



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

TABLE A1: SUMMARY ENVIRONMENTAL MANAGEMENT PLAN

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
DESIGN STAGE						
1. Contract Clauses	Ensure requirements and recommendations of environmental assessment are included in the contracts.	<ul style="list-style-type: none"> Include EMP Matrix in tender documentation and make contractors responsible to implement mitigation measures by reference to EIA/IEE in contract. Include preparation of EMP review and method statement WM plan, Temporary Drainage (TD) and Erosion Control (EC) Plan in contract as a payment milestone(s). Require environmental accident checklist and a list of controlled chemicals / substances to be included in the contractor's work method statement and tender documentation. 	<ul style="list-style-type: none"> During tender preparation. No later than pre-qualification or tender negotiations In bidding documents as evaluation criteria. 	Noise sensitive locations identified in the IEE/EIA/EMP or as required / approved by PEPA.	IESCO Environmental and Social Unit (E&SS) with the design consultant.	IESCO E&SS and Contract Supervision Consultant (GSC).
2. Procurement	Ensure environmentally responsible procurement.	<ul style="list-style-type: none"> Require in procurement specifications that transformers, transformer oil and other equipment are to be free from PCB and other petroleum fractions that may be injurious to environment or equipment. Require new switchgear to be free from CFCs in procurement specifications. SF6 gas insulated equipment to be effectively leak free with nominal SF6 top up less than 1% per year. 	<ul style="list-style-type: none"> During tender preparation. No later than pre-qualification or tender negotiations. 	Tender negotiations.	IESCO E&SS with the design consultant.	IESCO E&SS and GSC.
3. Waste Disposal	Ensure adequate disposal options for all waste including transformer oil, residually contaminated soils, and scrap metal.	<ul style="list-style-type: none"> Create waste management policy and plan to identify sufficient locations for, storage and reuse of transformers and recycling of breaker oils and disposal of transformer oil, residually contaminated soils and scrap metal "cradle to grave". Include in contracts for unit rates for re-measurement for disposal. After agreement with local authority, designate disposal sites in the contract and cost unit disposal rates accordingly. 	<ul style="list-style-type: none"> Prior to detailed design stage no later than pre-qualification or tender negotiations. Include in contract. 	IESCO E&SS. Locations approved by EPA and IESCO and local waste disposal authorities.	IESCO E&SS and Environmental Protection Agency (EPA) with the design consultant.	IESCO E&SS and GSC.
4. Hazardous Waste	To ensure responsible	<ul style="list-style-type: none"> Waste management plan to identify any 	<ul style="list-style-type: none"> During tender 	All IESCO	IESCO E&SS with	IESCO.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
Disposal	disposal of hazardous waste in line with best practice.	remaining PCB containing equipment to be replaced and appropriate method for disposal.	preparation.	substations.	the Design Consultant.	
5. Prevent Spills & Contamination.	To prevent spills, contamination of soil groundwater and surface water.	<ul style="list-style-type: none"> Design of adequate secondary containment facilities in new substations to include concrete bases with bunding to prevent contamination from a major catastrophic failure and residual contamination from installation, maintenance and decommissioning. Review design of existing transformer and oil treatment location to aim to improve secondary containment facilities, concrete bases and bounding if retrofitting is technically feasible and will provide benefits at reasonable cost. Design all transformers to be located over bunds to comply with best international practice so that transformer oil and other residual contamination does not run to ground and can be captured for controlled disposal. (Commence designs in new substations). Integrate proposals with waste management policy and plan to identify sufficient locations for, storage and disposal of transformer oil and residually contaminated surface water or soil “cradle to grave”. Include in contracts for unit rates for construction of bunds and new style drainage requirements. In consultation with EPA identify designate residual oil disposal sites in each IESCO and design disposal accordingly. 	<ul style="list-style-type: none"> During design stage. Before tender prequalification. 	<p>All new and upgraded substations and where new transformers.</p> <p>Where augmentation of transformers requires significant civil works that can accommodate required improvements.</p>	IESCO E&SS with the Design Consultant.	IESCO.
6. Hydrological Impacts	To minimize hydrological and drainage impacts during construction.	<ul style="list-style-type: none"> Design of adequate major and minor culverts facilities to be integrated in design to avoid effects on hydrological flow in areas where it is sensitive, such as water courses or bridges and culverts. 	<ul style="list-style-type: none"> During design stage. Before the commencement of construction activities 	If lines or substation are relocated near water courses, culverts or bridges in the design stage reports.	IESCO E&SS with the Design Consultant.	IESCO.
7. Temporary	Include mitigation in	<ul style="list-style-type: none"> Identify locations where drainage or irrigation 	<ul style="list-style-type: none"> During designing 	Locations based on	IESCO E&SS and	IESCO E&SS



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
Drainage and Erosion Control	preliminary designs for erosion control and temporary drainage.	crossing ROW may be affected by works. ▪ Include protection works in contract as a payment milestone(s).	stage no later than pre-qualification or tender negotiations.	drainage or irrigation crossing ROW near DGS.	design consultant.	and GSC.
8. Noise	Ensure cumulative noise impacts are acceptable in construction and operational phase.	<ul style="list-style-type: none"> ▪ Conduct detailed acoustic assessment for all residential, school, (other sensitive structures) within 50m of DGS and line. ▪ If noise at sensitive receiver exceeds the permissible limit, the construction activities should be mitigated, monitored and controlled. ▪ If noise at sensitive receiver will exceeds the permissible limit in operational phase the design to include acoustic mitigation (noise barrier or relocation of noisy equipment) and monitoring. 	<ul style="list-style-type: none"> ▪ During detailed design stage. No later than pre-qualification or tender negotiations ▪ Include acoustic specification in the contract. 	Noise sensitive locations identified in the IEE/EIA/EMP or as required / approved by PEPA.	IESCO E&SS with the design consultant.	IESCO E&SS and GSC (if any).
9. Social Impacts	To ensure that the adverse impacts due to constructing lines over private land, property acquisition and resettlement are mitigated according to the LARP.	<ul style="list-style-type: none"> ▪ IESCO to prefer to select a site that will not affect any local public in property or house such that no additional land is required. ▪ Social preparation completed. LARP etc. (if required) in place IN CASE UNFORSEEN ADDITIONAL LAND IS REQUIRED. ▪ Acquisition of lands completed to minimize the uncertainty of people. ▪ Completed implementation of LARP and LARCs to provide compensation and assistance to the APs. ▪ All the payments / entitlements are paid according to the Entitlement Matrix, prepared according to the LARP. ▪ All the impacts identified by the EIA are incorporated in to the project as well as the LARP and relevant entitlements included into the Entitlement Matrix. 	<ul style="list-style-type: none"> ▪ Commence as early as possible and complete one month before the construction of the GSS and all the included structures, the APs to be given sufficient time with compensation money and to resettle satisfactorily. 	Affected Families will be compensated by IESCO through the concerned District Revenue Department and Land Acquisition Collectors.	IESCO E&SS / LACs.	ADB and External Monitors.
CONSTRUCTION STAGE						
1. Hydrology And Drainage Aspects.	To ensure the proper implementation of	<ul style="list-style-type: none"> ▪ Consideration of weather conditions when particular construction activities are 	<ul style="list-style-type: none"> ▪ Prepare a thorough drainage 	Locations of each construction activity	Contractor supervised by GSC	IESCO E&SS.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
	any requirements mentioned in EPA conditions of approval letter in relation to hydrology of the project.	<p>undertaken.</p> <ul style="list-style-type: none"> ▪ Limitations on excavation depths in use of recharge areas for material exploitation or spoil disposal. ▪ Use of landscaping as an integrated component of construction activity as an erosion control measure. ▪ Minimizing the removal of vegetative cover as much as possible and providing for its restoration where construction sites have been cleared of such areas. 	<p>management plan to be approved by GSC one month prior to a commencement of construction</p> <ul style="list-style-type: none"> ▪ Proper timetable prepared in consideration with the climatic conditions of the area, the different construction activities mentioned here to be guided. 	<p>to be listed by the GSC engineer.</p> <p>Special locations are identified on the site by the contractor to minimize disturbances.</p> <p>A list of locations of irrigation channels / drains to be compiled and included in the contract.</p>	<p>or to actively supervise and enforce.</p>	
2. Orientation for Contractor, and Workers.	To ensure that the GSC contractor and workers understand and have the capacity to ensure the Environmental requirements and implementation of mitigation measures.	<ul style="list-style-type: none"> ▪ IESCO (Environmental Social Unit (E&SS) environmental specialist to monitor and progress all environmental statutory and recommended obligations. ▪ Conduct special briefing for managers and / or on-site training for the contractors and workers on the environmental requirement of the project. Record attendance and achievement test for contractors site agents. ▪ Agreement on critical areas to be considered and necessary mitigation measures, among all parties who are involved in project activities. ▪ Continuous progress review and refresher sessions to be followed. 	<ul style="list-style-type: none"> ▪ Induction course for all site agents and above including all relevant IESCO staff / new project staff before commencement of work. ▪ At early stages of construction for all construction employees as far as reasonably practicable. 	All staff members in all categories. Monthly induction and six month refresher course as necessary until contractor complies.	IESCO E&SS, Contractor and the GSC and record details.	IESCO & GSC to observe and record success.
3. Water Quality.	To prevent adverse water quality impacts due to negligence and ensure unavoidable impacts are managed effectively. Ensure adverse impacts on water quality caused by construction activities are minimized.	<ul style="list-style-type: none"> ▪ Compile temporary drainage management plan one month before commencement of works. ▪ Proper installation of temporary drainage and erosion control before works within 50m of water bodies. ▪ Proper maintenance and management construction of TD and EC measures, including training of operators and other workers to avoid pollution of water bodies by 	<ul style="list-style-type: none"> ▪ Month prior to construction. 	50m from water bodies 2. Relevant locations to be determined in the detailed project design.	<p>Contractor (IESCO E&SS & GSC to enforce).</p> <p>Contractor has to check water quality and report to IESCO.</p> <p>GSC supervises implementation</p>	IESCO E&SS.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<p>the considerate operation of construction machinery and equipment.</p> <ul style="list-style-type: none"> Storage of lubricants, fuels and other hydrocarbons in self-contained dedicated enclosures >50m away from water bodies. Proper disposal of solid waste from construction activities. Cover the construction material and spoil stockpiles with a suitable material to reduce material loss and sedimentation and avoid stockpiling near to water bodies. Topsoil stripped material shall not be stored where natural drainage will be disrupted. Borrow sites (if required) should not be close to sources of drinking water. 			activities.	
4. Air Quality.	To minimize dust effectively and avoid complaints due to the airborne particulate matter released to the atmosphere.	<ul style="list-style-type: none"> CONTROL ALL DUSTY MATERIALS AT SOURCE. All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations.(Relevant regulations are in the Motor vehicles fitness rules and Highway Act). Stockpiled soil and sand shall be slightly wetted before loading, particularly in windy conditions. Fuel-efficient and well-maintained haulage trucks shall be employed to minimize exhaust emissions. Vehicles transporting soil, sand and other construction materials shall be covered. Limitations to speeds of such vehicles necessary. Transport through densely populated area should be avoided. To plan to minimize the dust within the 	<ul style="list-style-type: none"> During all construction. 	<p>Construction sites within 100m of sensitive receivers.</p> <p>A list of locations to be included in contract and other sensitive areas identified by the GSC along the ROW during works.</p>	Contractor should maintain acceptable standard GSC to supervise activities.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		vicinity of orchards and fruit farms. <ul style="list-style-type: none"> Spraying of bare areas with water. Concrete plants. to be controlled in line with statutory requirements should not be close to sensitive receptors. 				
5. Ground Vibration.	To minimize ground vibrations during construction.	<ul style="list-style-type: none"> Review requirements for piling and use of powered mechanical equipment within 100m of SRs. Review conditions of buildings and conduct public consultation with SRs to establish less sensitive time for works involving piling and schedule works accordingly. Non-percussive piling methods to be used wherever practicable. Percussive piling shall be conducted in daylight hours. Hammer- type percussive pile driving operations shall not be allowed at night time. 	<ul style="list-style-type: none"> Month prior to construction. 	Construction sites within 100m of sensitive receivers. A list of locations to be included in contract and other sensitive areas identified by the GSC along the ROW during works.	Contractor should maintain the acceptable standards. GSC to supervise relevant activities.	IESCO E&SS / GSC.
6. Noise.	To minimize noise increases during construction.	<ul style="list-style-type: none"> Review requirements for use of powered mechanical equipment within 100m of SRs. Conduct public consultation with SRs to establish less sensitive time for works and schedule works accordingly. All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations and with effective silencing apparatus to minimize noise. Heavy equipment shall be operated only in daylight hours. Construction equipment, which generates excessive noise, shall be enclosed or fitted with effective silencing apparatus to minimize noise. 	<ul style="list-style-type: none"> Month prior to construction. 	Construction sites within 100m of sensitive receivers. A list of locations to be included in contract and other sensitive areas identified by the GSC along the ROW during works.	Contractor should maintain the acceptable standards. GSC to supervise relevant activities.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<ul style="list-style-type: none"> Well-maintained haulage trucks will be used with speed controls. Contractor shall take adequate measures to minimize noise nuisance in the vicinity of construction sites by way of adopting available acoustic methods. 				
7. Soil Erosion / Surface Run – off.	<p>Prevent adverse water quality impacts due to negligence and ensure unavoidable impacts are managed effectively.</p> <p>To minimize soil erosion due to the construction activities of towers, stringing of conductors and creation of access tracks for project vehicles.</p>	<ul style="list-style-type: none"> SCHEDULE WORKS IN SENSITIVE AREAS (e.g. NEAR RIVERS) FOR DRY SEASON In the short-term, temporary drainage and erosion control plan to be presented with tender. Temporary drainage and erosion control plan one month before commencement of works to protect all areas susceptible to erosion. (Permanent drainage works shall be in the final design). Installation of TD and EC before works construction within 50m of water bodies. Clearing of green surface cover to be minimized during site preparation. Meaningful water quality monitoring up and downstream at any tower site during construction within a river or stream bed. Rapid reporting and feedback to GSC. Back-fill should be compacted properly in accordance with IESCO design standards and graded to original contours where possible. Cut areas should be treated against flow acceleration while filled areas should be carefully designed to avoid improper drainage. Stockpiles should not be formed within such distances behind excavated or natural slopes that would reduce the stability of the slopes or cause slippage. Measures shall be taken to prevent ponds of 	<ul style="list-style-type: none"> Month prior to construction because the area can be subject to unseasonal heavy rain Plan before and during construction (cut and fill, land reclamation etc.) while considering the climatic conditions. 	<p>Locations based on history of flooding problems indicated by local authorities.</p> <p>A list of sensitive areas during construction to be prepared by the detail design consultant in consideration with the cut and fill, land reclamation, borrow areas etc.</p> <p>Locations of all rivers, streams, culverts, irrigation channels, roads and highways.</p>	Contractor and GSC.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<p>surface water and scouring of slopes. Newly eroded channels shall be backfilled and restored to natural contours.</p> <ul style="list-style-type: none"> Contractor should arrange to monitor and adjust working and adopt suitable measures to minimize soil erosion during the construction period. Contractor's TD and EC plan should be endorsed and monitored by GSC after consulting with concerned authorities. Replanting trees to be done before the site is vacated and handed back to IESCO with appropriate trees (other vegetation cover as appropriate) to ensure interception of rainwater and the deceleration of surface run-off. 				
8. Exploitation, Handling, Transportation and Storage of Construction Materials.	To minimize disruption and contamination of the surroundings, minimize and or avoid adverse environmental impacts arising out of construction material exploitation, handling, transportation and storage by using sources that comply with EPA license conditions.	<ul style="list-style-type: none"> (CONSIDER ALSO FOR FUTURE TRANCES IF CIVIL WORKS). Use only EPA licensed sites for raw materials in order to minimize adverse environmental impacts. Measures to be taken in line with any EPA license conditions, recommendations and approval to be applied to the subproject activities using the licensed source including: Conditions that apply for selecting sites for material exploitation. Conditions that apply to timing and use of roads for material transport. Conditions that apply for maintenance of vehicles used in material transport or construction. Conditions that apply for selection of sites for material storage. Conditions that apply for aggregate production. 	<ul style="list-style-type: none"> Month prior to starting of works. Update monthly. 	<p>List of borrow areas to be prepared with tender stage contractors method statement and updated one month prior to construction.</p> <p>List of routes of transport of construction material is to be prepared for the contract and agreed one month prior to construction.</p> <p>Map of locations of storage is prepared by the contractor.</p>	Contractor and GSC to agree format of reporting.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<ul style="list-style-type: none"> Conditions that apply for handling hazardous or dangerous materials such as oil, lubricants and toxic chemicals. 				
9. Construction Waste Disposal.	Minimize the impacts from the disposal of construction waste.	<ul style="list-style-type: none"> Waste management plan to be submitted to the GSC and approved by IESCO E&SS one month prior to starting of works. WMP shall estimate the amounts and types of construction waste to be generated by the project. Investigating whether the waste can be reused in the project or by other interested parties without any residual environmental impact. Identifying potential safe disposal sites close to the project, or those designated sites in the contract. Investigating the environmental conditions of the disposal sites and recommendation of most suitable and safest sites. Piling up of loose material should be done in segregated areas to arrest washing out of soil. Debris shall not be left where it may be carried by water to downstream flood plains, dams, lagoons or other water bodies. Used oil and lubricants shall be recovered and reused or removed from the site in full compliance with the national and local regulations. Oily wastes must not be burned. Disposal location to be agreed with local authorities/EPA. Waste breaker insulating oil to be recycled, reconditioned, or reused at IESCO's facility. Machinery should be properly maintained to minimize oil spill during the construction. Machinery should be maintained in a dedicated area over drip trays to avoid soil contamination 	<ul style="list-style-type: none"> One month prior to starting of works. Update monthly One month prior to starting of works. Update monthly 	<p>Dumping.</p> <p>A list of temporary stockpiling areas and more permanent dumping areas to be prepared at the contract stage for agreement.</p> <p>A list of temporary stockpiling areas and more permanent dumping areas to be prepared at the contract stage for agreement (in W M Plan).</p>	Contractor, GSC and IESCO E&SS should supervise and take action to ensure that contractor's complete relevant activities according to EIA / IEE / EMP requirement & NEQS.	IESCO/ GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<p>from residual oil spill during maintenance.</p> <ul style="list-style-type: none"> ▪ Solid waste should be disposed at an approved solid waste facility and not by open burning which is illegal and contrary to good environmental practice. 				
10. Work Camp Operation and Location (if required).	To ensure that the operation of work camps does not adversely affect the surrounding environment and residents in the area.	<ul style="list-style-type: none"> ▪ Identify location of work camps in consultation with local authorities. The location shall be subject to approval by the IESCO. If possible, camps shall not be located near settlements or near drinking water supply intakes. ▪ Cutting of trees shall not be permitted and removal of vegetation shall be minimized. ▪ Water and sanitary facilities (at least pit latrines) shall be provided for employees. Worker camp and latrine sites to be backfilled and marked upon vacation of the sites. ▪ Solid waste and sewage shall be managed according to the national and local regulations. As a rule, solid waste must not be dumped, buried or burned at or near the project site, but shall be disposed of to the nearest sanitary landfill or site having complied with the necessary permits of local authority permission. ▪ The Contractor shall organize and maintain a waste separation, collection and transport system. ▪ The Contractor shall document that all liquid and solid hazardous and non-hazardous waste are separated, collected and disposed of according to the given requirements and regulations. ▪ At the conclusion of the project, all debris and waste shall be removed. All temporary structures, including office buildings, shelters 	<ul style="list-style-type: none"> ▪ UPDATE Once a month 	Location Map is prepared by the Contractor.	Contractor.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<p>and toilets shall be removed.</p> <ul style="list-style-type: none"> Exposed areas shall be planted with suitable vegetation. IESCO and Construction Supervising Consultant shall inspect and report that the camp has been vacated and restored to pre-project conditions. 				
11. Loss of Trees and Vegetation Cover of the Areas for Towers and Temporary Work-space.	To avoid negative impacts due to removing of landmark, sentinel and specimen trees as well as green vegetation and surface cover.	<ul style="list-style-type: none"> Tree location and condition survey to be completed one month before tender. The route for the distribution line should be selected so as to prevent the loss or damage to any orchard trees or other trees. Use of higher towers to be preferred to avoid trees cutting. Clearing of green surface vegetation cover for construction, borrow of soil for development, cutting trees and other important vegetation during construction should be minimized by careful alignment. Written technical Justification for tree felling included in tree survey. At completion all debris and waste shall be removed and not burned. The contractor's staff and labour will be strictly directed not to damage any vegetation such as trees or bushes outside immediate work areas. Trees shall not be cut for fuel or works timber. Land holders will be paid compensation for their standing trees in accordance with prevailing market rates (LARP). The land holders will be allowed to salvage the wood of the affected trees. The contractor will plant three (3) suitable new trees outside the 30 meter corridor of the transmission line in lieu of one (1) tree removed. 	<ul style="list-style-type: none"> Route design and site identification (1 & 2) during design stage and other matters during construction of relevant activities 	Tree survey to be completed one month before tender at relevant Locations with a Map to be compiled prior to tender by the design consultant / IESCO E&SS during detailed design and GSC to update as necessary.	Design consultant, Contractor and GSC.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<ul style="list-style-type: none"> Landscaping and road verges to be re-installed on completion. Compensatory planting of trees/shrubs/ornamental plants (at a rate of 3:1) in line with best international practice. After work completion all temporary structures, including office buildings, shelters and toilets shall be removed. 				
12. Safety Precautions for the Workers.	To ensure safety of workers.	<ul style="list-style-type: none"> Providing induction safety training for all staff adequate warning signs in health and safety matters, and require the workers to use the provided safety equipment. Providing workers with skull guard or hard hat and hard toe shoes. 	<ul style="list-style-type: none"> Prior to commencement and during construction 	Location to be identified by the GSC with contractor.	Contractor and GSC.	IESCO/ GSC.
13. Traffic Condition.	Minimize disturbance of vehicular traffic and pedestrians during haulage of construction materials and equipment.	<ul style="list-style-type: none"> Submit temporary haul and access routes plan one month prior to start of works. Routes in vicinity of schools and hospitals to be avoided. 	<ul style="list-style-type: none"> Prior to and throughout the construction. 	The most important locations to be identified and listed. Relevant plans of the Contractor on traffic arrangements to be made available.	Contractor and GSC.	IESCO E&SS / GSC.
14 Impact on Wetlands (if relevant).	To ensure that damage to river ecosystems and wetlands and its ecosystem is minimized during construction.	<ul style="list-style-type: none"> Erection of towers in the wetlands will be avoided as far as possible. However, at places where realignment of the distribution is unavoidable, towers with maximum span will be used to minimize the impacts. Avoid disposal of wash water, solid waste and discarded packing etc. on wetlands. Piling up of loose material should be done in segregated areas to arrest washing out of soil. In addition, these materials should not be tipped or stockpiled near wetlands. Residual concrete from works should not be dumped close to wetlands. Avoid temporary structures or stockpiling 	<ul style="list-style-type: none"> Prior to and during Construction 	Taunsa wetland (Ramser Site) is located 85 km from the project site.	Contractor and GSC.	IESCO E&SS / GSC.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		<p>within banks of river and on wetlands.</p> <ul style="list-style-type: none"> Special measures will be adopted to minimize impacts on the wild birds, such as avoiding construction activities during the critical periods of breeding and feeding. Staff working on the project should be given clear orders, not to shoot, snare or trap any bird (MANDATORY). Schedule construction for April to July and September to November to avoid the monsoons and periods of mass migration of birds from Central Asia to the plains of Sindh and their return journey (December to March). Construction activities confined to small areas to minimize impacts and encourage migratory birds to settle as normal. Contractor will prevent the workers from hunting and fishing for water birds and fish resources etc. Food and fuel to be bought by contractor at local villages too boost local income. 				
15.Social Impacts.	To ensure minimum impacts from construction labour force. on public health.	<ul style="list-style-type: none"> Potential for spread of vector borne and communicable diseases from labour camps shall be avoided (worker awareness orientation and appropriate sanitation should be maintained). Complaints of the people on construction nuisance / damage close to ROW to be considered and responded to promptly. Contractor should make alternative arrangements to avoid local community impacts. 	<ul style="list-style-type: none"> Complaints of public to be solved as soon as possible 	All subprojects all tranches.	Contractor and the GSC.	IESCO/ GSC.
16. Institutional Strengthening and Capacity Building.	To ensure that IESCO officials are trained to understand and to appreciate EMP.	<ul style="list-style-type: none"> Capacity building activities were taken by Environmental Officer in Tranche 1. Environmental Management Unit (EMU) was setup within IESCO under Director Operations 	<ul style="list-style-type: none"> Initiate preconstruction and continue beyond project completion. 	Awareness training for all management and senior staff in IESCO at senior	IESCO E&SS.	IESCO & ADB.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

Environmental Concern.	Objectives.	Mitigation Measures Recommended.	Timing to Implement.	Locations to Implement.	Responsibility for Implementation.	Responsibility for Monitoring.
		in Tranche 1. Development of strengthening plan for the EMU should be taken up with resources.		engineer and above in PMU and related units.		
OPERATIONAL STAGE						
1. Air Quality.	Minimize air quality impacts.	<ul style="list-style-type: none"> No significant Impacts Tranche 1. Monitor designs and plans for all future tranches. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
2. Noise.	Minimize noise impacts.	<ul style="list-style-type: none"> No significant Impacts Tranche 1. Acoustic designs checking and plan for all future tranches. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
3. Waste Disposal.	Minimize improper waste disposal.	<ul style="list-style-type: none"> Continue waste management arrangements in operational phase of all subprojects and IESCO activities. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
3. Compensatory Tree Planting.	Maintain survival of trees planted.	<ul style="list-style-type: none"> Employ landscaping contractor to monitor, water and feed replacement saplings and replace dead specimens as necessary. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
4. Land Slides and Soil Erosion.	Avoid landslips and loss of productive land.	<ul style="list-style-type: none"> No significant Impacts in Tranche 1. Review designs checking and plan for all future tranches. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
5. Water Quality.	Minimize water quality impacts.	<ul style="list-style-type: none"> No significant Impacts in Tranche 1. Review designs checking and plan for all future tranches. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
6 Crops and Vegetation.	Monitor impacts from maintaining tree clearance under transmission lines.	<ul style="list-style-type: none"> Track growth of large trees under the conductors. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.
7. Social safety Impacts.	Ensure no encroachments / construction under the transmission line. No violation of clearance spaces.	<ul style="list-style-type: none"> Necessary signboards with limits of height clearances to be placed all along the line. Identify and prevent any illegal encroachments under the DGLs. 	Operational phase	All subprojects in future tranches.	IESCO.	IESCO E&SS.

LARP = Land Acquisition and Resettlement Plan.
WM = Waste Management.

AP = Affected Persons.
GSC = Construction Supervision Consultant or Equivalent.

LAC = Local Authority Council.
TXL = Transmission Line.

TD = Temporary Drainage.
GSS = Grid substation.

EC = Erosion Control.
NEQS = National Environmental Quality Standards.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)
Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

TABLE A2: SUMMARY ENVIRONMENTAL MONITORING PLAN FOR TRANCHE 2

No.	Environmental Monitoring Tasks ¹	Implementation Responsibility	Implementation Schedule
1. DESIGN PHASE			
1.1	Audit project bidding documents to ensure IEE and EMP is included.	▪ IESCO through project implementation unit.	Prior to issue of bidding documents.
1.2	Monitor final site selection process and final alignment selection process and its environmental compliance with EMP.	▪ IESCO with the assistance of an external environmental consultant.	Prior to IESCO approval of contractor's detailed alignment survey.
1.3	Review the implementation of the Land Acquisition Plan and expropriation, including considerations concerning vulnerable groups among land-owners, farmers, and farm workers.	▪ IESCO with the assistance of an external environmental consultant.	Prior to IESCO approval of contractor's detailed alignment survey.
1.4	Monitor contractor's detailed project design to ensure relevant environmental mitigation measures in EMP have been included.	▪ IESCO with assistance of project implementation unit.	Prior to IESCO approval of contractor's detailed alignment survey.
1.5	Monitor the thorough implementation of detailed Environmental Guidelines for Construction Works, including procurement, management, works, closing operations.	▪ IESCO with the assistance of an external environmental consultant.	Prior to IESCO approval of contractor's detailed designs.
1.6	Review the management plan for mineral construction materials and waste management.	▪ IESCO with the assistance of an external environmental consultant.	Prior to IESCO approval of contractor's detailed designs.
1.7	Audit detailed designs of facilities and installations to ensure standard environmental safeguards/ mitigation measures (as identified in EMP) have been included.	▪ IESCO with assistance of project implementation unit.	Prior to IESCO approval of contractor's detailed designs.
1.8	Review landscape design plan, including compensatory planting.	▪ IESCO with the assistance of an external environmental consultant.	Prior to IESCO approval of contractor's detailed designs.
1.9	Monitor the performance of environmental training and briefings and of the environmental awareness of project staff and IESCO.	▪ IESCO with the assistance of an external environmental consultant.	Continuous throughout the entire project period.
2. CONSTRUCTION PHASE			
2.1	Regular (monthly) monitoring and reporting (quarterly) of contractor's compliance with contractual environmental mitigation measures.	▪ IESCO with assistance of project implementation unit.	Continuous throughout construction period.
2.2	Monitoring of the implementation of the Landscape Design Plan.	▪ IESCO with the assistance of an external environmental consultant.	During the last phase of construction works.
2.3	Commissioning phase monitoring of as built equipment versus environmental performance criteria.	▪ IESCO.	At commissioning.
3. OPERATION AND MAINTENANCE PHASE			
3.1	Observations during routine maintenance inspections of facilities and distribution lines rows. Inspections will include monitoring implementation of operational mitigation	▪ IESCO.	As per IESCO inspection schedules.

¹ Monitoring of issues related to compensation of landowners for land acquisition and loss of production, etc. are addressed in the Resettlement Action Plan.



ISLAMABAD ELECTRIC SUPPLY COMPANY (IESCO)

Power Distribution Enhancement Investment Program (PDEIP) – Tranche – II Subprojects

No.	Environmental Monitoring Tasks ¹	Implementation Responsibility	Implementation Schedule
	measures versus environmental criteria specified in EMP, waste management and operational noise.		
3.2	Monitoring of the implementation of the Landscape Design Plan.	▪ IESCO with the assistance of an external environmental consultant.	Twice per year for three years of operation.
3.3	Monitoring decommissioning of other plant required for installation of MFF funded components and waste disposal.	▪ IESCO.	During the life of the project.