



Environmental Documentation Form (EDF) / Environmental Mitigation and Monitoring Plan (EMMP)

USAID Power Distribution Program
Submitted to USAID through Engility/IRG

Acronyms

DISCOs	Electric Power Distribution Companies
EDF	Environmental Documentation Form
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic Field
EMMP	Environment Mitigation and Monitoring Plan
IEE	Initial Environmental Examination
HSE	Health, Safety and Environment
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IRG	International Resource Group
kV	Kilo Volts
LT/HT	Low Tension/High Tension Transmission Lines
NEQS	Pakistan's National Environmental Quality Standards
NIP	National Implementation Plan of Stockholm Convention
OEM	Original Equipment Manufacturer
OHS	Occupational Health and Safety
Pak EPA	Pakistan Environment Protection Agency
PDDs	Project Design Documents
PDP	Power Distribution Program
PPE	Personal Protective Equipment
RAP	Remedial Action Plan
SVR	Site Visit Report
USAID	United States Agency for International Development
US EPA	United States Environment Protection Agency
USG	United States Government
VOC	Volatile Organic Compounds

Environmental Documentation Form

USAID Power Distribution Program

A. Applicant information

Contractor/ grantee (organization)	Engility/IRG	Parent grant or project	PDP
Individual contact and title	Craig VanDevelde Chief of Party (COP)	Address, phone and email (if available)	H#23, St#19, F-6/2, Islamabad +92.51.2270911 (Ext 123)
Activity (brief description)	The Program is working jointly with the Ministry of Water and Power (MWP), National Electric Power Regulatory Authority (NEPRA) and ten government-owned DISCOs to improve the overall governance and commercial performance	Amount	\$230 million
Location of activity	Ten government owned DISCOs across all over the country excluding K-Electric that feeds Karachi	Start and end date of activity	Sep 17, 2010 Sep 15, 2015

B. Activities, screening results, and recommended determination

TABLE 1 Proposed Sub-activities	Screening result (Step 3 of instructions)			Recommended Determinations (Step 6 of instructions. Complete for all moderate and high-risk activities)		
	Very Low Risk	Moderate Risk	High Risk	No significant adverse impact	With specified mitigation, no significant adverse impact,	Significant Adverse impact
1. Improvement of corporate governance and management	✓			✓		
2. Establishment of full-cost recovery tariffs	✓			✓		
3. Training & capacity building of staff with a special focus on linemen training and safety	✓			✓		
4. Implementation of computer based MIS systems (ERP/CIS/HRIS etc.)	✓			✓		
5. Improving financial and commercial procedures and performance	✓			✓		
6. Installation/re-fixing of electronic meters		✓			✓	

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7. Installation of AMR/RF enabled meters		✓			✓	
8. Installation of LT Capacitors		✓			✓	
9. Installation of efficient pumps at municipalities		✓			✓	
10. Installation of efficient motors in industries		✓			✓	
11. Introduction of smart technologies and their installation such as ABC cable, Volt Voltage Optimization (VVO) devices, outage reduction devices, self-protected transformers etc.		✓			✓	
12. Renovation and up-gradation of existing buildings owned by DISCOs such as Circle & Regional Training Centers, Customer Service Centers, Day Care Centers, misc. office buildings etc.		✓			✓	

C. Summary of recommended determinations (check all that apply)

The activity contains.	<i>(equivalent regulation 216 terminology)</i>
<input checked="" type="checkbox"/> Very low risk sub-activities	<ol style="list-style-type: none"> 1. Improvement of corporate governance and management 2. Establishment of full-cost recovery tariffs 3. Training & capacity building of staff with a special focus on linemen training and safety 4. Implementation of computer based MIS systems (ERP/CIS/HRIS etc.) 5. Improving financial and commercial procedures and performance <i>categorical exclusion(s)</i>
<input type="checkbox"/> After environmental review, sub-activities determined to have no significant adverse impacts	N/A <i>negative determination(s)</i>
<input checked="" type="checkbox"/> After environmental review, sub-activities determined to have no significant adverse impacts, given appropriate mitigation and monitoring	<ol style="list-style-type: none"> 1. Installation/re-fixing of meters including electronic/AMR/RF enabled meters 2. Installation of LT capacitors on tube-wells as well as energy efficient pumps and motors 3. Installation of ABC cable, Volt Voltage Optimization (VVO) devices, outage reduction devices, connector, self-protected transformers etc. 4. Renovation and up-gradation of existing buildings owned by DISCOs such as Circle & Regional Training Centers, Customer Service Centers, Day Care Centers, misc. office buildings etc. <i>negative determination(s) with conditions</i>
<input type="checkbox"/> After environmental review, sub-activities determined to have significant adverse impacts	N/A <i>positive determination(s)</i>

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D. Certification:

I, the undersigned, certify that:

1. The information on this form is correct and complete
2. The following actions have been and will be taken to assure that the activity complies with environmental requirements established for the **USAID Power Distribution Program** under the Code of Federal Regulations 22 CFR 216:
 - These design elements and best practices will be followed in implementing this activity, except with the approval of USAID.
 - Any specific mitigation or monitoring measures described in the attached document (EMMP) including the Initial Environmental Examination of the proposed activity prepared by USAID (**Original IEE: Asia 10-185 Pakistan IEE-ETD PDIP, IEE Amendment-1: OAPA-12-MAR-PAK-0021**) will be implemented in their entirety.
 - Compliance with these conditions will be regularly confirmed and documented by on-site inspections during the activity and at its completion.



(Signature) Craig VanDeyelde, Chief of Party, Engility/IRG

May 13, 2014
(Date)

BELOW THIS LINE FOR USAID USE ONLY

Approval

USAID Project Officer	(print name)	(signature)
<input checked="" type="checkbox"/> Approved	<i>Nadeem Habib</i>	<i>Nad 5/14/14</i>
<input type="checkbox"/> Rejected		
USAID MEO or DMEG	(print name)	(signature)
<input checked="" type="checkbox"/> Approved	<i>ASIM AZIZ - DMEG</i>	<i>Asim Aziz</i>
<input type="checkbox"/> Rejected		

May 14, 2014

USAID comments: (if documentation is rejected, comments must be provided to applicant)

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Executive Summary

The USAID-funded Power Distribution Program (PDP) is a five-year program designed to facilitate improvements in electric power distribution companies (DISCOs) in nine distribution companies across Pakistan. The program began in September 2010 and is being implemented by Engility/IRG.

US Regulation §216 requires an environmental examination of AID related activities except for which exemption has been granted. Accordingly, Initial Environmental Examination (Tracking #: Asia 10-185 Pakistan IEE-ETD PDIP) for the program was carried out in July 2010. IEE recommended that an Environment Mitigation and Monitoring Plan (EMMP) should be developed to incorporate environmental considerations in all aspects of the project. It has also placed special emphasis on safe disposal through auction to recycling companies at the end of useful life of the equipment procured during the course of the project.

This EMMP has been developed keeping in view best international practices, US regulations and requirements of Pakistani environmental laws as well as mandatory requirements of IEE. As stipulated in the contract, all proposed activities of PDP were examined and investigated. The process involved desktop review of relevant material, interviews, site visits and review of documentation provided during the course of this engagement. The following impacts were identified for various project activities:

- Danger of damage to active bird nesting in breeding seasons during network modifications
- Health and safety hazards of low tension/high tension (LT/HT) extensions in congested areas
- Presence of and increase in electric and magnetic field due to LT/HT extensions
- Possible release of transformer oil from transformers
- Noise disturbance during operations of backup generators
- Danger of damage to health of tree as a result of cutting, trimming, shredding or pruning for keeping it clear of LT/HT lines
- Generation of chemical and hazardous waste from room and building renovations
- Generation of non-hazardous waste from room/building renovations, pole removal and new pole/bracket installation
- Indoor air pollution during room/building renovations
- Safe disposal at the end of useful life of equipment procured during the life of the program.

The above-mentioned impacts can be easily mitigated through a series of mitigation and monitoring measures. The EMMP has been developed keeping in view best international practices. It equally shares the mitigation and monitoring responsibilities between PDP, DISCOs and subcontractors. However, the actual entity implementing project activity has the primary responsibility of ensuring that mitigation measures recommended in this documents have been adopted. PDP would be responsible for monitoring and evaluating mitigation measures adopted by DISCOs and subcontractors.

This EMMP also recommends implementing an environmental management system and processes for identification as well as mitigation and monitoring of impacts. Process flow and templates of required reports for smooth implementation of the EMMP have been developed. Such templates include Site Visit Report, Monitoring and Evaluation Report, Remedial Action Plans, etc. to help PDP staff in implementing various aspects of EMMP.

1. Introduction

The USAID-funded Power Distribution Program (PDP) is a five-year program. It is designed to facilitate improvements in government-owned electric power distribution utilities across Pakistan through addressing governance issues, reducing technical and administrative losses, and increasing revenues.

The Component 1 (C1) of PDP covered in depth power sector study. Based upon recommendations of C1 study, Component 2 (C2) was designed to facilitate improvements in nine electric power distribution companies (DISCOs) across Pakistan. Subsequently, the Component 3 (C3) was added for turning around two DISCOs as well as initiating some nationwide interventions such as LT capacitor installation, cost of service study, technical assistance and advisory services to National Electric Power Regulatory Authority (NEPRA) and Ministry of Water and Power (MWP) etc. The program began in September 2010 and is being implemented by Engility/IRG.

The objectives of the program is to demonstrate that modifying corporate culture to a merit based system, using improved internal processes, and adopting selected technologies can help achieve the following outcomes:

- Reduction in technical and non-technical losses
- Efficiency enhancement through better metering
- Energy conservation and demand side management
- Load management and power factor improvements
- Better data management and reduction in data manipulation
- Improvement in quality of services for the customers
- Increase in profitability and reduction in costs
- Internal and external capacity building of regulator

It may be mentioned here that projects supported within overall PDP also demonstrate that expensive equipment is not prerequisite for performance improvement. Other than the above-mentioned technology related initiatives, the program also aims to address gender equality and is working to create female-friendly working conditions.

The above-mentioned objectives are to be achieved through a host of activities performed by different teams. For project details, please refer to Project Design Documents (PDDs) available within the PDP office and prepared by different teams.

2. Compliance with USAID Regulations

US Foreign Assistance Act of 1961 (Section 117) requires that environmental factors and issues are integrated into the decision making process. This mandate is codified in the federal regulation 22 CFR 216. IEE is required as a first review for accessing environmental impacts of the proposed actions. Section §216.2(d) lists projects that normally have significant effect on environment. PDP does not fall into any of the categories mentioned in section §216.2(d). As per Section §216.2(c) (1), an IEE, Environmental Assessment or Environmental Impact Statement are not required if the project does not have an effect on the natural or physical environment.

Accordingly, Initial Environmental Examination (Tracking #: Asia 10-185 Pakistan IEE-ETD PDIP) for the program was carried out in July 2010. Later in March 2012, an amendment to original IEE was issued (Tracking #: OAPA-12-MAR-PAK-0021) to reflect the changes in the level of project funding as well as the extension in the project timeline. However the scope of

work and nature of activities established under original IEE as well as all conditions established in the original IEE for continuing activities remain the same.

As per IEE conducted for PDP, project activities related to staff trainings and technical assistance have been classified under **categorical exclusion as per Section §216.2(c)(1)(i) and (c)(2)(i)**. Threshold decision for procurement of equipment, tools and software is **negative determination with conditions as per Section §216.3(a)(2)(iii)**. The conditions are listed below.

IEE mandated that an Environment Mitigation and Monitoring Plan (EMMP) should be prepared which should ensure the following:

- Compliance with occupational health and safety (OHS) requirements at all times
- Environmental considerations are addressed and incorporated in all aspects of the project
- Train local counterparts to address and effectively manage environmental considerations
- Environmentally safe and sound waste management and disposal at the end of the useful life for equipment procured during the life of the project
- Continue existing practice of auctioning old equipment/spares to recycling companies for safe disposal in accordance with Pakistani laws.

Consequently, this document has been prepared keeping in view above-mentioned mandatory requirements imposed by USAID IEE as well as Pakistani environmental legislation and other potential impacts not identified in IEE.

3. Compliance with Pakistani Environmental Regulations

Pakistan’s environmental legal framework is quite extensive and covers a whole range of parameters that are monitored with aim to mitigate adverse impacts and reduce degradation. Table 1 summarizes environmental impacts controlled by the Pakistani environmental laws and a quick run through of probable impacts of project on corresponding environmental parameter.

Table 1: Environmental Impacts Controlled By Environmental Laws and Regulations

Environmental Parameter	Environmental Impacts	Probable Project Impact
Soil	▪ Slope failure and mass movements	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
	▪ Soil erosion and modification of surface relief	<input type="checkbox"/>
	▪ Sedimentation of water bodies and drains	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
	▪ Loss of protective topsoil in borrows areas (if any)	<input type="checkbox"/>
	▪ Soil Contamination	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
		<input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
		<input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
		<input type="checkbox"/>
Water Resources	▪ Degradation of natural water bodied and wildlife habitat resulting from erosion and sedimentation	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
	▪ Degradation of natural water bodies and wildlife habitats resulting from contamination by accidental spills	<input type="checkbox"/>
	▪ Impairment of beneficial uses; changes to groundwater levels.	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
	▪ Threat to human health amenity and to natural systems resulting from insufficient storm water management and flooding	<input type="checkbox"/>
	▪ Deprivation of other users from water resources	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
		<input type="checkbox"/>

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Environmental Parameter	Environmental Impacts	Probable Project Impact
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Ecosystem	▪ Damage, fragmentation or loss of habitat and biodiversity.	Yes <input type="checkbox"/> NO <input type="checkbox"/> Possible <input checked="" type="checkbox"/>
	▪ Destruction of vegetation	Yes <input type="checkbox"/> NO <input type="checkbox"/> Possible <input checked="" type="checkbox"/>
	▪ Disappearance of reproduction and food zones for fish, aquatic and migratory birds	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Contamination of biota	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Transmission of disease	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Increase in poaching and subsequent hunting and fishing	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Air	▪ Air quality deterioration	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Air quality degradation-caused by dust and vehicle emissions generated through construction activity, construction machinery and vehicular traffic	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Community Activities	▪ Split Community	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Disintegration of social activity	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Disruption of traditional modes of transport	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Loss of community business	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Degradation of environment owing to ribbon development	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Displacement and Resettlement	▪ Displacement of both private and public institutions and utilities	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Displacement of settlements, business and properties	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Problem with resettlement of households, properties and utilities	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Problem with basic utilities in displaced and resettlement areas	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Cultural Heritage	▪ Damage of sites, structures and remains of archeological, historical, religious and cultural values	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Degradation of aesthetic value of historical and cultural monuments	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Landscape	▪ Destruction of natural relief resulting by major cut and fill	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Change in natural drainage patterns	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Destruction of vegetation and trees	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
	▪ Deforestation and desertification	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>
Human Health	▪ Transmission of diseases	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible <input type="checkbox"/>

Environmental Parameter	Environmental Impacts	Probable Project Impact
and Safety	Contamination of local water supplies	<input type="checkbox"/>
	Air pollution	Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
	Noise disturbance	<input type="checkbox"/>
	Accidents	Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/> Possible
	Obstructions/unsafe conditions owing to presence of side poles, ditches, trees, steep slopes and barriers	<input type="checkbox"/>
	Disturbance by vibration	Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/> Possible
		<input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible
		<input type="checkbox"/>
		Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/> Possible

The National Environmental Quality Standards (NEQS) for noise set by Pak EPA are listed in Table 2 below

Table 2: Noise Levels by Zones (decibels)

Category of Area/ Zone	Day Time	Night Time
	6:00 am to 10:00 pm	10:00 pm to 6:00 am
Residential Area	55	45
Commercial Area	65	55
Industrial Area	75	65
Silence Zone (comprising of hospital, educational institutions, courts)	50	45

As per guidelines of the Pakistan Environment Protection Agency (available on the website http://www.environment.gov.pk/cia_pdf/C_P_P11SeptRev.pdf), energy efficiency projects are exempted from environmental impact assessments (EIAs) and initial environmental examinations (IEEs). However, this is not applicable to projects located in environmentally sensitive areas. It may be mentioned here that according to the Pakistani environmental laws IEEs are required for new transmission lines less than 11 kV and large distribution projects. EIAs are required for new transmission lines of 11 kV and above as well as for grid stations. Furthermore, it can be argued that the network modifications that involve 11 kV transmission extensions may not classify as new transmission lines. The area covered by such extensions is small and sporadic over a neighborhood in a DISCO.

4. PDP's Environmental Impacts

Table 3 gives a holistic view of environmental issues associated with PDP activities.

Table 3: Environmental Hazardous and Critical Issues

Category	Issues
Environmental Compliance Issues	There is no critical issue related to environmental compliance. Pakistan Environmental Protection Agency (PEPA) may ask for IEE/EIA of the project on complaint by local residents. Pakistan's National Environment Quality Standards (NEQS) must be adhered to at all times.
Environmental Management	Mitigation and monitoring measures need to be implemented as per EMMP.
Chemical Management	No critical issue.
Hazardous Materials	Proper Personal Protective Equipment (PPE) as recommended in EMMP to be used for handling damaged transformers and capacitors if removed on recommendations of PDP or funded by USAID.
Soil Contamination	No critical issue. Care should be taken while removing old transformers so as to avoid contamination of soil from leaked transformer oil.
Damage to Flora	Tree trimming/cutting should be carried out in a manner that health or life of tree is not affected.
Damage to Fauna Habitat	Bird nesting during breeding season can be a major issue. Mitigation and monitoring measure need to be implemented as per EMMP.
Solid Waste Management	Waste from the renovation should be disposed off in an environmentally safe and sound manner.
Emissions to Air	No critical issue. There is also a possibility of indoor air pollution during renovation from Volatile Organic Compounds (VOCs) from paints.
Environmental Noise	Noise is to be monitored at generator locations.
Wastewater	No critical issue.
Safety	Applicable emergency equipment should be in place. Appropriate warning and directional signs should be posted around LT/HT extensions in congested areas.
Health	Appropriate personal protective equipment should be worn during renovations. Possible hazards due to presence of electric magnetic field.
Sanitation	No critical issue.

5. Purpose and Objectives of EMMP

As mentioned under section 2 that IEE (Tracking #: Asia 10-185 Pakistan IEE-ETD PDIP) requires an Environment Mitigation and Monitoring Plan (EMMP) for ensuring compliance with Pakistani and US Government (USG) environmental regulations. As a result the primary objectives of the EMMP are to:

- Facilitate implementation of mitigation measures
- Define responsibilities of the implementing partners and executing authority
- Identify monitoring parameters to ensure effectiveness of the mitigation measures
- Provide mechanism for timely correction of unanticipated environmental situations.

Please note that the EMMP has been developed on the basis of the current program design. Should the program be modified and the changes are significant, the EMMP will be correspondingly amended.

6. General Monitoring and Enforcement Responsibilities

Overall responsibility of project implementation remains with PDP. It is their responsibility to ensure that the subcontractors whose services have been engaged to deliver project activities comply with the EMMP. DISCO partners and subcontractors will jointly implement some of the activities and; therefore, compliance responsibility will also rest with both.

Roles and responsibilities for general monitoring and enforcement responsibilities are given in Table 4.

Table 4: Roles and Responsibilities for Environmental Monitoring

Aspect	PDP	DISCO and/or Contractor	Relevant Documentation
Contracting	Ensure that mitigations and monitoring requirements are included in the contracts	Understand requirements, engage appropriate resources and develop implementation plan accordingly	Contract between PDP and subcontractor
Disposal of Used, Old and Replaced Equipment	Ensure environmentally safe and sound disposal of equipment at the end of its useful life	Understand requirements, take appropriate action and ensure environmentally safe and sound disposal of equipment	DISCOs existing disposal procedures
Capacity Building and Trainings	Incorporate environmental training as a part of general capacity building of DISCO staff, if required ¹	Ensure staff has attending trainings and is aware of environmental aspects of the project, if required	Training material, if required
Resources	Ensure that resources are adequately available for compliance	Ensure that resources are adequately available for compliance	Compliance budget
Environmental	Designate an	Appoint an officer to	Job descriptions

¹ DISCOs have fully functional environmental and social departments. PDP will work with the department to ensure implementation of EMMP.

Aspect	PDP	DISCO and/or Contractor	Relevant Documentation
Staff	officer/employee from the project staff for overseeing and monitoring	ensure and oversee compliance	
Compliance Reports and Inspections	Maintain records as per requirements mentioned under section 10	Follow EMMP requirements and maintain records as per contractual obligations	Reports
Corrective Actions	Identify non-compliance with EMMP and develop corrective action plans	Implement desired corrective actions	Corrective action record register
Maintenance of Record	Maintain records as per requirements mentioned under section 10	Maintain record of non-compliance issues and corrective actions taken	Environmental record as mentioned in section 10

Exhibit 1 further gives details about the monitoring responsibilities.

7. Main Environmental Issues of the Power Distribution Program

Table 5 lists potential environmental impacts that may result from planned PDP activities and the associated team within PDP responsible for overseeing the activity.

Table 5: Environmental Impacts and Responsible Team

Environmental Impacts	Project Team Responsibility
1. Cutting and/or trimming of trees	<ul style="list-style-type: none"> ▪ Commercial Team ▪ Engineering Team ▪ Field Operations Team
2. Damage to active bird nesting's and hatchlings during removal of old cables, transformers and pylons	<ul style="list-style-type: none"> ▪ Engineering Team ▪ Field Operations Team
3. Noise disturbance during the operation of generators	<ul style="list-style-type: none"> ▪ Commercial Team ▪ Engineering Team ▪ Communications Team
4. Possible release of transformer oil (mineral oil) from damaged transformers. <i>This is applicable only where the equipment is removed on the recommendations of PDP or is funded by USAID</i>	<ul style="list-style-type: none"> ▪ Engineering Team ▪ Field Operations Team
5. Possible exposure to asbestos during old capacitor removals. <i>This is applicable only where the equipment is removed on the recommendations of PDP or is funded by USAID</i>	<ul style="list-style-type: none"> ▪ Engineering Team ▪ Field Operations Team
6. Exposure to VOCs in solvents and paints	<ul style="list-style-type: none"> ▪ Commercial Team

	<ul style="list-style-type: none"> ▪ Gender Strategy Team
7. Indoor air pollution from building/room renovations (dust from dry sanding)	<ul style="list-style-type: none"> ▪ Commercial Team ▪ Gender Strategy Team ▪ Communications Team
8. Chemical and hazardous waste from building/renovation work (i.e., waste removal of paint coatings/paint sludge)	<ul style="list-style-type: none"> ▪ Commercial Team ▪ Gender Strategy Team ▪ Communications team
9. Safe disposal of old/used/replaced equipment	<ul style="list-style-type: none"> ▪ Engineering Team ▪ Field Operations Team ▪ Communication Team ▪ Commercial Team

No loss of biological resources including flora and fauna or habitat is expected.

Please note that even though all of the above mentioned potential environmental impacts are significant and serious, the project activities and corresponding impact cannot be classified as having large-scale impacts as the impacts are localized and of limited scale. For example cutting/trimming of a few trees cannot be viewed in the same light as the clear-cutting of a large forest. Similarly, damage to bird nesting in a specific street does not imply that there will be a loss of habitat. These impacts can easily be mitigated as per the EMMP.

It is important to mention here that PDP is only installing new transformers and capacitors at locations where transformers and capacitors were not previously installed. PDP is not involved in removal of transformers and capacitors at any location. Possible discharge of transformer oil from used transformers as a result of dismantling (as mentioned in point no 4 in Table 3) is not part of this project. Similarly, possible release of asbestos fibers into air from used capacitors as a result of dismantling (as mentioned in point 5 in Table 3) is also not part of this project. **In the eventuality that old transformers and capacitors are removed or replaced on the recommendation of PDP or are funded by USAID, environmental impacts mentioned under point no 4 and 5 in Table 5 above would be applicable.**

It may still be appropriate to sensitize DISCOs about harmful effects of transformer oils and asbestos.

8. Health, Safety and Other Issues

Appropriate personal protective equipment as mentioned in EMMP in Appendix A Exhibit 1 must be worn at times. Minimum requirements should be:

- Mask should be worn during renovation especially during dry sanding
- Protective gloves, boots, safety belts and other necessary personal protective equipment (PPE) should be worn while carrying out activities related to transformers, removal of cables and capacitors, and working on live/energized wires.

Occupational health and safety (OHS) hazards specific to power transmission and distribution projects primarily include the following:

- Live power lines
- Working at height
- Electric and magnetic field
- Exposure to chemicals.

Table 6 lists some of the basic and minimum prevention and control measure that should be followed at all times. It would be appropriate to strengthen occupational health and safety monitoring mechanisms of DISCOs.

Table 6: OHS Hazards and Prevention/Control Measures

Occupational Health and Safety Hazards	Prevention and Control Measures									
1. Live Power Lines	<ul style="list-style-type: none"> ▪ Deactivate and properly ground power distribution network before performing work on the lines ▪ Only trained persons to install, maintain and repair electric equipment ▪ Ensure special safety equipment and procedures are followed when working close to or on exposed energized parts ▪ Strict adherence to safety standards ▪ Strict adherence to insulation standards 									
2. Working at Heights	<ul style="list-style-type: none"> ▪ Implement fall protection program which should include climbing techniques; fall protection measures; maintenance and replacement of fall protection equipment ▪ Emergency plan including first aid and rescue of fall arrested workers ▪ Install fixtures on polls to facilitate use of fall protection system ▪ Safety belts should not be less than 16 mm two-in-one nylon or material of equivalent strength 									
3. Electric and Magnetic Field	<ul style="list-style-type: none"> ▪ Take appropriate measures as mentioned in EMMP including posting of warning signs, wherever possible taking cables underground, etc ▪ International Commission on Non-Ionizing Radiation Protection (ICNIRP) is given in table below: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Frequency</th> <th>Electric Field (V/m)</th> <th>Magnetic Field (T)</th> </tr> </thead> <tbody> <tr> <td>50 Hz</td> <td></td> <td>100</td> </tr> <tr> <td>60 Hz</td> <td>4150</td> <td>83</td> </tr> </tbody> </table>	Frequency	Electric Field (V/m)	Magnetic Field (T)	50 Hz		100	60 Hz	4150	83
Frequency	Electric Field (V/m)	Magnetic Field (T)								
50 Hz		100								
60 Hz	4150	83								
4. Exposure to Chemicals	<ul style="list-style-type: none"> ▪ As per EMMP (for transformer oils containing PCB content) 									

Appropriate and applicable emergency information and equipment should be available on the field.

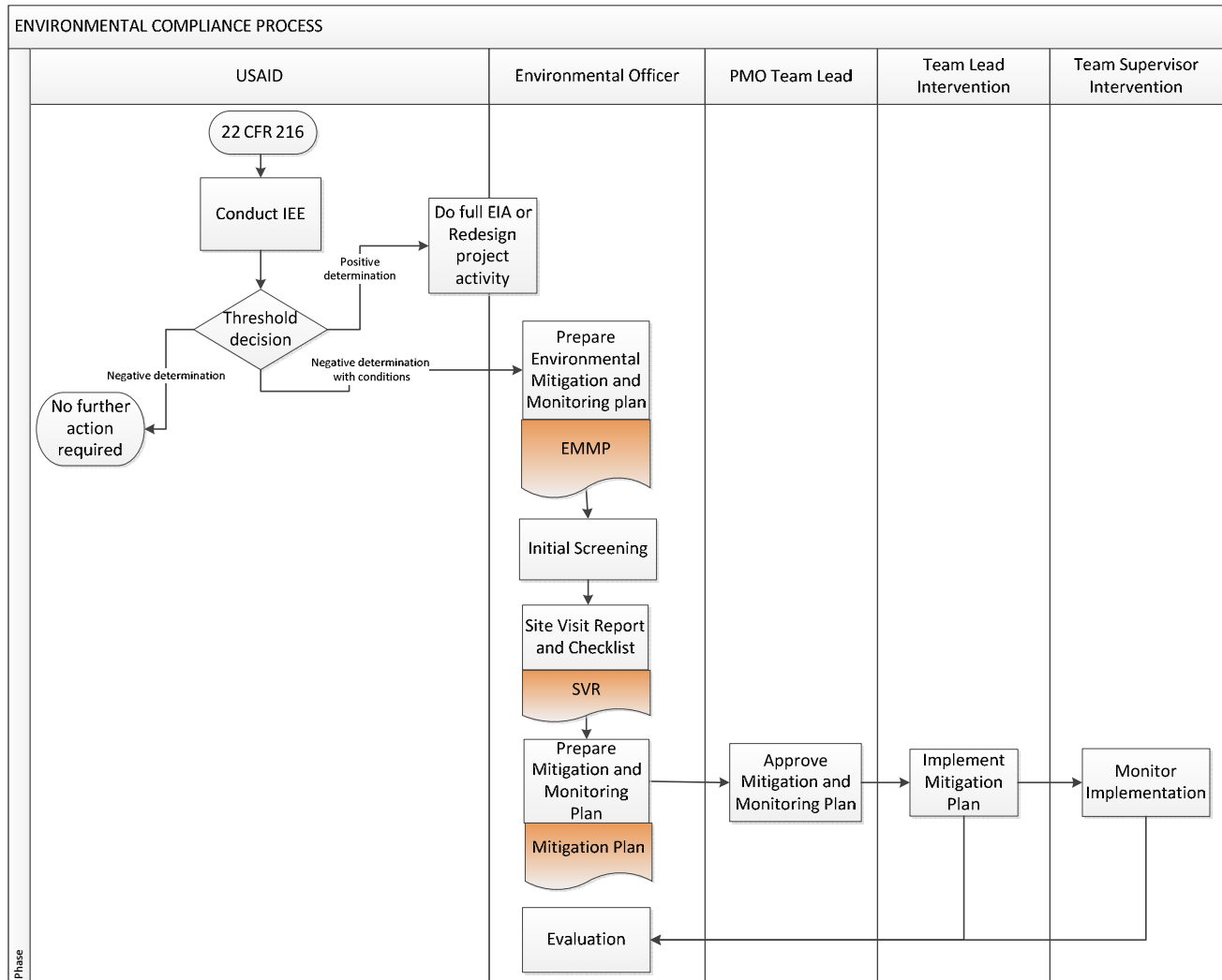
The project related activities are taking place at locations where no resettlement is expected.

9. Environmental Mitigation and Monitoring Plan (EMMP)

Mitigation and monitoring plan requirements as assessed above can be found in Appendix A – Exhibit 1. It is recommended that relevant portions of mitigation and monitoring measures of an intervention as described in Appendix A – Exhibit 1 must be made part of the relevant contracting documents.

10. Environmental Management Systems and Records

The Environmental management System and process flow is depicted in Figure 1 below.



The following record related to environmental should be maintained:

- Site Visit Report and duly completed/filled up checklists
- Site Specific Mitigation and Monitoring plans
- Monitoring and Evaluation Report
- Environmental training records, if required

11. Site Visit Report and Checklist

A site visit report (SVR) template has been developed to help PDP staff members in identifying site-specific environmental impacts. It also includes a checklist for identifying impacts as a result of project activities as well as in implementing appropriate mitigation measures. Therefore, it should be run in conjunction with EMMP in Appendix A Exhibit 1.

SVR template is attached with Appendix B Exhibit 1 and Exhibit 2.

12. Monitoring and Evaluation Reports

EMMP requires various types of Monitoring and Evaluation Reports (M&ER) such as noise monitoring report, waste disposal report, random EMF checks, etc. Such M&E reports are a succinct account of the effectiveness of the mitigation and monitoring measures adopted as a part of EMMP. The main purpose is to ensure that mitigation measures have been implemented and identify if any serious environmental degradation has taken place.

Please note that written/formal M&E reports are not required and therefore, templates have not been prepared. Even an e-mail indicating effectiveness of the measures adopted is enough and appropriate for reporting purposes.

13. Remedial Action Plan

Remedial Action Plan (RAP) is prepared only where there has been serious and visible environmental degradation. It is recommended that if such environmental degradation has been reported, Environmental Officer should visit the affected site to get firsthand information and appropriately prepare RAP.

A RAP template has been prepared and can be found in Appendix C of this EMMP.

14. Waste Storage Guidelines

IEE mandates that environmentally safe and sound disposal of equipment at the end of the useful life through auction to recycling companies. DISCOs are encouraged to follow guidelines for waste collection area as mentioned in Appendix D of this EMMP. This is for reference purposes only.

15. Conclusion

Like all energy efficiency and improvement projects, PDP has positive impact on the overall energy utilization in the country. The project activities do not have a significant adverse impact on the environment. Minor impacts like tree cuttings or a few bird nesting's can be mitigated through a series of interventions and measures. PDP, DISCOs and subcontractors would have to strictly adhere to EMMP developed for various project activities.

Appendix A: Exhibit 1 – Environmental Mitigation Plan and Monitoring Plan

The mitigation and monitoring plan is given below:

Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
1. LT/HT extensions and equipment installation - Damage to active bird nesting during network modifications	<ul style="list-style-type: none"> <input type="checkbox"/> Examine and carry out visual inspection before implementing LT/HT extensions to check/identify bird nesting during the breeding season. If no nesting found proceed as usual/planned <input type="checkbox"/> If active nest found, develop implementation plan which does not affect active bird nesting <input type="checkbox"/> Avoid demolition of bird nesting (with eggs or hatchlings) by either using an alternative route for laying of new cable and/or by not removing old cable until hatchlings has flown away <input type="checkbox"/> Place nesting boxes before the start of breeding season so as to attract local avian species to build nesting in the boxes <input type="checkbox"/> Consider placing bird deterrents to divert birds from making areas around cables as nesting grounds <input type="checkbox"/> Please note that the breeding season 	<ul style="list-style-type: none"> <input type="checkbox"/> Project area to be inspected by an PDP environmental officer before start of network modifications <input type="checkbox"/> Approve implementation plan to ensure that it does not affect active bird nesting <input type="checkbox"/> Verification and routine visits and checks by PDP staff to see if warnings signs have been placed 	<ul style="list-style-type: none"> <input type="checkbox"/> Site visits before and after project implementation in each DISCO. (A separate checklist will be generated for project areas in each of DISCOs) <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Environmental Officer) for initial site screening and periodic monitoring <input type="checkbox"/> Subcontractor (Site Supervisor) for implementing mitigation measures <input type="checkbox"/> PESCO, MEPCO, LESCO, FESCO, GEPCO and IESCO (Line Superintendents) for coordination and field support 	\$4,800

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
	<p>is a function of food availability and wet season. In areas where there is abundance of food and early showers in the year, the birds typically breed from January to April. In areas with long dry season, birds don't breed until start of the wet season.</p>				
<p>2. LT/HT extensions - LT/HT lines (even insulated) in congested and populated areas can be health and safety hazard</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Post warning signs in Urdu and local languages along the path (such on walls) indicating voltage and hazards <input type="checkbox"/> LT/HT insulated cables should be at a height which does not endanger human or animal life <input type="checkbox"/> If possible, take the cable underground <input type="checkbox"/> Do not pass LT/HT cables where it can be touched from balconies 	<ul style="list-style-type: none"> <input type="checkbox"/> Site inspection by PDP staff to vet compliance with tender/design documents prepared by PDP Team 	<ul style="list-style-type: none"> <input type="checkbox"/> Random checks during project implementation phase to ensure compliance with mitigation measures <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Project Manager) to ensure safe design <input type="checkbox"/> PDP (Environmental Officer) for initial site screening and periodic monitoring <input type="checkbox"/> Subcontractor (Site Supervisor) for implementing mitigation measures <input type="checkbox"/> PESCO, MEPCO, LESCO, FESCO, GEPCO and IESCO (Line Superintendents) for coordination and field support 	<p>\$3,000</p>

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
<p>3. LT/HT extensions and equipment installation - Increase and presence of Electric and Magnetic Field (EMF) resulting in adverse health effects from exposure to EMF from transmission lines and equipment.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Measure EMF with a gauss meter. (EMF is related to current flow and not line voltage) <input type="checkbox"/> Evaluate potential exposure to the residents against the safe levels recommended by International Commission on Non-Ionizing Radiation Protection (ICNIRP) <input type="checkbox"/> If exposure exceeds recommended levels, engineering techniques (such as modifications to size, spacing and configuration of conductors) to reduce EMF <input type="checkbox"/> If possible, try and avoid passing it over residential accommodation by laying it underground 	<ul style="list-style-type: none"> <input type="checkbox"/> Random checks at locations where EMF exposure level exceeds recommended levels 	<ul style="list-style-type: none"> <input type="checkbox"/> Random EMF spot checks using a Gauss Meter <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Project Manager) for ensuring safe designing and routing of cables <input type="checkbox"/> PDP (Environmental Officer) for periodic monitoring and EMF spot checks <input type="checkbox"/> Subcontractor (Site Supervisor) for implementing mitigation measures <input type="checkbox"/> PESCO, MEPCO, LESCO, FESCO, GEPCO and IESCO (Line Superintendents) for coordination 	<p>\$4,250</p>
<p>4. Installation of transformers and capacitors - Release oil from transformers during network modifications. <i>This is</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Appropriate gloves and other personal protective equipment should be used while handling capacitors and transformers. Rubber gloves are not recommended. Use of chemical resistant fluorinated rubber is recommended. In case of non-availability such material; gloves should be replaced with new pairs 	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure proper use of PPE <input type="checkbox"/> Pictures to be taken for each capacitor removed. Pictures should be taken before and after wrapping and sealing in oil absorbing material 	<ul style="list-style-type: none"> <input type="checkbox"/> Monitoring as per site specific mitigation and monitoring plan <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Field Staff) for periodic monitoring <input type="checkbox"/> Subcontractor (Field Staff) for implementing mitigation measures 	<p>\$750</p>

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
<i>applicable only where the equipment is removed or replaced on the recommendations of PDP or is funded by USAID</i>	<p>before breakthrough time lapses. This procedure must adopted for removing unhealthy transformers</p> <ul style="list-style-type: none"> <input type="checkbox"/> In case of spills or contamination, treatment of contaminated soil. Depending upon the circumstances and site conditions, contaminated soil can be treated in-situ or ex-situ <input type="checkbox"/> Check capacitors and transformers for any leaks (oily film or oily dirt) and take measures to clean up. <input type="checkbox"/> Leaked or damaged transformers to wrapped and sealed in oil absorptive material. <input type="checkbox"/> The metal drums should be labeled as “Used Capacitors/Hazardous Waste” <input type="checkbox"/> Leaked transformers should be wrapped in oil absorptive material, sealed in polythene bags and stored at places where secondary confinement is available 	<p>and polythene sheet</p> <ul style="list-style-type: none"> <input type="checkbox"/> Routine visits by PDP 		<ul style="list-style-type: none"> <input type="checkbox"/> MEPCO/PESCO (Line Staff) field visits for monitoring 	
5. Installation of backup generator as a part of building renovation - Disturbance due to excessive	<ul style="list-style-type: none"> <input type="checkbox"/> Use of noise reduction techniques such as using canopy and/or of noise transmission reduction strategies <input type="checkbox"/> Proper maintenance, replacement and lubrication of parts to reduce 	<ul style="list-style-type: none"> <input type="checkbox"/> Noise to be monitored using a Sound Level Meter as per NEQS limits <input type="checkbox"/> Weighted average noise levels to be calculated – 	<ul style="list-style-type: none"> <input type="checkbox"/> Periodic noise monitoring report <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Project Manager) for ensuring canopy be part of generator specs while placing the order 	\$3,250

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
noise levels particularly at generator locations.	<p>noise as the generator becomes old</p> <ul style="list-style-type: none"> <input type="checkbox"/> If noise exceeds NEQS, ear plugs should be used by the generator operators 	<p>Readings to be taken at start of generator and then a few minutes are after startup when the load is maximum on generator. These reading need to be average out</p> <ul style="list-style-type: none"> <input type="checkbox"/> Noise to be recorded at 7.5 meters from the source or at the receptor level <input type="checkbox"/> Three readings to be taken for each of the above mentioned locations 		<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Environmental Officer) for periodically monitoring the noise level using sound level meter 	
6. LT/HT Extension and equipment installation - Cutting, trimming or pruning of trees.	<ul style="list-style-type: none"> <input type="checkbox"/> Help DISCOs to develop (in case its not already developed) and implement international best practices related to integrated vegetation management approach (IVMA). Only under unavoidable circumstances tall growing trees may be replaced with medium growing species – only native plant species should be used <input type="checkbox"/> No more 25% of a tree’s crown should be pruned/removed in a single trimming episode. Primary 	<ul style="list-style-type: none"> <input type="checkbox"/> Compliance with IVMA 	<ul style="list-style-type: none"> <input type="checkbox"/> As per IVMA <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Environmental Officer) for helping DISCOs developing the IVMA if required <input type="checkbox"/> Subcontractor (Site Supervisor) to implement mitigation measures <input type="checkbox"/> DISCOs (Assistant Director- Environment and Social Responsibility) 	Covered under items 1 through 4 above

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
	<p>pathways and braches of the tree should be avoided</p> <ul style="list-style-type: none"> <input type="checkbox"/> Establish clearance limits and only branches in the tree limits should be cut. Braches should be cut or branches should be pruned laterally to direct growth away from the utility space <input type="checkbox"/> Topping of trees must be avoided as it increases tree related hazards for the adjoining buildings/property <input type="checkbox"/> Avoid shredding/cutting of trees in breeding and nesting season 			for IVMA development and implementation	
7. Building Renovation – Hazardous waste generation.	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare proper hazardous waste disposal plan <input type="checkbox"/> Remove all waste at the end of renovation <input type="checkbox"/> Waste to be stored in only appropriate containers and/or areas earmarked for hazardous waste – appropriate signage to be placed on drums/containers <input type="checkbox"/> Hazardous waste to be stored on impervious surface and away from drainage system/drains 	<ul style="list-style-type: none"> <input type="checkbox"/> Compliance with waste disposal plan 	<ul style="list-style-type: none"> <input type="checkbox"/> Surprise site visits when renovation work is in progress <input type="checkbox"/> Bi-annual reporting to USAID COR/PM 	<ul style="list-style-type: none"> <input type="checkbox"/> PDP (Environmental Officer) for developing waste disposal plan <input type="checkbox"/> Subcontractor (Site Supervisor) for implementing waste disposal plan 	\$800

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
8. Building Renovation – Non-hazardous waste generation.	<input type="checkbox"/> Prepare proper waste disposal plan and storage area <input type="checkbox"/> Remove all waste at the end of renovation <input type="checkbox"/> Waste to be stored in only area earmarked for waste – appropriate signage to be placed at the site	<input type="checkbox"/> Compliance with waste disposal plan	<input type="checkbox"/> Surprise site visits when renovation work is in progress <input type="checkbox"/> Bi-annual reporting to USAID COR/PM	<input type="checkbox"/> PDP (Environmental Officer) for developing waste disposal plan <input type="checkbox"/> Subcontractor (Site Supervisor) for implementing waste disposal plan	Covered under item 7 above
9. Building Renovation - Indoor air quality of rooms/places being renovated, effected due to presence of VOCs vapors in paints, dust and other particulate material.	<input type="checkbox"/> WHO approved respiratory personal protective equipment should be used while removing paints, dry sanding or applying fresh paint <input type="checkbox"/> Take appropriate measures like increasing ventilation for improving indoor air quality	<input type="checkbox"/> 8-hr and 24-hr recordings during the renovation period <input type="checkbox"/> Surprise site visits. Pictures of subcontractor working while renovating rooms	<input type="checkbox"/> Surprise site visits when renovation work is in progress <input type="checkbox"/> Bi-annual reporting to USAID COR/PM	<input type="checkbox"/> PDP (Environmental Officer) for periodic monitoring <input type="checkbox"/> Subcontractor (Site Supervisor) for ensuring that his workers use proper PPEs	\$1,000

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Activity	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Parties Responsible	Indicative Budget
10. Equipment replacement - Safe disposal of the equipment (at the end of its useful life) of the equipment procured	<input type="checkbox"/> Sell equipment at the end of useful life to certified equipment recycling business as per the existing material disposal policy existed in DISCOs	<input type="checkbox"/> Keep track/inventory of equipment procured during the project life and its disposal	<input type="checkbox"/> Disposal report <input type="checkbox"/> Bi-annual reporting to USAID COR/PM	<input type="checkbox"/> PDP (Environmental officer) for ensuring that DISCOs follows their material disposal policy <input type="checkbox"/> DISCOs Material Management Department to ensure compliance	\$4,500

Appendix B: Exhibit 1 – Site Report Template

Executive Summary

Executive Summary should be succinct description of the site location and the planned activities at that specific site. Then summarize the findings of the site visit and most specifically project’s potential impact as well as monitoring and mitigation impacts highlighted in EMMP.

Introduction

Name:	<i>Name of the person conducting site visit and writing site description and may be potential impacts. It is possible that the person visiting the site is not the Environmental Officer of PDP.</i>
Designation:	<i>Designation of the officer in PDP/DISCO conducting site visit.</i>
Organization/Department/Team:	<i>Write the name of the organization (PDP/DISCO) whose employee visited site(s) for environmental compliance. In case person is an employee of PDP then he/she should write department/ team within PDP.</i>
Date of Visit:	<i>Write the date of site visit.</i>
Site(s) Visited:	<i>Mention site(s) visited. This report can cover more than one area within a city with the same project activity like metering.</i>
Project Activities:	<i>List down activities that would be taken for the site(s) under consideration.</i>

Site Description

The person visiting sites under consideration must fill out this section. This section must describe in detail general dynamics of the site – topography (surface features), socioeconomic conditions, etc.

Potential Impacts

In addition to comments by the person who conducted site visit, this section must be filled/completed by PDP Environmental Officer. In this section identify the potential impacts in detail. In support of the potential impacts, refer to the pictures taken during the site visit and reproduced in Appendix B.

Recommended Monitoring and Mitigation Measures

It is recommended that the Environmental Officer should fill this section according to EMMP. The Environmental Officer can amend or add mitigation as well as monitoring measures keeping view the severity of the situation. This section should clearly mention the parties responsible for mitigation and monitoring as well as the frequency of monitoring. It would be better to write the mitigation and monitoring measure in a tabular format similar to Appendix A – Exhibit 1 of EMMP.

Exhibit 2 – Site Visit Checklist

Please attach completed/duly filled checklist. The Checklist can be found in Exhibit 2 of this Appendix.

Exhibit 3 – Site Pictures

Site Visit Report should include pictures of the site. It must include pictures, which can depict possible environmental impacts such as badly pruned trees, or bird nesting, leaking equipment, LT/HT wires with adverse affects to human health and safety (passing very close to balconies, etc.), waste management issues, etc

Appendix B: Exhibit 2 – Checklist

Name:

Designation:

Organization:

Department/Team:

Site/Location:

Brief Description of Activity:

A – Project Specific Checklist

Instructions: For each question answered in affirmative, please follow the instructions given in EMMP Exhibit 1. Please provide as much information as possible in remarks and attach supporting material such as photographs to further ascertain appropriateness of respective measures suggested in Exhibit 1 of EMMP

Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
Damage to Fauna Habitat	<input type="checkbox"/> Demolition of birds nesting's	<input type="checkbox"/> Is the project activity being carried out in breeding season?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 1 in Exhibit 1.
	<input type="checkbox"/> Disruption of habitat of avian species especially during the breeding season	<input type="checkbox"/> Is there any active nest (eggs, hatchlings) in the area where network modifications	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

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Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
		are being carried out?			List Remarks and Evidence
Damage to flora	<input type="checkbox"/> Adverse impacts on tree due to cutting and trimming	<input type="checkbox"/> Does the project activity involve cutting, trimming, shredding or pruning of trees?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 6 in Exhibit 1. List Remarks and Evidence
Indoor Air Quality	<input type="checkbox"/> Presence of VOCs vapors due to paints <input type="checkbox"/> Dust / Particulate matter as a result of dry sanding <input type="checkbox"/> Repairable particulate matter	<input type="checkbox"/> Is the project activity cover renovation of building/rooms? <input type="checkbox"/> Is the room/building being painting of walls?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 9 in Exhibit 1. List Remarks and Evidence
Compliance with NEQS for noise	<input type="checkbox"/> Noise from generator	<input type="checkbox"/> Is the project in compliance with NEQS for noise?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 5 in Exhibit 1. List Remarks and Evidence
Danger to human life	<input type="checkbox"/> Health and safety risks from LT/HT in congested areas <input type="checkbox"/> Presence of EMF	<input type="checkbox"/> Is there any risk to human life and safety from LT/HT? <input type="checkbox"/> Is the LT/HT line passing within the reach of normal human activity (eg can be easily touched from balconies)? <input type="checkbox"/> Is there any risk of electric shock to workers working on live LT/HT?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 5 in Exhibit 1 and Point no 1 in Table 6 on OHS hazards. List Remarks and Evidence
Danger to human health	<input type="checkbox"/> Adverse effects from EMF	<input type="checkbox"/> Is the project causing health hazards due to electromagnetic fields? <input type="checkbox"/> Is the project activity being conducted close to cardiac hospitals/clinics? <input type="checkbox"/> Is the project located close maternity	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 3 in Exhibit 1.

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Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
		ward or basic health unit for mother/ child?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	List Remarks and Evidence
Hazardous material management	<input type="checkbox"/> Contamination of soil from release of transformer oil	<input type="checkbox"/> Is there any risk of release of transformer oil from removal of old transformers?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 4 in Exhibit 1. List Remarks and Evidence
		<input type="checkbox"/> Is there any risk of release of transformer oil from new transformer being installed?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Solid and hazardous waste management	<input type="checkbox"/> Inadequate procedures to handle waste (collection, storage and disposal) from room/building renovations	<input type="checkbox"/> Is the project generating construction waste?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Follow monitoring and mitigation measures of Point no 7 and 8 in Exhibit 1. List Remarks and Evidence
		<input type="checkbox"/> Is the project generating waste from renovation of rooms?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project generating E-waste?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project generating waste from activities related to network modifications including removal of electricity poles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

B – General Environmental and Social Checklist

Instructions: For each question answered in affirmative, further investigations would be required. Please provide as much information as possible in remarks and attach supporting material like photographs to ascertain appropriate measures

Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
Project Location	<input type="checkbox"/> Damage to environmentally sensitive areas	<input type="checkbox"/> Is project located in or near environmentally sensitive area such as wetland, mangrove, estuarine, national park, special area earmarked for breeding of animals/birds, etc?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	To be filled by staff member of PDP / DISCO / Subcontractor
	<input type="checkbox"/> Damage to cultural heritage				
		<input type="checkbox"/> Is the project site located in an area			

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Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
		protected by the country's laws or international treaties or conventions?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is project going to adversely affect/damage local archeological, historical, cultural and religious heritage sites?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Effect on natural and physical environment	<input type="checkbox"/> Damage to ecosystem, topography and geology	<input type="checkbox"/> Is project encompassing ecologically valuable habitats?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	To be filled by staff member of PDP / DISCO / Subcontractor
	<input type="checkbox"/> Increase in indoor/outdoor pollution	<input type="checkbox"/> Is there a possibility of extensive loss of natural environment?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is project activity expected to cause any effect on surface water hydrology?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is there any severe environmental disturbance as a result of maintenance of LT/HT lines?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is any of project activity resulting in creation of temporary or permanent breeding grounds mosquito vectors of disease?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Are chemicals used to clear vegetation for LT/HT lines?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is project relying on use of herbicides to control vegetation height?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is project going to adversely affect landscape?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project activity (especially resulting from construction activity and movement of vehicles) causing local air pollution?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is noise exceeding NEQS limits as a	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

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Category	Project Potential Impact	Screening Questions	Responses		Remarks/Actions for Responses Marked Affirmatively
		result of civil works?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project activity going to cause change in natural drainage patterns?			
Social Environment	<input type="checkbox"/> Effect on livelihoods	<input type="checkbox"/> Is there a possibility that the project activities will adversely affect the living conditions of area inhabitants?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	To be filled by staff member of PDP / DISCO / Subcontractor
	<input type="checkbox"/> Dislocation and resettlement of people	<input type="checkbox"/> Is there a possibility that project activities will cause increase in accidents and injuries?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Resettlement plan would have to be developed and properly implemented
		<input type="checkbox"/> Is there any dislocation and resettlement of people due to project activity?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is there any possibility of transmission of communicable diseases from non-local employees to local population?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project activity expected to cause further deterioration of existing roads?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project activity going to cause disruption in movement of traffic or traditional modes of transportation for more than seven days?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		<input type="checkbox"/> Is the project expected to cause social conflict or unrest?			

Appendix C: Exhibit 1 – Remedial Action Plan

Name:	<i>Name of the PDP staff member who reported environmental degradation. It is possible that the person visiting the site is not the Environmental Officer of PDP.</i>
Designation:	<i>Designation of the officer in PDP/DISCO conducting site visit.</i>
Organization/Department/Team:	<i>Write the name of the organization (PDP/DISCO) whose employee visited site(s) for environmental compliance. In case person is an employee of PDP then he/she should write department/ team within PDP.</i>
Date of Visit:	<i>Write the date of site visit.</i>
Affected Site(s):	<i>Give physical description of the site that has been affected.</i>
Describe Environmental Degradation/Non-Compliance with EMMP:	<i>Briefly describe environmental degradation/ non-compliance seen at the site.</i>
Causes of Environmental Degradation:	<i>Here list down all possible causes of environmental degradation</i>
Remedial Measures:	<i>Describe remedial action plan and measures to be adopted.</i>
Responsibility:	<i>Please name responsible parties and their respective tasks assigned under remedial action plan</i>
Recommendations for Future Work:	<i>Include recommendations which can help prevent similar incidents in the future</i>

Exhibit 1 – Site Pictures

The report must include pictures that can depict possible degradation at the site

Appendix D – Waste and Hazardous Waste Collection Area Guidelines

The material is classified as waste if it no longer appropriate for further use. Such material is then needs to be disposed off in an environmentally safe manner. In the first phase it needs to be collected in an area. Waste collection area refers to a designated or specific site earmarked to safely store hazardous waste containers for a predetermined time. Such areas can be further classified into *general/non-hazardous waste collection areas* and *hazardous waste collection areas*. It is important to mention here that the waste collection areas have to be planned, prepared or constructed, inspected and maintained according to the local statutory requirements and international best practices.

For the purpose of this assignment the following can be used a minimum requirement. Improvements to this would be appreciated and welcomed.

Area Location and Layout

The design of the waste collection area must adhere to the following requirements:

- The area should be designated as Waste Storage Area
- The site should be away from vehicular traffic, sewer and storm-water channels/drain, surface water sources and property boundaries
- While developing waste area layout, potential impacts and risks associated with waste should be studied and incorporated in the layout
- Area should be secure and unauthorized entry should be stopped. A room or a fenced area that can be locked should be preferred.

Storage

Storage should conform to the following requirements:

- The waste can be stored both outdoor as well as indoor. However, the waste stored must not be is exposed to weather and natural events. It must be protected from direct sun and rain at all times
- The waste should not under any circumstance be stored on unprotected soil
- It should provide adequate storage space to have aisles around the containers. Storage in a haphazard manner must be avoided at all times
- Underground storage tanks and underground piping of hazardous waste should be avoided
- Liquid and hazardous waste must be stored on non-porous surface. Ideally it should be stored on a coated concrete structure. However, such a structure is not mandatory
- Hazardous and non-hazardous waste should be stored separately.

Storage Units and Containments

- The storage time prior to safe disposal of waste and hazardous materials should be limited
- Secondary containment is required for all liquid hazardous waste and for any other type of waste that has the potential of release into the environment
- Secondary containments should be able to hold at-least 10% of the agreement value of liquid hazardous waste
- Secondary containment system should not be exposed to rainfall. In case the circumstances make prevention difficult, secondary containment system exposed to rainfall should be able to hold annual average rainfall in addition to at-least 10% holding capacity mentioned above.

Container and Labeling Requirements

- Waste containers and area should be clearly labeled
- Label should be clearly visible. “Hazardous Waste” should be labeled clearly and legibly on each hazardous waste container;
- Appropriate warnings can be in words, pictures, symbols or combination so that information can be easily communicated;
- Labels should be in English as well as in local language;
- Waste containers especially for hazardous waste should clearly mention material name and appropriate hazard information;
- Material Safety Data Sheet (MSDS) for each hazardous material should be prepared and posted at appropriate places.

Internal Audit and Inspection

- Primary as well as secondary containment should be inspected for leaks and general condition.
- Designated persons should undertake such inspections only. Weekly inspections are recommended with more frequent inspections may be necessary under extreme weather conditions
- Corrective actions requirements must be reported immediately to appropriate authorities
- Corrective action must be properly documented and implemented
- Maintain inspection log. The log should mention inspector name/initials, inspection date, observations/comments and corrective actions required.