The Republic of Turkey
Turkish Land Registry and Cadastre Agency

Proposed Cadastre Modernization Project

Environmental Management Framework (EMF)
(14 November 2007)

1. INTRODUCTION

Turkey has a long history of protection of property rights. More than 95% of land in Turkey is mapped and registered, and the Turkish Land Registry and Cadastre Agency (TKGM) plans to complete the registration by 2008. Nevertheless, significant improvements are needed to fully modernize the TKGM and bring it to European standards.

In the last years, Turkey has experienced an economic growth with an average rate of 7.5% per annum since 2001. The housing and construction sector has been very active and is growing at a 7% rate. In major cities, the residential, industrial and commercial construction is taking place at a rapid pace and all support services, including property surveys and subdivision, are stretched to keep-up with increasing demand. Most secondary city areas have grown in size, some by at least 50% into rural areas in the last decade (e.g., Konya). The resulting demand for cadastral survey services from both the public and private sectors continues to grow.

While the Turkish Cadastre and Registration system is considered one of the most effective in the region as registration of property transaction is done within one day in many offices, there are still many shortcomings that require to be addressed to ensure that the system modernizes to reach the same service level as in the European countries.

Still, many of the Cadastre and Land Registry offices rely on manual systems, with old documents, some of them dating back to the Ottoman times. The TAKBIS system (the computerized Land Registry Software) runs in only 140 out of the 1000 offices. There are plans to expand the computerization to other offices in the coming years.

The most challenging aspect is that cadastral maps continue to be in a paper format, vary in accuracy and consistency, and are not linked to the national datum. This makes it difficult to support E-government applications as cadastre maps serve as a base mapping for many government applications. Furthermore, in many localities maps are out of date and do not correspond with the ground parcel sizes and shapes, differing sometimes by up to 10 meters. This situation resulted from the varying quality of surveying technologies used in the last 100 years and the lack of required resources and regulatory means to keep the cadastre up to date and to be truly representative of the realities on the ground. Over time, several different geographical coordinate systems for the cadastre have been used in Turkey, ranging from none 100 years ago, then local systems, and finally, in the last 20 years, to a national coordinate system. Coordinates are central to digital spatial information systems, and at present, there is no standard system in the country’s cadastre. This lack of a consistent coordinate system is a critical shortcoming for both developers, spatial analysts and users, and it will take several years to rectify.
Property valuation for taxation is less developed in Turkey than in similar economies. In the wider context of Europe, survey work on behalf of the United Nations Economic Commission for Europe Working Party on Land Administration (UNECE WPLA) in 2001 confirms that the large majority (84%) of respondent countries either have (72%), or were developing (14%), mass valuation systems for taxation purposes. Land administration agencies are substantially the most common type of agency to have responsibility for mass valuation of real estate and maintenance of the appropriate databases. There is no property valuation law in Turkey which would assign institutional responsibilities or provide the framework for property valuation guidelines and grievances procedures. Current property taxation relies on the minimum value of property provided by local governments. The minimum value is in many cases less than 10% of the fair market value. This significantly reduces the taxes the government collects on real estate transactions. The government has enacted several regulations to improve property valuation for accounting purposes as well as property appraisal to support mortgage lending. However, there are no similar initiatives to ensure that broader property valuation function develops in line with international standards.

The Government of Turkey is aware of the outstanding needs and decided to modernize the cadastre in order to realize the economic and social benefits of up-to-date information for future development. The E-government initiative, of which the cadastre and registration is a central part, is one of key government priorities. The transition from the paper-based to the computer-based land registry and cadastre is aimed at improving customer services, supporting E-government initiatives, and making information available to other government and private users. The digital cadastre information provides the base maps and related information for many E-government functions such as municipal services, emergency management, land use planning and development control, postal services, real estate monitoring, utilities management and property taxation. Most countries in Europe, including many of the transition economies, have moved from paper-based to computer-based land registry and cadastre systems. The success of the Turkish transition to a uniform digital environment will require significant efforts to deal with data renovation and updating, building the IT and communications infrastructure in the TKGM central and field offices, and significant human resources development program to upgrade the skills of TKGM staff to operate effectively in the new environment.

1.1. Project Objective

The Government’s development program for 2007-2013 puts great emphasis on improving the efficiency and quality of public services. The EU accession process will require upgrading of the quality and cost-effectiveness of public services to adapt them to the EU standards. The project

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2 Respondent countries were: Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Denmark, Estonia, Finland, France, Georgia, Germany, Hungary, Iceland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Romania, Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom
3 The remaining four countries all have taxes based on net wealth/assets and on real estate.
4 13 of the 25 countries responding: Armenia, Azerbaijan, Belarus, Belgium, Cyprus, Estonia, France, Iceland, Italy, Latvia, Lithuania, Russian Federation, Spain
will contribute to achievement of this objective through enhancing and bringing the land registry and cadastre services to the European standards.

The project is in line with the priorities set out in the draft Country Partnership Strategy (CPS) for 2008 – 2011 which expected to be soon finalized with the Government. One of the key planned areas of the World Bank engagement is the support to efficient delivery of high quality public services, including modernization of land administration and cadastre to allow improved property valuation and taxation, and urban development. The project will also contribute to the CPS objective of enhancing technology adaptation and innovation as well as to the improvement of local delivery of public services.

The overall goal of the project is to contribute to government agenda to improve quality and effectiveness of public services through spreading and making effective E-government applications. The specific objective of the proposed project is to improve the effectiveness and efficiency of the land registry and cadastre services. This objective will be achieved through: (i) renovating and updating cadastre maps to support digital cadastre and land registry information; (ii) making the digital land registry and cadastre information available to public and private entities (iii) improving customer services in land registry and cadastre offices; (iv) improving human resources in the TKGM; (v) developing policies and capacity to introduce in Turkey best international practices in property valuation.

1.2. Project Description

The project will include the following components:

Component 1: Cadastre and Land Registry Renovation and Updating. The component will support (through renovation) the conversion (into digital format), updating and integration of existing analogue and digital cadastre information, land registry and related data, into updated, accurate, consistent and standardized legally agreed cadastral renovated digital map and data sets, that will be available for entry into TAKBIS.

The component will up-date around 5 million priority parcels over the 5 year project period in at least 5 priority regions (Ankara, Antalya, Istanbul, Izmir, and Gaziantep) covering selected urban and rural areas. The resulting renovated parcel information will be entered into the national cadastre and land registry systems thereby increasing the fidelity and security of the parcel information and the title overall. The component will include the following activities:

- Cadastre renovation (in line with articles 22/a of Law no.3402 – the Cadastre Renovation Law);
- Base mapping in selected areas; and
- Supervision and quality control.

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5 / TKGM estimates that there are 55 million real estate parcels in Turkey which have been surveyed to varying degrees of precision and accuracy over the history and recent years recorded on over 350,000 cadastre plans. These plans reflect the history of the growth of the cadastre over the last 70 years. Some purely graphical, others are in local coordinate systems, while others are in the national UTM system (with 3 degree zones) and are purely digital.
Component 2: Improved Service Delivery. The component will support the modernization of the TKGM infrastructure so as to improve TKGM’s ability to provide core services to the Government and citizens of Turkey. It includes consultancy services to provide strategic advice on critical issues affecting the national implementation of TAKBIS in Land Registry and Cadastre Directorates. Model offices will be established in each of the regions targeted in the project so as to provide examples of office layouts that support streamlined, improved and integrated workflows involving both Land Registry and Cadastre Directorates of TKGM and the operation of the integrated version of TAKBIS. This component will also support procurement of furniture and equipment that may be required for the new model land offices. Furthermore, the component will support the E-government initiative through making available an E-cadastre data through the planned Turkish National Spatial Data Infrastructure. It will provide access to land registry and cadastre data.

The component will include the following sub-components:

- Cadastre integration consultancy support;
- Provision of furniture and office equipment; and
- Model office construction/renovation.

Component 3: Human Resources and Institutional Development. The component will support the development of strategic plans and human resources development plans to ensure that the TKGM personnel skills match the strategic needs of the organization. The component will also finance training, study visits to countries which have undertaken similar modernization programs in the last few years, and support the development of video conferencing capability between regional directorates and headquarters for management, core and specialized training.

The component will include the following activities:

- Development of Human Resources Development Strategy;
- Business Planning and Strategic Planning including stakeholder analysis and the private sector roles;
- Training and distance learning;
- Video-conferencing capability development for TKGM; and
- Study visits on international trends in institutional development, strategic and business planning, and human resource development.

Component 4: Property Valuation. The component will investigate and develop the policy and institutional options for the property valuation function in Turkey in line with international best practices. The component will also finance the development of interim guidelines and piloting of property valuation in two municipalities and support building of the required capacities. It will include the following sub-components:

- Policy development (proposals on legal, institutional and technical arrangements);
- Pilot implementation; and
- Capacity building.
**Component 5: Project Management.** This component will finance the project management costs, including the procurement and financial management contractors, the incremental costs to supervise the field activities, and the monitoring and evaluations, including the costs of customer surveys.

1.3. Project Environmental Assessment Category

In accordance with the World Bank’s safeguard policies and procedures, including the *OP/BP 4.01 Environmental Assessment*, the project has been classified as a Category B for environmental assessment purposes. Environmental due diligence for Category B projects financed by the World Bank requires the preparation of the present document, called “Environmental Management Framework” (EMF), and its implementation in order to prevent, minimize or mitigate site-specific impacts.

It is anticipated that environmental risks will be relatively modest in the proposed project. Under the project Component 2 (“Improved Service Delivery”) model offices will be established in each of the regions targeted in the project so as to provide examples of office layouts that support streamlined, improved and integrated workflows involving both Land Registry and Cadastre Directorates of TKGM and the operation of the integrated version of TAKBIS. The project will include only small scale civil and construction works connected to the renovation of existing buildings and structures or construction of new buildings. On three sites the renovation of current buildings or construction of new ones is planned with the above mentioned purposes.

The present EMF has been prepared by the TKGM to ensure that the civil works related to the construction of these model offices under the Project protect the respective populace and environment from key risks such as dust, noise, illegal dumping of demolition and construction wastes and accidental spillage of machine oil and lubricants, wastewater disposal on the construction site, pollution of surface waters and soil. The EMF also provides guidance on avoiding the use of hazardous substances, such as toxic paints, solvents or cleaning agents and also includes a check on potential impacts on Physical Cultural Resources (PCR). While no major impacts on PCR may be expected, attention is paid to the possibility of built PCR being affected by dust and vibration during construction. The Project activities will not change boundaries, ownership or use rights in forest lands or protected areas, neither support land acquisition and associated involuntary resettlement. All civil construction works planned will be executed on public land.

The above risks can be effectively anticipated in advance of project implementation and addressed by direct mitigation activities in the design, planning and construction supervision process as well as during the operation of the facilities. An EMP checklist that covers typical mitigation approaches to common civil works contracts with localized impacts and related monitoring actions that are compatible to the Bank safeguard requirements would be directly usable and applicable in bidding documents and as an integral part of contract documents for the respective civil works (Annex 3).
2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Environmental Legislation

World Bank classified this Cadastre Modernization Project as category B in regards with Environmental Impact with low risks. Based on this classification World Bank Operational Directive (OD.04.01) and Turkish Environmental Legislation were reviewed very closely to prepare this comprehensive Environmental Management Framework. In this chapter, relevant Turkish Environmental Legislation is thoroughly reviewed and its compliance requirements and conditions are assessed to determine mitigation measures and monitoring activities.

The Environmental Framework Law (coded 2872) that came into force in 1983 describes the main issues regarding Environmental Management in Turkey. Since then several Regulations have been enacted and only relevant ones are evaluated through this section. The last revision was done on April 26, 2006 with law no. 5491.

Since last few years to establish conformity with the EU (European Union) acquis, either new Regulations are been enacted (such as Debris Removal Regulation Section 2.1.5., Regulation of Handling of Asbestos Products Section 2.1.7.) or existing Regulations are being revised and updated. Herein after the dates for revisions are clarified and wherever available the latest version is being studied.

2.1.1. Environmental Impact Assessment Regulation

The legal basis of environmental impact assessment is Article 10 of the Environmental Framework Law (2872/83) which states that «organizations, corporations, and enterprises whose planned activities have the potential of causing environmental problems shall prepare an Environmental Impact Assessment Report. By considering all possible effects on the environment, these reports shall specify the ways of treating residues and wastes which may pollute the environment as well as precautions envisaged for minimizing any negative environmental impact».

The Environmental Impact Assessment Regulation (EIA) was enacted on February 7, 1993. The regulation has been amended since then a number of times. The last updated version of regulation was published at Official Gazette (25318) on December 16, 2003 and revised on December 16, 2004 with a regulation that amends some articles of the previous one (Official Gazette 25672). The purpose of Turkish EIA Regulation is to regulate the administrative and technical principles, which will be obeyed during the process of environmental impact assessment.

Neither renovation, nor demolishing and rebuilding of public buildings require an Environmental Impact Assessment review according to this Regulation.

2.1.2. Water Pollution Control Regulation
The “Water Pollution Control Regulation” became effective in September 4, 1988. The last updated version of regulation was published in the Official Gazette (25687) on December 31, 2004. In this regulation, two basic approaches to water resources have been adopted. First one of these approaches is the acceptance and treatment of water resources within the framework of an ecosystem and conservation of them in their existing conditions; the second one being the protection and improvement of water quality in accordance with the requirements of the country. Protection of drinking water supply reservoirs through buffer zones and land use restrictions, and control on wastewater discharge practices are two critical aspects of the regulation.

Water Supply Reservoir watersheds within a city are under the responsibility of the Municipality and Water and Sewerage Administration of the city. Related articles of the above mentioned regulation and any such regulation issued by the municipality in line with this will apply.

2.1.3. Air Pollution Control Regulation

This regulation was enacted in November 1986 and sets forth limit values to control dust and other emissions to air. It was revised on October 7, 2004 and issued at the Official Gazette (25606). The last updated version of regulation was published at Official Gazette (26236) on July 22, 2006. Scraping Removal and use of construction material during retrofitting or rebuilding might require control of dust and other emissions. This might necessitate appropriate use of exhaust systems and mufflers for machines and vehicles; screens and tents for the site and trucks and masks for workers. All these will be the responsibility of the contractor.

The regulation, which defines emission levels for different categories of vehicles, is still at draft stage so when it is approved this regulation must be taken into consideration during retrofitting implementation.

2.1.4. Noise Control Regulation

Noise Control Regulation was enacted in 1986. This regulation sets standards for ambient noise limits at railways, airports, industrial zones, construction sites and emission standards for outdoor machinery. The last updated version of regulation was published at Official Gazette (25862) on July 1, 2005. Annex 3.2 presents these standards and the levels suggested in the World Bank Publication _World Bank General Environmental Guideline, World Bank Pollution Prevention Handbook_ and Turkish Noise Control Regulation

During construction, the limits set in the Regulation should not be exceeded (70 Leq (dB(A)). The responsibility will be with the contractor where as monitoring and supervision authority will be the Engineer as contracted out.

Provincial Directorate of MOEF and Municipality officer will also be executing on-site controls and measurements.

2.1.5. Debris Removal Regulation

The technical issues and administrative procedures for handling debris generated through activities of excavation, construction and demolition are set forth in the “Debris Removal
Regulation” which was enacted on March 18, 2004 and published at the Official Gazette No.25406.

According to the regulation, during renovation, demolish and construction of buildings, the construction company (contractor) is expected to:

- Take all measures on the site to mitigate possible environmental effects;
- Sort reusable/recyclable construction materials at the site;
- Obtain permits from district municipalities for transporting debris to an approved disposal site or make contracts with companies who have relevant authorization.

2.1.6. Hazardous Waste Management Regulation

Hazardous Waste Management Regulation, which was put into force on August 1995, sets forth the rules, for the production, minimization, transportation and disposal and/or destruction of the hazardous wastes. The last updated version of regulation was published at Official Gazette (24458) on July 10, 2001. Not so many issues related with hazardous waste management are expected during the renovation and/or construction of model offices proposed in different regions. If there are any since the volume and toxicity will be small (if any) there will be capacity in related city to handle disposal of Hazardous Waste of this Project. Annexes to the Regulation list describe in detail the hazardous waste items, which cover, inter alias, batteries; liquid Fuels; lubricants, hydraulic Ails; chemicals such as anti-freeze; anti-corrosion products; pesticides and herbicides; asbestos; dust and fibres.

Before renovation and/or construction starts the contractor needs to determine if any hazardous waste to be handled during the activity in consultation with the related parties and prepare a plan for management of this waste to be approved by the Municipality.

2.1.7. Regulation for Handling of Asbestos Products

This Regulation was enacted in December 2003 and sets forth the rules mainly for the health safety of workers handling asbestos products where the rules for disposal are described in the Hazardous Waste Management Directive.

With regards to the retrofitting activities the Contractor is requested to follow the next steps:

- Consult the owner/manager of the building and review existing designs and as-built drawings for possible existing material containing asbestos;
- Prepare a plan for handling the asbestos containing material if there are any in accordance with the Regulation;
- Obtain the approval of MoEF for this plan;
- Execute the renovation and/or construction activities in accordance with the Plan.

Therefore, it is the Contractors’ responsibility to provide the related mitigation activities.

3. PROJECT RELEVANT WORLDBANK SAFEGUARD POLICIES
The World Bank requires that appropriate environmental investigations and analyses are conducted and adequate mitigation and management procedures established for potential project negative impacts. Instruments to achieve these goals are summarized in Annex 1. As a result of screening determinations further more detailed studies may be conducted, such as Environmental Management Plans and/or Resettlement Action Plans (unlikely for this project), and that disclosure and/or public consultation are undertaken in accordance with WB disclosure policies.

This environmental management framework (EMF) is based mainly on the following WB policies likely to become relevant for this project:

- **Environmental Assessment** (OP 4.01)
- **Cultural Property** (OP 4.11)

The policies and procedures are available for view and download on the World Bank’s external website\(^6\). Additionally, Annex 2 provides a brief explanation on the policies applicable in this project.

### 4. PROJECT EMF IMPLEMENTATION ARRANGEMENTS

The responsibility for the implementation and monitoring of the Bank’s safeguards policies and resulting environmental management and mitigation measures will remain with the General Directorate of Land Registry and Cadastre (TKGM). TKGM will fulfill this responsibility through its Construction Works Unit under the Department of Administrative and Financial Affairs and Project Management Unit which will carry out procurement procedures and perform contract management for the project activities. The TKGM will assign one staff with a civil engineering or environmental engineering background, who in the past involved in similar studies.

The renovation and/or construction of model offices will be carried out by contractors selected through competitive procedures; they will be responsible for the proper implementation of mitigation measures during the construction stage defined in the documents which will be a part of the bidding package. The works done by the contractors will be supervised by independent technical consultants who will ensure that the related environmental mitigation measures are strictly applied and reported to TKGM through PMU.

With regard to the implementation of safeguards policies, especially environmental management and mitigation activities above mentioned supervision arrangements are envisaged. A qualified engineer from TKGM, preferably with existing experience in construction site supervision and works contract management as well as in related environmental protection aspects, would receive adequate training from the World Bank or a Consultant commissioned by the Bank. The training could probably be accomplished within 2 days and would cover knowledge related to: (i) the Bank’s safeguard policies; (ii) good international practice in construction site management (workplace health and safety, air quality, noise, dust, surface- and groundwater protection, waste management, cultural heritage, traffic safety, waste management, including management of toxic / hazardous waste, e.g. asbestos); (iii) Turkish environmental legislation and relevant regulations for construction sites; (iv) contract management and related environmental site management.

The Ministry of Environment, the related Provincial Directorate of the Ministry of Environment in the region where the model office will be renovated or constructed and the related Municipality will be consulted regarding requirements for environmental impacts, mitigation measures and for training of related staff under Turkish legislation. As stated in the Environmental Framework Law, individual citizens, citizen organizations, and non-governmental organizations may contribute to the enforcement of environmental protection objectives and implementation activities for the protection and improvement of the environment.

5. ENVIRONMENTAL SCREENING, ASSESSMENT AND MANAGEMENT

5.1. Site specific environmental screening

As a part of the EMF, the construction of the model offices will be subjected to a site-specific environmental screening and review process. This process will minimize site-specific environmental impacts and will use a standardized appraisal format that includes, but is not limited to, review of: (i) current environmental problems at the sites (soil erosion, water supply contamination, etc.); (ii) potential environmental impacts, if any, due to the project (disposal waste from construction, construction noise and dust, vibrations, etc); (iii) Potential impacts on archaeological and historical sites.

5.2. Potential Environmental Impacts

Environmental effects of the project, if any will be minor and of short-impact. The project will include small scale construction works connected to buildings renovation and construction. To allow the flexibility to accommodate exterior office expansion or to address environmental hazards as they may be encountered (e.g. asbestos), the project is rated as environmental assessment Category B according to WB OP 4.01 (see Annexes 1 and 2) and simple environmental management plans will be prepared for all construction sites.

These plans will be prepared in accordance with World Bank guidelines and the Turkish legal and regulatory framework. It will state the foreseen environmental impacts and provide good operational practice to control emissions (e.g. dust, noise, and exhaust fumes), wastewater discharge and solid waste management on the construction site. It will provide guidance on avoiding the use of hazardous substances, such as toxic paints, solvents or cleaning agents.

Moreover, it will include traffic safety (especially focusing on pedestrian safety) in the immediate vicinity of the construction sites, as necessary. It also will address steps to be taken if any cultural heritage elements (e.g. wall frescos, culturally valuable facades etc.) are encountered during the implementation of civil works (see Annex 3).

Identified environmental impacts will relate principally to civil works during the offices’ construction/rehabilitation activities including impacts at the construction sites resulting from: (i) noise, dust, and the re-direction of traffic, if necessary, during the execution of works; (ii) the quarrying of stone and gravel; (iii) removal of construction related waste materials; and (iv) alteration of drainage and potential soil erosion during the construction period. However, these possible impacts could be managed through supervision of environmental aspects and use of adequate technical construction standards.
The site specific screening and review would carefully assess the following issues:

① Dust, noise and vibration due to the demolition and construction;
② Risk of damage to unknown historical and archaeological sites;
③ Dumping of construction wastes and accidental spillage of machine oil, lubricants, etc.;
④ Risk from inadequate handling of waste.

Short-term impact from noise, dust, and vibration during the execution of civil works is inevitable. Noise levels will increase significantly due to movement of construction machinery. This impact will be minimized under the project by (i) specifying in all project contracts the responsibility of contractor to undertake appropriate work site mitigation actions as a part of their management of work sites, and (ii) the supervision of compliance of contractors by the Supervision Engineer. Mitigation measures may include the following actions: use of sprinklers to wash down roads and suppress dust emissions during soil transport; cover vehicles to prevent spills and transport borrow materials during daytime only; reduce noise by using noise absorbing/protecting building materials, provide workers with ear plugs and helmets and generally prevented from prolonged exposure to high noise levels, etc.

Construction related waste - Technical specifications should require the collection and containment of all waste materials with bituminous content in specific landfills. All contractors would be required to conform to environmental regulations and practice relating to proper waste disposal. The identification of the disposal site to be used and the appropriate quantities for each site are to be included as part of the documentation of each rehabilitated/constructed building. Wood waste will be stored separately and arranged to be recycled instead of disposing it. Open burning and illegal dumping will not be permitted. Proper sites for earth/clay and sand disposal will be determined and prior approval from relevant authority for disposal will be obtained. Stockpiling of construction debris on site will be avoided and waste will be disposed of on a regular basis at the authorized government dumping ground.

Cultural Property Resources – Rehabilitation/construction may uncover archaeologically or culturally significant findings. Consideration of such concerns is provided in the works contracts that will include requirements that the contractor is obliged to look for chance finds and immediately stop the construction work at the contested location and alert the TKGM Engineer and the responsible authorities in case of chance finds.

Use of proper construction materials - All materials should have appropriate permissions on quality and safety (e.g., appropriate certificate). Priority should be given to products meeting standards for recognized international or national symbols. Water-based interior nontoxic, non allergenic paint for drywall or plaster surfaces is preferable to latex or oil-based paints from a respiratory standpoint.

Safety of construction site - Construction sites should be fenced off in order to prevent entry of public, and general safety measures will be imposed. Temporary inconveniences due to construction works should be minimized through planning and coordination with contractors, neighbors and authorities.
The project is also likely to contribute to improvements in information and the regulatory framework in ways that facilitate better public sector management of land use.

Renovation and/or construction activities under the project will not change boundaries, ownership or use rights in forest lands or protected areas. However, project activities may improve the accessibility of information on boundaries, ownership and use rights of these areas.

The project will not support land acquisition and associated involuntary resettlement. The project also does not support eviction or similar enforcement of laws addressing illegal occupation of state land. All civil construction works planned will be executed on existing land plots which are already in the possession of the respective agencies. However, the project will generate information on the magnitude and nature of illegal or other information occupation and settlements, and contribute to the formulation of strategies to address these issues.

5.3. Environmental Management Approach

For low-risk topologies, such as public buildings rehabilitation activities, the EMF includes a checklist-type format that provides “pragmatic good practice” in a user friendly format that is compatible with safeguard requirements. A blank sample is attached as Annex 3.

The checklist-type format attempts to cover typical mitigation approaches to common civil works contracts with localized impacts. It is anticipated that this format provides the key elements of an Environmental Management Plan (EMP) to meet World Bank Environmental Assessment requirements under OP 4.01. The intent is that this checklist would be directly usable and applicable in bidding documents and as an integral part of contract documents for civil works under Bank-financed projects.

The checklist has three sections:

- **Part 1** constitutes a descriptive part that describes the project specifics in terms of physical location, the institutional and legislative aspects, the project description, inclusive of the need for a capacity building program and description of the public consultation process. Attachments for additional information can be supplemented if needed.

- **Part 2** includes the environmental and social screening in a simple Yes/No format followed by mitigation measures for any given activity.

- **Part 3** is a monitoring plan for activities during project construction and implementation. It retains the same format required for standard World Bank EMPs. It is the intention of this checklist that Part 2 and Part 3 be included as bidding documents for contractors.

5.4. Application of the EMP-Checklist

The design process for the envisaged civil works in the Cadastre Modernization Project will be conducted in three phases:

1) **General identification and scoping phase**, in which the objects for rehabilitation, extension and/or demolition and complete reconstruction are selected and an approximate program for the potential work typologies elaborated. Part 2 of the tabular EMP can be used to select typical activities from a “menu” and relate them to the typical environmental issues and mitigation measures.

2) **Detailed design and tendering phase**, including specifications and bills of quantities for individual objects, integrating environmental provisions in form of a tabular EMP (see
Annex 2). This phase also includes the tender and award of the works contracts and in this phase the Contractor’s obligations for environmental measures during the works are contractually fixed.

3) During the works implementation phase environmental compliance is checked on site alongside other quality criteria by the TKGM’s site inspector(s). The monitoring plan in Part 3 of the EMP table in Annex 2 is that basis to verify the Contractor’s compliance with the required environmental provisions.

The practical application of the EMP-checklist would include the filling in of Part 1 to obtain and document all relevant site characteristics. In Part 2 the type of foreseen works, as obtained from the design documents, would be checked and the resulting provisions listed below highlighted (e.g. by hatching the field or copy pasting the relevant text passages into the special provisions of the tender documents.

The whole filled in tabular EMP is additionally attached as integral part to the works contract and, analogous to all technical and commercial terms, has to be signed by the contract parties.

6. Monitoring and Reporting

The monitoring of the Contractor’s safeguards due diligence is performed by the designated construction inspector that works with Part 3 of the EMP Checklist, the monitoring plan. This should be developed site specifically and in necessary detail, defining clear criteria and parameters which can be included in the works contracts, which reflect the status of environmental practice on the construction site and which can be observed/measured/quantified/verified by the inspector engineer during the construction works.

Part 3 will be filled in during the design process to fix key monitoring criteria which can be checked during and after works for compliance assurance and ultimately the Contractor’s remuneration.

Such parameters and criteria include the use of protection and safety measures by and for workers on the site, dust generation and prevention, amount of water used and discharged by site, presence of proper sanitary facilities for workers, waste collection of separate types (mineral waste, wood, metals, plastic, hazardous waste, e.g. asbestos, paint residues, spent engine oil), waste quantities, proper organization of disposal pathways and facilities, or reuse and recycling wherever possible.

The responsibility for the implementation and monitoring of the Bank’s safeguards policies and resulting environmental management and mitigation measures will remain with the Engineer identified within TKM. The Contractor that will perform the civil works will also follow the requirements of the current local construction regulations.

The environmental issues including monitoring measures will occasionally be supervised by the Bank’s project team.

Reports will be prepared on each of the environmental reviews, specifying mitigation measures and assigning responsibilities for implementation. The findings and recommendations of the reports will be discussed with representatives of the cooperating municipalities and, as appropriate, organizations and neighbors concerned. Annual reports outlining progress in EMP implementation and highlighting environmental issues arising from the project supported
activities, the status of mitigation measures and next steps will be prepared and submitted to the Bank for review.

The site engineer’s monitoring report would be a condition for full payment of the contractually agreed remuneration, the same as technical quality criteria or quantity surveys. To assure a degree of leverage on the Contractor’s environmental performance an appropriate clause will be introduced in the works contracts, specifying penalties in case of noncompliance with the contractual environmental provisions, e.g. in the form of withholding a certain proportion of the payments, its size depending on the severity of the breech of contract. For extreme cases a termination of the contract shall be contractually tied in.

7. PUBLIC DISCLOSURE

The draft EMF was publicly disclosed on the TKGM website on November XXX and in Washington at the Infoshop on November YY, 2007. Public comments, if any, will be endorsed in the final EMF document.
### ANNEX 1: Documents generally required by World Bank’s Safeguard Policies

<table>
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<th>Topic</th>
<th>Documents / deliverables required during preparation</th>
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<td>Environmental Screening / Assessment (EA)</td>
<td>EA process, including EMF, EIA, EMP, MP</td>
<td>EMP / MP</td>
<td>(EMP) / MP</td>
</tr>
<tr>
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<td>Natural Habitats</td>
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<tr>
<td>OP 4.09</td>
<td>Pest Management</td>
<td>included in EA under OP 4.01Pest Management Plan (PMP)</td>
<td>(reference in ISR/ICR)</td>
<td></td>
</tr>
<tr>
<td>OP 4.10</td>
<td>Indigenous Peoples</td>
<td>social assessment, IPP</td>
<td>IPP / RAP</td>
<td>(reference in ISR/ICR)</td>
</tr>
<tr>
<td>OP 4.11</td>
<td>Physical Cultural Resources</td>
<td>included in EA under OP 4.01PCR management plan (part of EA)</td>
<td>(reference in ISR/ICR)</td>
<td></td>
</tr>
<tr>
<td>OP 4.12</td>
<td>Involuntary Resettlement</td>
<td>RAP (and other instruments)</td>
<td>RAP (and other instruments)</td>
<td>(reference in ISR/ICR)</td>
</tr>
<tr>
<td>OP 4.36</td>
<td>Forest</td>
<td>included in EA under OP 4.01EMP / MP</td>
<td>EMP / MP, OP 4.01</td>
<td>included in EMP + MP, OP 4.01</td>
</tr>
<tr>
<td>OP 4.37</td>
<td>Safety of Dams</td>
<td>dam safety report (DSR), TOR for PoE</td>
<td>DSR &amp; emergency preparedness plan (ERP)</td>
<td>DSR &amp; emergency preparedness plan, dam instrumentation &amp; monitoring plan</td>
</tr>
<tr>
<td>OP 17.50</td>
<td>Disclosure</td>
<td>SIR</td>
<td>SCR, disclosure of ESIA &amp; EMP</td>
<td>contd. information &amp; consultation</td>
</tr>
<tr>
<td>OP/BP 7.50</td>
<td>International Waterways</td>
<td>notification of all affected riparian states</td>
<td>legal / political negotiations</td>
<td></td>
</tr>
<tr>
<td>OP/BP 7.60</td>
<td>Disputed Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fields hatched in grey: no specific documents required at preparation stage

**Acronyms:**

- **DSR** dam safety report
- **EIA** environmental impact assessment report
- **EMP** environmental management plan
- **ERP** emergency response plan
- **ICR** implementation completion report
- **ISR** implementation status report
- **PCR** physical cultural resources
- **SCR** stakeholder consultation report
- **SCR** stakeholder identification report
- **SIR** stakeholder identification report
- **SCR** stakeholder consultation report
- **STIR** stakeholder identification report
- **TPP** territorial peoples plan
- **PoE** Panel of Experts
- **ESIA** environmental / social impact assessment
- **MP** monitoring plan
- **EA** environmental assessment process
- **EMF** environmental management framework

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7 This is commonly not released to the Public.
Environmental Assessment (EA) is the most widely applied of 10 environmental, social and legal safeguard policies of the WB. EA is used in the WB to identify, avoid and/or mitigate the potential negative environmental impacts associated with lending operations. The purpose of EA is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been adequately consulted. The WB’s environmental assessment policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment. A brief summary is presented below:

- **Environmental Screening** is an important step through which proposed projects are assessed for the appropriate level and type of EA. In practice, the significance of impacts, and the selection of screening category, depends on the type and scale of the project, the location and sensitivity of environmental issues, and the nature and magnitude of the potential impacts.

- Projects are classified as **Category A** if they are ‘likely to have significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works.’ Hence, the EA for a Category A project examines a project’s potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the ‘without project’ situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. The EA of a Category A project considers both the social and the physical environmental impacts. Socioeconomic environment includes themes such as land acquisition and resettlement; indigenous or traditional populations, cultural heritage, aesthetics and landscapes, noise and human health and safety.

- The impacts of **Category B** projects are ‘site-specific in nature and do not significantly affect human populations or alter environmentally important areas, including wetlands, native forests, grasslands, and other major natural habitats. Few if any of the impacts are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects.’

- For both the Category A and B projects, an Environmental Management Plan (EMP) needs to be established in accordance with the Bank’s OP 4.01. EMPs as an essential feature of category A projects; and for category B projects, the EA may result in development of an EMP only, with no separate EA report. The specific requirements relating to EMPs are set out in Annex C to the WB’s procedure 4.01 (BP 4.01).

- **Category C** projects are likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required.

- For Category A projects, the Borrower should consult with project affected groups at least twice: (i) shortly after screening and before the TOR for the EA are finalized, involving discussion on issues to be addressed in the EA; and (ii) once a draft EA is prepared, involving discussion of issues raised in the EA. In addition, the Borrower consults with such groups throughout project implementation as necessary to address EA related issues that affect them.

The WB OP on **Cultural Property** is based on the acknowledgement of cultural resources as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of a people’s cultural identity and practices. WB policy as stated in Operational Directive (OD) 4.50 is to: (a) assist in protecting and enhancing cultural property through specific project components and (b) decline to finance projects which significantly damage cultural property, and assist only those that are designed to prevent or minimize such damage.
Important note for Annex 3: This checklist will be prepared for each model office (i.e. each construction site) separately and will be filled in as soon as the location sites for the model offices are identified. Renovation will be done only in buildings which are owned by the government and construction will be done only on appropriate public land.

### ANNEX 3: EMP Checklist for Construction and Rehabilitation Activities

<table>
<thead>
<tr>
<th>PART 1: INSTITUTIONAL &amp; ADMINISTRATIVE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td>Turkey</td>
</tr>
<tr>
<td><strong>Project title</strong></td>
<td>Cadastre Modernization Project</td>
</tr>
<tr>
<td><strong>Scope of project and activity</strong></td>
<td>Modernization of TKGM through; (i) cadastre and land registry renovation and updating, (ii) improved service delivery, integration of renovated cadastral information into the information management systems of TKGM and National Spatial Data Infrastructure of Turkey and establishment of model offices, (iv) development of strategies on human resources development, business plans and strategic plans and (v) development of property valuation</td>
</tr>
<tr>
<td><strong>Institutional arrangements</strong></td>
<td></td>
</tr>
<tr>
<td>(Name and contacts)</td>
<td>WB Wael Zakout</td>
</tr>
<tr>
<td><strong>Implementation arrangements</strong></td>
<td></td>
</tr>
<tr>
<td>(Name and contacts)</td>
<td>Safeguard Supervision (……….), Local Counterpart Supervision (…………), Local Inspectorate Supervision (……….), Contractor (…………)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SITE DESCRIPTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of site</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Describe site location</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Who owns the land?</strong></td>
<td>The Government of Turkey</td>
</tr>
<tr>
<td><strong>Geographic description</strong></td>
<td>Attachment 1: Site Map [ ]Y [ ] N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEGISLATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identify national &amp; local legislation &amp; permits that apply to project activity</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PUBLIC CONSULTATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identify when / where the public consultation process took place</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INSTITUTIONAL CAPACITY BUILDING</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Will there be any capacity building?</strong></td>
<td>[ ] N or [ ]Y if Yes, Attachment 2 includes the capacity building program</td>
</tr>
</tbody>
</table>
### PART 2: ENVIRONMENTAL /SOCIAL SCREENING

Will the site activity include/involv any of the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
<th>Additional references</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Building rehabilitation</td>
<td>![ ]</td>
<td>Yes</td>
</tr>
<tr>
<td>B. New construction</td>
<td>![ ]</td>
<td>No</td>
</tr>
<tr>
<td>C. Individual wastewater treatment system</td>
<td>![ ]</td>
<td>Yes</td>
</tr>
<tr>
<td>D. Historic building(s) and districts</td>
<td>![ ]</td>
<td>No</td>
</tr>
<tr>
<td>E. Acquisition of land8</td>
<td>![ ]</td>
<td>Yes</td>
</tr>
<tr>
<td>F. Hazardous or toxic materials9</td>
<td>![ ]</td>
<td>No</td>
</tr>
<tr>
<td>G. Impacts on forests and/or protected areas</td>
<td>![ ]</td>
<td>Yes</td>
</tr>
<tr>
<td>H. Handling / management of medical waste</td>
<td>![ ]</td>
<td>No</td>
</tr>
<tr>
<td>I. Traffic and Pedestrian Safety</td>
<td>![ ]</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### ACTIVITY PARAMETER MITIGATION MEASURES CHECKLIST

**A. General Conditions**

- **Notification and Worker Safety**
  - (a) The local construction and environment inspectorates and communities have been notified of upcoming activities
  - (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works)
  - (c) All legally required permits have been acquired for construction and/or rehabilitation
  - (d) All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.
  - (e) Workers’ PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots)
  - (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.

**B. General Rehabilitation and/or Construction Activities**

- **Air Quality**
  - (a) During interior demolition use debris-chutes above the first floor
  - (b) Keep demolition debris in controlled area and spray with water mist to reduce debris dust
  - (c) Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site
  - (d) Keep surrounding environment (side walks, roads) free of debris to minimize dust
  - (e) There will be no open burning of construction / waste material at the site
  - (f) There will be no excessive idling of construction vehicles at sites

- **Noise**
  - (a) Construction noise will be limited to restricted times agreed to in the permit
  - (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible

- **Water Quality**
  - (a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.

- **Waste management**
  - (a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities.
  - (b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.
  - (c) Construction waste will be collected and disposed properly by licensed collectors
  - (d) The records of waste disposal will be maintained as proof for proper management as designed.
  - (e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)

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8 Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transfered and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

9 Toxic/hazardous material includes and is not limited to asbestos, toxic paints, removal of lead paint, etc.
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PARAMETER</th>
<th>MITIGATION MEASURES CHECKLIST</th>
</tr>
</thead>
</table>
| C. Individual wastewater treatment system | Water Quality | (a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities.  
(b) Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment.  
(c) Monitoring of new wastewater systems (before/after) will be carried out. |
| D. Historic building(s) | Cultural Heritage | (a) If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notify and obtain approval/permits from local authorities and address all construction activities in line with local and national legislation.  
(b) Ensure that provisions are put in place so that artifacts or other possible “chance finds” encountered in excavation or construction are noted, officials contacted, and works activities delayed or modified to account for such finds. |
| E. Acquisition of land | Land Acquisition Plan/Framework | (a) If expropriation of land was not expected and is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the bank task Team Leader is consulted.  
(b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented. |
| F. Toxic Materials | Asbestos management | (a) If asbestos is located on the project site, mark clearly as hazardous material.  
(b) When possible the asbestos will be appropriately contained and sealed to minimize exposure.  
(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust.  
(d) Asbestos will be handled and disposed by skilled & experienced professionals.  
(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately.  
(f) The removed asbestos will not be reused. |
| | Toxic / hazardous waste management | (a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information.  
(b) The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching.  
(c) The wastes are transported by specially licensed carriers and disposed in a licensed facility.  
(d) Paints with toxic ingredients or solvents or lead-based paints will not be used. |
| G. Affects forests and/or protected areas | Protection | (a) All recognized natural habitats 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.  
(b) For large trees in the vicinity of the activity, mark and cordon off with a fence large tress and protect root system and avoid any damage to the trees.  
(c) Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control feature to include by not limited to hay bales, silt fences.  
(d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas. |
| H. Disposal of medical waste | Infrastructure for medical waste management | (a) In compliance with national regulations the contractor will insure that newly constructed and/or rehabilitated health care facilities include sufficient infrastructure for medical waste handling and disposal; this includes and not limited to:  
1. Special facilities for segregated healthcare waste (including soiled instruments “sharps”, and human tissue or fluids) from other waste disposal; and  
2. Appropriate storage facilities for medical waste are in place; and  
3. If the activity includes facility-based treatment, appropriate disposal options are in place and operational. |
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PARAMETER</th>
<th>MITIGATION MEASURES CHECKLIST</th>
</tr>
</thead>
</table>
| Traffic and Pedestrian Safety | Direct or indirect hazards to public traffic and pedestrians by construction activities | (b) 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  
  ① Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards  
  ② 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.  
  ③ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement  
  ④ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.  
  ⑤ Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public. |
<table>
<thead>
<tr>
<th><strong>Phase</strong></th>
<th><strong>What</strong> (Is the parameter to be monitored?)</th>
<th><strong>Where</strong> (Is the parameter to be monitored?)</th>
<th><strong>How</strong> (Is the parameter to be monitored?)</th>
<th><strong>When</strong> (Define the frequency / or continuous?)</th>
<th><strong>Why</strong> (Is the parameter being monitored?)</th>
<th><strong>Cost</strong> (if not included in project budget)</th>
<th><strong>Who</strong> (Is responsible for monitoring?)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RENOVATION/CONSTRUCTION</strong></td>
<td><strong>Air Quality/air pollution (solid particles, CO, NO₂, Pb (random sampling))</strong></td>
<td>At the Construction Site</td>
<td>Portable Measurement Devices</td>
<td>At the Project Start</td>
<td>To assure compliance with the Air Pollution Control Regulation in order to mitigate any potential negative environmental effects.</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Contractor is responsible to execute the Mitigation Measure. Supervision Engineer is responsible to supervise. Municipality is responsible to supervise.</td>
</tr>
<tr>
<td></td>
<td><strong>Vehicle Exhaust Emissions</strong></td>
<td>At the Construction Site</td>
<td>Visual</td>
<td>After all servicing vehicles</td>
<td>To prevent any possible disturbance and adverse health effects on the residents.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dust</strong></td>
<td>(In the case that during renovation buildings still operate partially) At the operating parts of building.</td>
<td>Visual</td>
<td>Weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Noise (noise levels (dB); equipment)</strong></td>
<td>Near the Construction Site</td>
<td>Portable Noise Meters</td>
<td>once a month or on complaint</td>
<td>To assure compliance with the Noise Control Regulation in order to mitigate any potential negative environmental effects.</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Contractor is responsible to execute the Mitigation Measure. Supervision Engineer is responsible to supervise. Municipality is responsible to supervise.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(In the case that during renovation buildings still operate partially) At the operating parts of building.</td>
<td>Auditory</td>
<td>Continuously</td>
<td>To prevent any possible disturbance and adverse health effects on the residents.</td>
<td></td>
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<tr>
<td>Phase</td>
<td>What</td>
<td>Where</td>
<td>How</td>
<td>When</td>
<td>Why</td>
<td>Cost</td>
<td>Who</td>
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</tr>
<tr>
<td></td>
<td>Collection of Solid Wastes</td>
<td>At the Construction Site</td>
<td>In accordance with the plan to be prepared. inspection; observation</td>
<td>In accordance with the plan to be prepared and volume of debris.</td>
<td>To assure compliance with the Debris Removal Regulation</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Engineer is responsible to monitor and supervise the activity.</td>
</tr>
<tr>
<td></td>
<td>Demolition Debris Handling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractor is responsible to implement the mitigation measure.</td>
</tr>
<tr>
<td></td>
<td>Hazardous Waste Handling</td>
<td>At the Construction Site</td>
<td>In accordance with the plan to be prepared. inspection; observation</td>
<td>In accordance with the plan to be prepared.</td>
<td>To assure compliance with the Hazardous Waste Management Regulation in order to mitigate any potential negative environmental effects.</td>
<td></td>
<td>Provincial Directorate of MoEF is responsible to monitor and supervise the activity.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Municipality is responsible to assist the Contractor, approve the plan and supervise the implementation.</td>
</tr>
<tr>
<td></td>
<td>Staff safety</td>
<td>protective equipment;</td>
<td>At work site</td>
<td>Unannounced inspection</td>
<td>To assure protection of workers at site</td>
<td>minimal</td>
<td>Engineer is responsible to monitor and supervise the activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractor is responsible to implement the mitigation measure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Municipality is responsible to assist the Contractor, approve the Plan and supervise the Implementation.</td>
</tr>
</tbody>
</table>
### PART 3: MONITORING PLAN

<table>
<thead>
<tr>
<th>Phase</th>
<th>What</th>
<th>Where</th>
<th>How</th>
<th>When</th>
<th>Why</th>
<th>Cost</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handle Asbestos Containing Material</td>
<td>At the Construction and Disposal Site</td>
<td>In accordance with the plan be prepared, inspection; observation</td>
<td>In accordance with the plan to be prepared.</td>
<td>To assure compliance with the Directive for Handling of Asbestos Products in order to mitigate any potential negative environmental effects</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Engineer is responsible to monitor and supervise the activity. Contractor is responsible to implement the Mitigation Measure. MoEF is responsible to approve the handling plan and supervise its implementation</td>
<td>Municipality is responsible to monitor and supervise the Activity.</td>
</tr>
<tr>
<td>Traffic disruption during construction activity; Vehicle and pedestrian safety</td>
<td>Near and at the Construction Site</td>
<td>Utilization of Designated Routes.</td>
<td>On Daily Basis.</td>
<td>To mitigate potential negative effects.</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Contractor is responsible to implement the Measure. Engineer is responsible to monitor and supervise the activity. Transportation Department of Municipality to assist and supervise the Contractor.</td>
<td></td>
</tr>
<tr>
<td>Waste Water Handling</td>
<td>Near and at the Construction Site</td>
<td>Observation, unannounced inspection</td>
<td>Continuous</td>
<td>To mitigate potential negative effects.</td>
<td>Criteria / specifications to be incorporated into bidding and contract documents. It is not considered as a separate cost item.</td>
<td>Engineer is responsible to monitor and supervise the activity. Contractor is responsible to implement the mitigation measure. Municipal Water and Sewerage Authority to assist and supervise the activity.</td>
<td></td>
</tr>
</tbody>
</table>