operation budget)	TEIAS TEIAS District Office Transmission Network Operation Maintenance Department	Taking the substation into operation	After the completion of the economic life of the substation
	Substation oil	<ul style="list-style-type: none"> <li>Substation oil will be analyzed physically and chemically (density, acidity, viscosity, corrosive sulfide, flash point, PCB, color).</li> <li>When the oil completes its economic life, it will be replaced with new one and disposal of it will be ensured by conducting required tests (to determine the category of the oil) and applying proper disposal method as to the category test results</li> <li>PCBs will never be used as replacement oils.</li> </ul>	Not high (as a part of operation budget)	TEIAS TEIAS District Office Transmission Network Operation Maintenance Department	Taking the substation into operation	After the completion of the economic life of the substation
	Solid-Liquid and Hazardous Wastes	<ul style="list-style-type: none"> <li>Solid wastes, junk materials and construction wastes will be collected seperately and they will be ensured to be taken by the Relevant Municipality or a licenced firm</li> <li>Wastes such as oil, dye will be collected in separate, impermeable, metal and labeled conteyners and will be ensured to be taken by a licenced recycle firm</li> </ul>	Not High (changing by depending on municipalities and/or licensed recovery plant)	TEIAS TEIAS District Office	Taking the substation into operation	After the completion of the economic life of the substation

\* Valid in the case of handing over of the proposed works to subcontractors. Otherwise, responsibilities defined for contractor will belong to TEIAS

\*\* While taking the proposed measures, compliance with all related regulations (Air Quality Evaluation and Control Regulation, Water Pollution Control Regulation, Environmental Noise Evaluation and Control Regulation, Solid Waste Control Regulation, Soil Pollution Control Excavation, Construction and Demolition Wastes Control Regulation, Hazardous Waste Control Regulation, Package and Packaging Waste Control Regulation, Grounding in Power Installations Regulation, Work Health and Safety Regulation, Health and Safety Conditions on Usage of Work Equipment Regulation) will be complied

MONITORING TABLE										
<u>Phase</u>	<u>Subject</u>	<u>What are the parameters, which would be monitored?</u>	<u>Where the parameters would be monitored?</u>	<u>How would the parameters be monitored?</u>	<u>When would the parameters be monitored - frequency of the measurements?</u>	<u>Why would the parameters be monitored?</u>	<u>Cost</u>	<u>The Institute that controls – frequency of the control</u>	<u>Start Date</u>	<u>Finish Date</u>
<b>Construction</b>	Cultural and Historical Assets	Cultural assets at the site	Construction site	Visual	In case of coinciding a cultural asset continuously by an archeologist	Obeying the Cultural and Natural Assets Protection Law	Not high if no cultural assets are damaged	Provincial Culture and Museum Directorate	Start of the construction works	Completion of construction works
	Dismantling of the existing substation (valid for substation)	Substation components & installation Redundant equipment and wastes	Construction site	Visual	During the dismantling activity	Related Environmental Laws and Regulations	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of the demolition activities	Completion of the demolition activities
	Dust – Particulate Matter	Dust Formation due to the Movement and Exhaust of the Construction Machinery (mg/Nm <sup>3</sup> ) Complaints from public	Construction site	Visual inspection Interviews with the local people near the site	During the excavation period / intense construction works, weekly/ in the case of complaint	Industrial Air Pollution Control Regulation	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of construction works	Completion of construction works
<b>Construction</b>	Noise	Complaints from public Noise Level (dBA)	Construction site	Interviews to be conducted in near residential areas Noise level measurement with noise meter (sound level meter)	Observation (weekly) In the case of complaint from public	Environmental Noise Evaluation and Control Regulation	Not High	TEIAS TEIAS District Office	Start of the construction works	Completion of construction works

MONITORING TABLE										
<u>Phase</u>	Subject	What are the parameters, which would be monitored?	Where the parameters would be monitored?	How would the parameters be monitored?	When would the parameters be monitored - frequency of the measurements?	Why would the parameters be monitored?	Cost	The Institute that controls – frequency of the control	Start Date	Finish Date
<b>Construction</b>	Wastewater	Connection to the sewerage system, Contamination in the water and/or soil in the substation area	Connection to the sewerage system Substation area	Visual (Wastewater generated by the workers will be given to the sewer system of the city. The connection to the sewer system and whether any wastewater is discharged to soil, water or to any receiving body expect the permitted one will be observed and controlled)	Weekly (irregular controls)	In accordance with the Water Pollution Control Regulation and Soil Pollution Control Regulation	No additional cost (within the project budget)	TEIAS TEIAS District Office Municipality	Start of the construction works	Completion of construction works

<u>Phase</u>	<b>Subject</b>	<b>What are the parameters, which would be monitored?</b>	<b>Where would the parameters be monitored?</b>	<b>How would the parameters be monitored?</b>	<b>When would the parameters be monitored - frequency of the measurements?</b>	<b>Why would the parameters be monitored?</b>	<b>Cost</b>	<b>The Institute that controls – frequency of the control</b>	<b>Start Date</b>	<b>Finish Date</b>
<b>Construction</b>	Excavation, Solid and Hazardous Wastes	Storage and disposal conditions	Construction site and disposal site	Visual	Weekly (irregular controls)	Compliance with Conservation of Habitat Regulation, Solid Waste Control Regulation and Soil Pollution Control Regulation, Hazardous Wastes Control and Waste Oil Control Regulation	No additional cost	TEİAŞ TEİAS District Office Contractor Municipality	Start of the construction works	Completion of construction works
	Wastes due to Vehicle Parking	Waste oils, automobile batteries, used tires and junk electronic materials	At the vehicle parking area	Visual Inspection and control of vehicle maintenance documents	During the failure and regular maintenance	Achievement of the disposal of the wastes compliance with Waste Oil Control Regulation, Waste Battery and Accumulators Control Regulation, End-of-tires Control Regulation	No additional cost	Contractor	Start of the construction works	Completion of construction works

<u>Phase</u>	<b>Subject</b>	<b>What are the parameters, which would be monitored?</b>	<b>Where would the parameters be monitored?</b>	<b>How would the parameters be monitored?</b>	<b>When would the parameters be monitored - frequency of the measurements?</b>	<b>Why would the parameters be monitored?</b>	<b>Cost</b>	<b>The Institute that controls – frequency of the control</b>	<b>Start Date</b>	<b>Finish Date</b>
	Health and Safety	Documents related to workers health and safety training Equipment used by the worker during working for construction (hard hat, gloves, safety belt etc.) Work practices	Construction sites	Visual	Beginning of the each work stage  Daily	In accordance with Labor Health and Occupational Safety Regulation	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of the construction works	Completion of construction works
<b>Construction</b>	Landscape	Wastes (construction, solid, hazardous, liquid) are left at the site, the excavated areas	The project area	Visual	During closing the construction site	Compliance with Environmental Law and Regulations	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of the construction works	Completion of construction works
	Habitats	Any adverse impact on flora and fauna at the project area	The project area	Visual	Continuous	Compliance with Environmental Law and Regulations and EMP	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of the construction works	Completion of construction works
	Traffic and pedestrian safety	Installation of signs, speed of vehicles, etc.	The project area	Visual	Continuous	Compliance with Environmental Law and Regulations and EMP	No additional cost (within the project budget)	TEIAS TEIAS District Office	Start of the construction works	Completion of construction works
<b>Operation</b>	Noise	Noise level (dBA) Public complaint	At the border (wall) of the substation Near residential areas	Interviews with the local people	In the case of complaint	Control of the limit values determined in the related regulation	Not High	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation

<u>Phase</u>	<b>Subject</b>	<b>What are the parameters, which would be monitored?</b>	<b>Where would the parameters be monitored?</b>	<b>How would the parameters be monitored?</b>	<b>When would the parameters be monitored - frequency of the measurements?</b>	<b>Why would the parameters be monitored?</b>	<b>Cost</b>	<b>The Institute that controls – frequency of the control</b>	<b>Start Date</b>	<b>Finish Date</b>
	Electromagnetic Field Strengths	Distance between the substation and the wall/fence  Documents related to the equipment procurement  Grounding resistance (ohm)	Within the substation and substation area	Visual observation  Interviews with the people at the near residential areas  Grounding measurement	Taking the substation into the operation  Any problem, failure in the grounding	Control of satisfying the national and international reference values	Not High	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation
<b>Operation</b>	Health and Safety	Technical training in terms of operation and maintenance  Protective equipment and clothes (whether usage or not)	The substation area	Visual	Maintenance works (proper periods)	Compliance with related health and safety regulations	No additional cost (within the operation budget)	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation
<b>Operation</b>	SF6	SF6 gas pressure	All bays	With pressure meter	During the operation (continuously)	Compliance with the Environmental Law and Regulations  Innecessaty of operation	No additional cost (within the operation budget)	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation

<u>Phase</u>	<b>Subject</b>	<b>What are the parameters, which would be monitored?</b>	<b>Where would the parameters be monitored?</b>	<b>How would the parameters be monitored?</b>	<b>When would the parameters be monitored - frequency of the measurements?</b>	<b>Why would the parameters be monitored?</b>	<b>Cost</b>	<b>The Institute that controls – frequency of the control</b>	<b>Start Date</b>	<b>Finish Date</b>
<b>Operation</b>	Fire Risk	SF6 gas pressure cable ends isolators cable connection points Primary and secondary controllers	Substation area	Technical tests and standard maintenance tests performed by the controllers	Semi-annually / in the case of maintenance, control and failure	Due to fire risk  To comply Electric Intense Current Plants Regulation requirements related to fire safety, to repair the worn, broken parts, to minimize the risk of accident and to prevent the outage	No additional cost (within the operation budget)	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation
<b>Operation</b>	Substation Oil	Oil characteristic parameters (density, acidity, viscosity, corrosive sulfide, flash point, PCB, color)	Transformers	Physical, chemical analyses done by TEIAS Test Laboratories	Bi yearly/daily, weekly, monthly in the case of failure	Quality control of the substation oil	Not high (within operation budget)	TEIAS TEIAS District Office	Taking the substation into operation	Completion of the economic life of the substation

<u>Phase</u>	<b>Subject</b>	<b>What are the parameters, which would be monitored?</b>	<b>Where would the parameters be monitored?</b>	<b>How would the parameters be monitored?</b>	<b>When would the parameters be monitored - frequency of the measurements?</b>	<b>Why would the parameters be monitored?</b>	<b>Cost</b>	<b>The Institute that controls – frequency of the control</b>	<b>Start Date</b>	<b>Finish Date</b>
<b>Operation</b>	Solid-Liquid and Hazardous Wastes (automobile accumulator, substation oil)	Contamination within the area of substation (wastes, smell etc.) Defective equipment wastes Contaminants in the waste substation oil (Arsenic, Cadmium, Lead, Total Halogens, PCBs, Flashing point)	Substation area	Visual  Analyses	During the operation period  In the case of defection, failure, completion of the economic life of the equipment  Completion of the economic life of the substation oil	Compliance with Conservation of Habitat Regulation, Solid Waste Control Regulation and Soil Pollution Control Regulation, Hazardous Waste Control Regulation  Compliance with Waste Oil Control Regulation	Not high (changing by depending on municipalities and/or licensed recovery plant)  Not high (depending on the firm/laboratory conducting the analysis)	TEIAS TEIAS District Office Municipality  Provincial Directorate of Environment and Forestry	Taking the substation into operation	Completion of the economic life of the substation