

# Environment Monitoring Report

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Bi-annual Environment Monitoring Report  
February 2016

PAK: MFF – Power Distribution Enhancement  
Investment Program (Tranche 2)

Prepared by Lahore Electric Supply Company, Punjab for the Asian Development Bank.

## NOTES

- (i) The fiscal year (FY) of the Government of the Islamic Republic of Pakistan and its agencies ends on 30 June.
- (ii) In this report "\$" refer to US dollars.

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L-2727, L-2972 PDEIP: LESCO BAEMRs (Jul-Dec 2015) approved for disclosure

Safia Shafiq

to:

Liaqat Ali

19/02/2016 07:04 AM

Cc:

Zhang Lei, Ehtesham Z. Khattak, Zehra Abbas, "Jeffrey Bowyer", Judy A. Vermudo, Jocelyn M. Cabrera

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2 Attachments



L-2972 PDEIP BAEMR (Jul-Dec 2015) LESCO.docx L-2727 PDEIP BAEMR (Jul-Dec 2015) LESCO.docx

Dear Liaqat Sb.,

The attached BAEMRs (Jul-Dec 2015) of LESCO for L-2727 and L-2972 PDEIP are approved for disclosure. Kindly have them uploaded on ADB website and share the disclosure link with me.

Thanks and regards,

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## Bi – Annual Environmental Monitoring Report

*Project Number: 2727 – PK (Tranche – II)*  
(July-December. 2015)

# Islamic Republic of Pakistan

Power Distribution Enhancement Investment Project  
(PDEIP) Tranche - II

Multi – Tranche Financing Facility (MFF)

**Financed by Asian Development Bank**

**Prepared By: Environment & Safeguard Cell**

**Office of the General Manager Technical LESCO**

**132 – kV Qurtaba Grid Station Complex, Bahawalpur Road**

**Lahore – 54000 Pakistan**

**For:**

**Pakistan Electric Power Company (PEPCO)**

**Lahore Electric Power Company (LESCO)**

This report does not necessarily reflect the views of ADB or the Government of Pakistan, and ADB and the Government cannot be held liable for its contents

ASIAN DEVELOPMENT BANK

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## **List of Abbreviations**

ADB	Asian Development Bank
LESCO	Lahore Electric Supply Company
GOP	Government of Pakistan
EPA	Environment Protection Agency
CEO	Chief Executive Officer
STG	Secondary Transmission and Grid Station
GSC	Grid Station Construction
PD	Project Director
BPI	M/s British Power International
EIA	Environment Impact Assessment
IEE	Initial Environment Examination
LARP	Land Acquisition and Resettlement Plan
EMMP	Environment Management & Monitoring Plan
SIR	Site Inspection Report
ESCR	Environment & Social Complaint Register
BOQ	Bill of Quantities
CA	Corrective Action
NC	Non Compliance
N	New
A	Augmentation
E	Extension

## Part 1. INTRODUCTION

1. Lahore Electric Supply Company Ltd; LESCO is a Public limited Utility Company, established in 1998 under Companies Ordinance 1984 responsible for distribution of Electric Power within its territorial jurisdiction and presently serving approximately three Million customers (Domestic, Commercial, Agricultural, Industrial and others) in the five districts of Lahore, Kasur, Okara, Sheikhu Pura and Nankana of Punjab Province.
2. The power sector is central to the current and future prosperity of Pakistan through the supply of low-cost electricity to domestic customers throughout the country and by virtue of its capacity to stimulate commercial and industrial development. The key challenges of the power sector are (i) lack of generation capacity, (ii) increasing constraints in the transmission and distribution systems, (iii) weak financial management and sustainability of the sector entities, and (iv) inadequate corporate governance structures for the power companies. In order to enhance the transformation capacity, LESCO through GoP has undergone a Project Financing agreement with Asian Development Bank for strengthening the capacity of Distribution and Transmission networks to meet increasing Electricity Demand in the selected areas. The amount of the loan is paid in tranches.
3. The Major Scope of Work for the Tranche – II comprises of
  - a. Construction of Five New Grid Stations along with Feed Transmission Line on Turnkey Basis

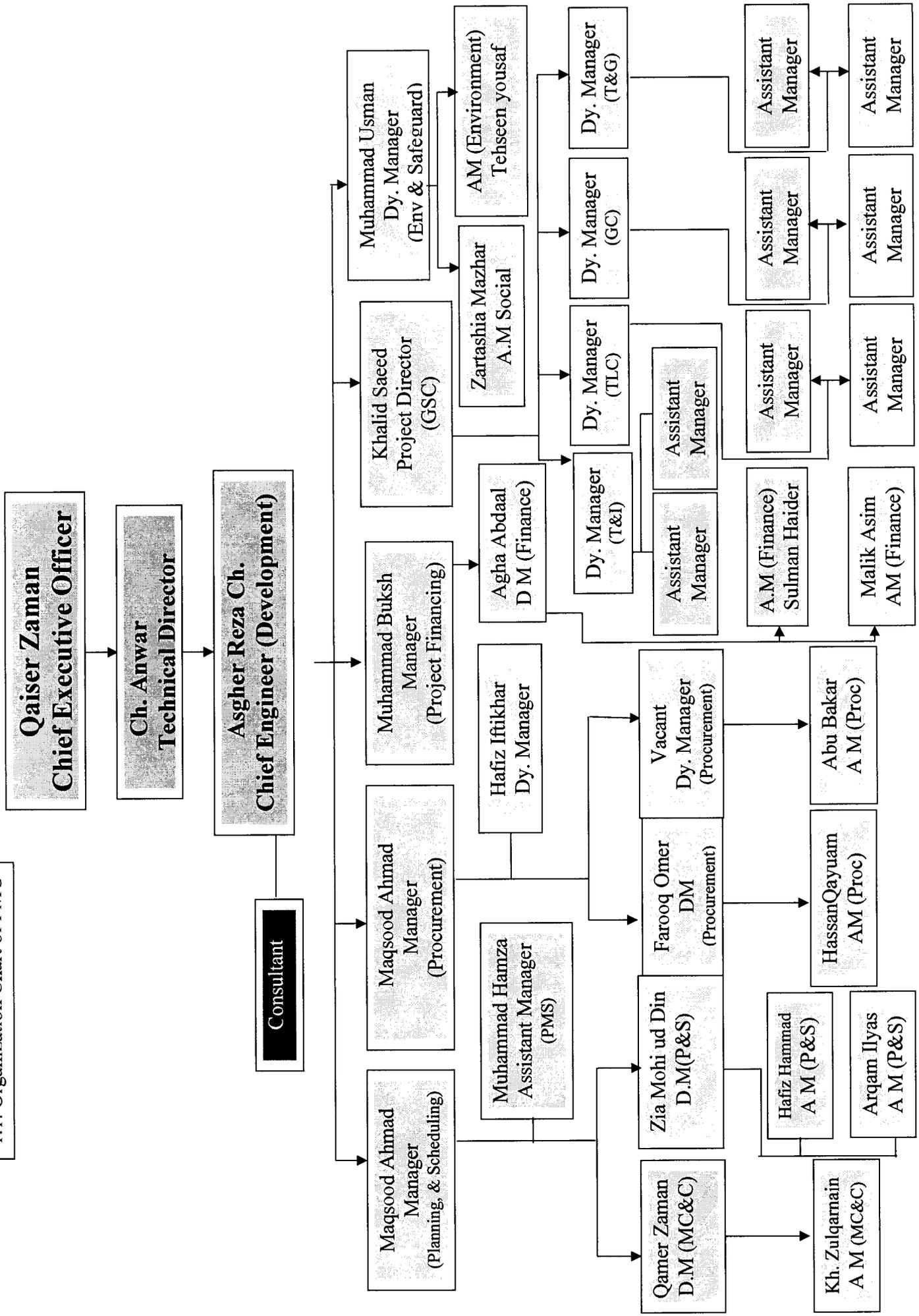
Sr. No.	Name of Projects
1	132kV DHA Rahber
2	132kV Jubilee Town Housing Scheme
3	132kV Central Park Housing Scheme
4	132kv Press Club Housing Scheme
5	132kV Doula Chuchak

b. Augmentation of 12 Power Transformers with high capacity.

Sr. No.	Name of Projects	T/F No.
1	132kV Allama Iqbal Town	T – 3
2	132kV Said Pur	T – 3
3	132kV Garden Town	T – 3
4	132kV Fateh Garh	T – 3
5	132kV Old Kot Lakhpat	T – 3
6	132kV Rehman Park	T – 3
7	132kV Manga Mandi	
8	132kV WAPDA Town	T – 1
9	132kV Badami Bagh	T – 2
10	132kV Shadman	T – 2
11	132kV Bhatti Gate	T – 2
12	132kV Qartaba	T – 2

4. Progress of the new grid stations is same as mentioned in previous report due to the stoppage of work by contractor. Current status is mentioned below.
5. Civil work is still in progress at site of 132 kV Central Park, Press Club and DHA Rahber Grid Stations. Civil and electrical works at 132 kV Doula Chuchak Grid Station have been completed. Testing commissioning has been done at Jubilee Town. Transmission Lines of Doula Chuchak and Jubilee Town have been completed.
6. Dy. Manager (Environment) Assistant Manager (Environment) and Assistant Manager (Social) are working in Environment & Social Cell (ESC) under Chief Engineer (Development) in Project Management Unit (PMU) LESCO.

1.1. Organization Chart of PMU

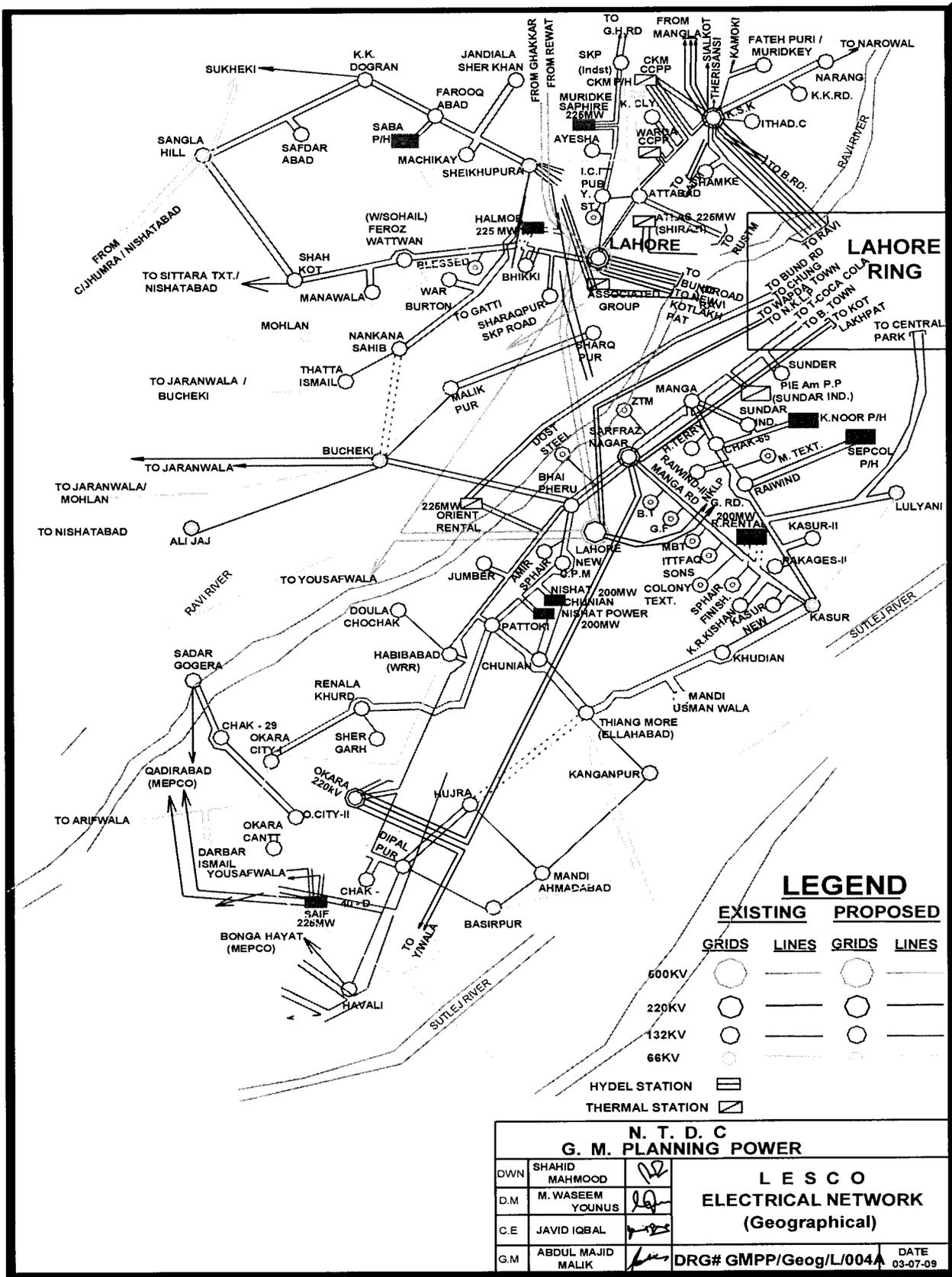


## 1.2 PROJECT OVERVIEW

### TRANCHE – II

i	ADB Loan No.	2727(SF) - PAK
ii	Project Title	Power Distribution Enhancement Investment Project Tranche - II
iii	Borrower	Islamic Republic of Pakistan
iv.	Executing Agency	Pakistan Electric Power Company (PEPCO)
v.	Implementing Agency	Lahore Electric Supply Company Ltd. (LESCO)
vi.	Total Project Cost (Actual)	US \$37.76 Million
vii.	Revised Project Cost	US \$ 35.46 Million
viii.	ADB Funding (Revised)	US \$ 24.88 Million
ix.	Counterpart Funding	US \$ 10.58 Million
x	Surrendered Amount	US \$ 2.3 Million
xi	Loan Signing Date	Jan.28.2011
xii.	Date of effectiveness	Oct. 6-2011
xiii.	Date of closing	Mar.31.2015

# 1.3 LESCO STG NETWORK



#### 1.4 SCOPE OF WORK TRANCHE - II

Sr. No.	Name of Sub-Project	Type	Scope of Work
1	132kV DHA Rahber and its Feeding T/L on Turn Key	N	2 x 132/11 kV, 26MVA T/B+2L/B+2PT/Bay
2	132kV Jubilee Town Housing Scheme and its Feeding T/L on Turn Key	N	2 x 132/11 kV, 26MVA T/B+2L/B+2PT/Bay
3	132kV Central Park Housing Scheme and its Feeding T/L on Turn Key	N	2 x 132/11 kV, 26MVA T/B+2L/B+2PT/Bay
4	132kv Press Club Housing Scheme and its Feeding T/L on Turn Key	N	2 x 132/11 kV, 26MVA T/B+2L/B+2PT/Bay
5	132kV Doula Chuchak and its Feeding T/L on Turn Key	N	2 x 132/11 kV, 26MVA T/B+2L/B+2PT/Bay
6	132kV Allama Iqbal Town T-3	A	1 x 132/11 kV 40 MVA PTRF
7	132kV Said Pur T-3	A	1 x 132/11 kV 40 MVA PTRF
8	132kV Garden Town T-3	A	1 x 132/11 kV 40 MVA PTRF
9	132kV Fateh Garh T-3	A	1 x 132/11 kV 40 MVA PTRF
10	132kV Old Kot Lakhpat T-3	A	1 x 132/11 kV 40 MVA PTRF
11	132kV Rehman Park T-3	A	1 x 132/11 kV 40 MVA PTRF
12	132kV Shadman T-2	A	1 x 132/11 kV 40 MVA PTRF
13	132kV WAPDA Town T-1	A	1 x 132/11 kV 40 MVA PTRF
14	132kV Badami Bagh T-2	A	1 x 132/11 kV 40 MVA PTRF
15	132kV Bhatti Gate T-2	A	1 x 132/11 kV 40 MVA PTRF
16	132kV Qartaba T-2	A	1 x 132/11 kV 40 MVA PTRF
17	132kV Manga Mandi	A	1 x 132/11 kV 40 MVA PTRF

## Part – 2 Environmental Monitoring

7. GSC & Contractors are continuously being apprised to monitor Environmental aspects during the implementation of Tranche – II sub projects. Civil work is under progress at 132 kV Central Park, Press Club and DHA Rahber Grid Station while civil works at 132 kV Doula Chuchak has been completed and testing commissioning work jubilee town has been completed.
8. BOQ and adequate clauses regarding implementation of Environment Management & Monitoring Plan were prepared and sent to Project Director GSC Circle and Procurement Section for inclusion in bidding documents. Office of PD GSC/Procurement Section has incorporated the BOQ and respective clauses in the bidding documents after vetting and approval from ADB. But ADB exclude the BOQ clauses and only EMMP is part of bidding documents.
9. Contract of following Grid Stations has been awarded on Turnkey basis:
  - i. 132 kV Doula Chuchak Grid Station
  - ii. 132 kV Press Club Housing Scheme Grid Station
  - iii. 132 kV Jubilee Town Grid Station
  - iv. 132 kV Central Park Grid Station
  - v. 132 kV DHA Rahber Grid Station
10. **Environment & Social Cell** will monitor the implementation of EMMP and will also suggest corrective measures where necessary to comply with the following EMMP parameters.
  - **Noise and Vibration**
  - **Water Quality**
  - **Air Quality, Flora & Fauna Monitoring**

## Part – 3 Environmental Management

### 3.1 Submission of EIA / IEE Reports

11. - Initial Environmental Examination (IEE) Reports of 5 New Grid Stations and augmentation at 12 existing grid stations Tranche-II has been received on 12 – 11 – 2010 from M/s BPI.
- These reports were reviewed and converted from Initial Environmental Examination (IEE) to Environment Impact Assessment (EIA) format to comply with the Local Statutory requirements / Law
- Environmental Reports have been approved by Chief Executive Officer LESCO on December 20, 2010 and uploaded on LESCO Website on December 31, 2010.
- IEE & EIA Reports have been submitted to EPA Punjab on 13 – 01 – 2011 for approval
- EPA Punjab accepted the IEE & EIA Reports and fix the Public Hearing at Lahore and Okara on May 13, 2011 & May 20, 2011 respectively.
- Public Hearing was conducted on May 13, 2011 at Lahore and at 132 kV Grid Station Doula Chuchak District Okara on May 20, 2011.
- **EPA issued the NOC on August 13,2012**
- The Clauses and BOQ regarding the implementation of EMMP sent to procurement section for inclusion in Bidding Documents but excluded by ADB Procurement section and only EMMP is part of contract agreement.
- A training program has been prepared which is approved by CEO LESCO and ADB and workshop conducted on 24-12-2012 and next workshop will be planned to be conducted during August 2014. But not conducted due to the non- approval of higher management.

### **Inspection of Project Sites**

12. Environment & Social Cell (ESC) has conducted site inspections along with concerned district environment officer of Environment Protection Department Punjab and furnished additional information as desired for preparation of Site Inspection Report (SIR)

13. COORDINATES OF NEW GRID STATIONS TRANCHE - II

Sub Project Number	Sub Project Name	Degree N°	Degree E°
1	DHA Rahber	31	74
2	Jubilee Town Housing Scheme	31	74
3	Central Park Housing Scheme	31	74
4	Press Club Housing Scheme Harbanspura (Shaffi Colony)	31	74
5	Doula Chuchak	31	73

14. COORDINATES OF GRID STATIONS AUGMENTATION WORKS TRANCHE – II

Sub Project Number	Sub Project Name	Degree N°	Degree E°
1	Allama Iqbal Town T-3	31	74
2	Said Pur T-3	31	74
3	Garden Town T-3	31	74
4	Fateh Garh T-3	31	74
5	Old Kot Lakhpat T-3	31	74
6	Rehman Park T-3	31	74
7	Shadman T-2	31	74
8	Wapda Town T-1	31	74
9	Badami Bagh T-2	31	74
10	Bhatti Gate T-2	31	74
11	Qartaba T-2	31	74
12	Manga Mandi	31	74

## **Inspection of Project Sites**

### **Findings / Observations**

15. Findings / Observations noted during the Site visits are briefed as under:
- Land for construction of five new grid stations has already been acquired by LESCO
  - Boundary Walls have been constructed at sites of new grid stations
  - There are no potential significant environmental impacts associated with the sub projects where no new land is acquired. There will be some environmental impacts during execution of new sub projects.
  - Suitable control measures will be required in project area to minimize / mitigate environmental impacts, disruption, and contamination of surroundings arising out due to construction material / chemical handling / storage and disposal of construction waste.
  - Neither permanent land acquisition, nor resettlement or property acquisition will be required for augmentation sub projects as augmentation will be executed within the boundary of existing grid station
  - No major / potential damages to water channels, land, construction nuisance / noise / air / waste water pollution will likely to be occurred in the sub project area.
  - LESCO has hired the laboratory to carry out analysis of environmental indicators (Air, Water & Noise). Reports of August 2015 are attached at F/A but end December test are not conducted yet.
  - Complaint Register is placed at active sites but no complaint has been recorded till date
  - Safety measures have been adopted but not upto the mark. Labor is reluctant to wear gloves in humid weather. Entry record is now maintained properly
  - Solid waste management plan is neither submitted to E&S Cell nor proper measures have been adopted regarding shortcoming pointed out by E&S Cell
  - Contractor has now started to conduct awareness session for labor on safety and environment.
  - Civil works are progressing at a low pace and timely completion of project is not apparently possible
  - Internal Compliance Reports are now submitted by contractor regularly.

## **Corrective Action Plans**

16. Civil work has been completed at 132 kV Doula Chuchak, Jubilee Town and DHA Rahber Grid Station and monitoring is being carried out fortnightly by E&S Cell and every single shortcoming regarding implementation of EMMP and observation are intimated to contractor for rectification.
17. Regular meetings have been conducted with contractor to resolve the issues for the implementation of EMMP

## **Consultation and Complaints**

18. Environmental Social Complaint Register in English & Urdu versions has already been sent to PD GSC to be placed on each active sub project site. So far, no affected person / household has logged any complaint in PMU / GSC Office. Regular public consultation has been carried out by E&S Cell.
19. A brochure to raise awareness in general public has been prepared and disseminated at project site for information.

## **20. Environmental Awareness & Trainings**

Several Environmental Training sessions are organized at each subproject site for implementation of Environmental Management Plan. Last two quarters awareness session was not conducted by M/s Pingao.

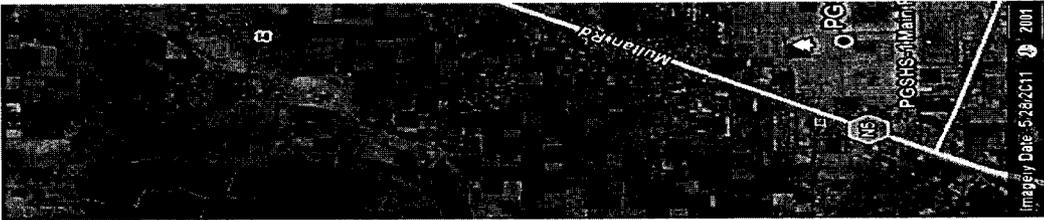
On Site briefing has been done by E&S Cell regularly during the site monitoring

## **21. Recommendations and Suggestions**

- ADB should include the detailed BOQ in the bidding documents to implement of EMMP / RP.
- Cost of EMMP should be clearly defined in the bidding document.
- Capacity Building of E&S Staff is suggested at regular intervals
- ADB should assist for the sustainability of E&S Cell and SOP Implementation for Environment and Social Safeguards in LESCO.

## **Annex I**

### **Location Maps of Project Sites**



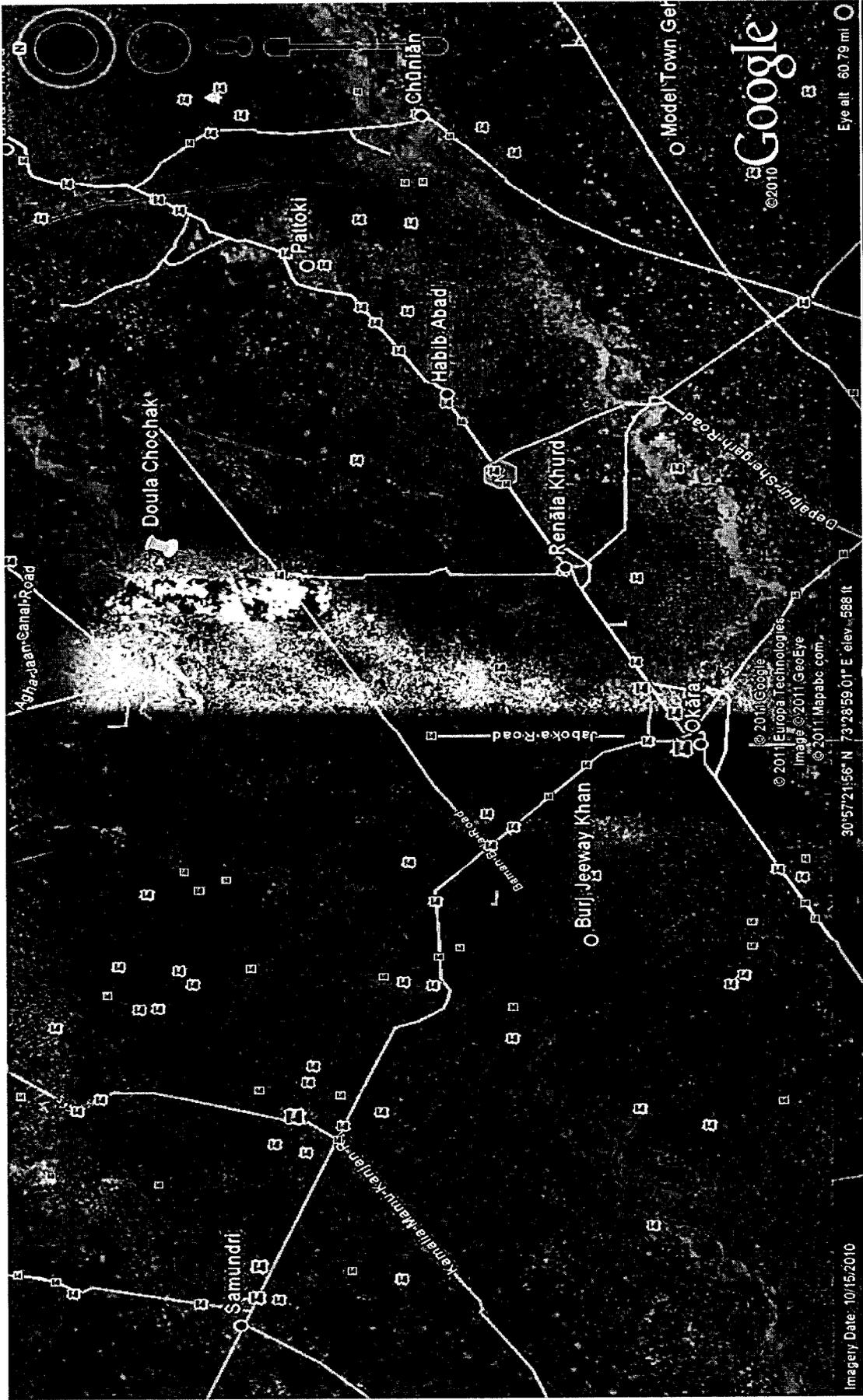
Location Map of DHA Rahbar Grid Station



Location Map of Central Park Grid Station



Location Map of Press Club Grid Station



Location Map of Daula Chuchak Grid Station

## **Annex II**

### **Implementation Report on EIA/IEE Mitigation Measures**

**IMPLEMENTATION REPORT ON EIA / IEE of Doula Chuchak  
Grid Station**

<b>Sr. No.</b>	<b>Reference</b>	<b>Requirement</b>	<b>Action till date</b>	<b>Remarks</b>
<b>1</b>	Compliance of EIA/IEE Report during execution of Civil Works of Sub Projects	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document	Done
<b>2</b>	Placement of Environment & Social Complaint Register (ESCR) at Project's Sites	ESCR should be placed before the start of construction activities	LESCO has placed the ESCR at Project's Sites	Done
<b>3</b>	Compliance of Environment Management and Monitoring Plan during execution of Civil Works	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document and contractor is bound for compliance	Done
<b>4</b>	Budget for EMMP Implementation	Allocation of Budget	BOQ is made the part of Bidding Document and Contractor is bound to quote the rates accordingly but excluded by ADB. Monitoring budget mentioned in the EIA/IEE has also been approved by competent authority and incorporated in the budget	Done
<b>5</b>	Training / Briefing of GSC Staff and Contractors	Design a Training Program for orientation on EMMP & LARP	A training program has been approved by CEO and ADB	Conducted on 24 – 12 – 2012 Next Trainings are Not conducted yet
<b>6</b>	Hiring of Laboratory Services	ADB desired to hire laboratory for analysis of environmental indicators	Hiring of laboratory has been finalized and competent authority has accorded the approval also. Tests results are attached	Done
<b>7</b>	Strengthening of Environment & Social Cell	Provision of Equipments, Vehicles, PPEs and necessary gadgets for monitoring of EMMP	Competent Authority accorded the approval and procurement is not done.	Not done yet

Sr. No.	Reference	Requirement	Action till date	Remarks
8	Institutionalization of E&S Cell	Establish as department Creation of post of Manager (E&S) and Environmental Inspectors and Social Enumerators to integrate the Environment & Social aspects in routine matters	Chief Executive Officer has accorded the approval to establish post of Manager (E&S) and sent it to LESCO Board of Directors for approval besides sanctioning the posts of lower staff for E&S Cell including Environmental Inspectors, Social enumerators and surveyors along with patwaris, LDC, Peon and guards PEPCO has approved and issued a SOP on Environment & Social Safeguards for Discos	Finalization Expected in near future. ADB support is sought in this regard and for approval of SOP

## IMPLEMENTATION REPORT ON EIA / IEE of DHA RAHBAR Grid Station

Sr. No.	Reference	Requirement	Action till date	Remarks
1	Compliance of EIA/IEE Report during execution of Civil Works of Sub Projects	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document	Done
2	Placement of Environment & Social Complaint Register (ESCR) at Project's Sites	ESCR should be placed before the start of construction activities	LESCO has placed the ESCR at Project's Sites	Done
3	Compliance of Environment Management and Monitoring Plan during execution of Civil Works	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document and contractor is bound for compliance	Done
4	Budget for EMMP Implementation	Allocation of Budget	BOQ is made the part of Bidding Document and Contractor is bound to quote the rates accordingly but excluded by ADB. Monitoring budget mentioned in the EIA/IEE has also been approved by competent authority and incorporated in the budget	Done
5	Training / Briefing of GSC Staff and Contractors	Design a Training Program for orientation on EMMP & LARP	A training program has been approved by CEO and ADB	Conducted on 24 – 12 – 2012 Next Trainings are Not conducted yet
6	Hiring of Laboratory Services	ADB desired to hire laboratory for analysis of environmental indicators	Hiring of laboratory has been finalized and competent authority has accorded the approval also. Tests results are attached	Done
7	Strengthening of Environment & Social Cell	Provision of Equipments, Vehicles, PPEs and necessary gadgets for monitoring of EMMP	Competent Authority accorded the approval and procurement is not done.	Not done yet

Sr. No.	Reference	Requirement	Action till date	Remarks
8	Institutionalization of E&S Cell	Establish as department Creation of post of Manager (E&S) and Environmental Inspectors and Social Enumerators to integrate the Environment & Social aspects in routine matters	Chief Executive Officer has accorded the approval to establish post of Manager (E&S) and sent it to LESCO Board of Directors for approval besides sanctioning the posts of lower staff for E&S Cell including Environmental Inspectors, Social enumerators and surveyors along with patwaris, LDC, Peon and guards PEPCO has approved and issued a SOP on Environment & Social Safeguards for Discos	Finalization Expected in near future. ADB support is sought in this regard and for approval of SOP

## IMPLEMENTATION REPORT ON EIA / IEE of Jubilee Town Grid Station

Sr. No.	Reference	Requirement	Action till date	Remarks
1	Compliance of EIA/IEE Report during execution of Civil Works of Sub Projects	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document	Done
2	Placement of Environment & Social Complaint Register (ESCR) at Project's Sites	ESCR should be placed before the start of construction activities	LESCO has placed the ESCR at Project's Sites	Done
3	Compliance of Environment Management and Monitoring Plan during execution of Civil Works	Inclusion of EMMP in the Bidding Document	EMMP has been made a part of Bidding Document and contractor is bound for compliance	Done
4	Budget for EMMP Implementation	Allocation of Budget	BOQ is made the part of Bidding Document and Contractor is bound to quote the rates accordingly but excluded by ADB. Monitoring budget mentioned in the EIA/IEE has also been approved by competent authority and incorporated in the budget	Done
5	Training / Briefing of GSC Staff and Contractors	Design a Training Program for orientation on EMMP & LARP	A training program has been approved by CEO and ADB	Conducted on 24 – 12 – 2012 Next Trainings are Not conducted yet
6	Hiring of Laboratory Services	ADB desired to hire laboratory for analysis of environmental indicators	Hiring of laboratory has been finalized and competent authority has accorded the approval also. Tests results are attached	Done
7	Strengthening of Environment & Social Cell	Provision of Equipments, Vehicles, PPEs and necessary gadgets for monitoring of EMMP	Competent Authority accorded the approval and procurement is not done.	Not done yet

Sr. No.	Reference	Requirement	Action till date	Remarks
8	Institutionalization of E&S Cell	Establish as department Creation of post of Manager (E&S) and Environmental Inspectors and Social Enumerators to integrate the Environment & Social aspects in routine matters	Chief Executive Officer has accorded the approval to establish post of Manager (E&S) and sent it to LESCO Board of Directors for approval besides sanctioning the posts of lower staff for E&S Cell including Environmental Inspectors, Social enumerators and surveyors along with patwaris, LDC, Peon and guards PEPCO has approved and issued a SOP on Environment & Social Safeguards for Discos	Finalization Expected in near future. ADB support is sought in this regard and for approval of SOP

## Implementation report on EIA / IEE Mitigation Requirements

Reference	Requirement	Action to date	Action Required/ Comment
	EIA/ IEE Reports in Bidding documents	EIA/ IEE Reports have been included/ made part of the Bidding DOC's	DONE
<b>Monitoring &amp; Management Plan during execution of Project Civil Work</b>	Inclusion of EMMP in Bidding documents	EMMP draft Documents have been included/ made part of the Bidding documents	DONE
<b>EMMP Implementation</b>	Allocation of budget by Contractor	Contractor(s) is bound to perform Environmental Management against the quoted amount in BOQ for Environmental Management Plan Implementation	DONE but BOQ should be detailed as prepared by DISCOs which was removed by ADB Procurement department and the contractors are reluctant to implement without detailed BOQ
<b>Hydrology And Drainage Aspects</b>	<ol style="list-style-type: none"> <li>1. Consideration of weather conditions when particular construction activities are undertaken. All works are being carried out taking into consideration of the climate conditions Improvement in coordination is required</li> <li>2. Limitations on excavation depths in use of recharge areas for material exploitation or spoil disposal.</li> <li>3. Use of landscaping as an integrated component of construction activity as an erosion control measure.</li> <li>4. Minimizing the removal of vegetative cover as much as possible and providing for its restoration where construction sites have been cleared of such areas.</li> </ol>	All works are being carried out taking into consideration of the climate conditions	Improvement in coordination is between contractor and E&S cell & GSC.

<p><b>Orientation for Contractor, and Workers</b></p>	<ol style="list-style-type: none"> <li>1. LESCO ESU environmental specialist to monitor and progress all environmental statutory and recommended obligations. Orientations have been carried out for contractor(s), workers and GSC officers/officials Improvement in coordination is required</li> <li>2 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.</li> <li>3. Agreement on critical areas to be considered and necessary mitigation measures, among all parties who are involved in project activities.</li> <li>4. Continuous progress review and refresher sessions to be followed.</li> </ol>	<p>Orientations have been carried out for contractor(s), workers and GSC officers/officials</p>	<p>Contractor should be bound to arrange awareness session at regular intervals.</p>
<p><b>Water quality</b></p>	<p>Compile temporary drainage management plan one month before commencement of works.</p> <ol style="list-style-type: none"> <li>1. Proper installation of temporary drainage and erosion control before works within 50m of water bodies.</li> <li>2. Proper maintenance and management construction of TD and EC measures, including training of operators and other workers to avoid pollution of water bodies by the considerate operation of construction machinery and equipment.</li> <li>3. Storage of lubricants, fuels and other hydrocarbons in self-contained dedicated enclosures &gt;50m away from water bodies.</li> <li>4. Proper disposal of solid waste from construction activities.</li> <li>5. Cover the construction material and spoil stockpiles with a suitable material to reduce material loss and sedimentation and avoid stockpiling near to water bodies.</li> <li>6. Topsoil stripped material shall not be stored where natural drainage will be disrupted.</li> <li>7. Borrow sites (if required) should not be close to sources of drinking water.</li> </ol>	<p>Necessary actions are being carried out and water quality test have been performed</p>	<p>Contractor and GSC should be bound to implement.</p>

<p><b>Air quality</b></p>	<p><b>CONTROL ALL DUSTY MATERIALS AT SOURCE.</b></p> <ol style="list-style-type: none"> <li>1. 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).</li> <li>2. Stockpiled soil and sand shall be slightly wetted before loading, particularly in windy conditions.</li> <li>3. Fuel-efficient and well-maintained haulage trucks shall be employed to minimize exhaust emissions.</li> <li>4. 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.</li> <li>5. To plan to minimize the dust within the vicinity of orchards and fruit farms.</li> <li>6. Spraying of bare areas with water.</li> <li>7. Concrete plants. to be controlled in line with statutory requirements should not be close to sensitive receptors.</li> </ol>	<p>Contractor(s) have been informed to hire authorized LAB to carry out air quality tests, so far only one test report has been provided by contractors. Measures related to avoid deteriorations of air quality are being carried out by sprinkling of water, fuel efficient vehicles etc.</p>	<p>Contractor &amp; GSC are bound.</p>
<p><b>Ground Vibration</b></p>	<ol style="list-style-type: none"> <li>1. Review requirements for piling and use of powered mechanical equipment within 100m of SRs.</li> <li>2. Review conditions of buildings and conduct public consultation with SRs to establish less sensitive time for works involving piling and schedule works accordingly.</li> <li>3. Non-percussive piling methods to be used wherever practicable.</li> <li>4. Percussive piling shall be conducted in daylight hours.</li> <li>5. Hammer- type percussive pile driving operations shall not be allowed at night time.</li> </ol>	<p>New grid stations are located away from local communities. Access roads are available for transport and all operations are being carried out in day light hours.</p>	<p>Contractor/GSC should coordinate with E&amp;S cell and inform well before time for any issue.</p>

<p><b>Noise</b></p>	<ol style="list-style-type: none"> <li>1. Review requirements for use of powered mechanical equipment within 100m of</li> <li>2. Conduct public consultation with SRs to establish less sensitive time for works and schedule works accordingly.</li> <li>3. 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.</li> <li>4. Heavy equipment shall be operated only in daylight hours.</li> <li>5. Construction equipment, which generates excessive noise, shall be enclosed or fitted with effective silencing apparatus to minimize noise.</li> <li>6. Well-maintained haulage trucks will be used with speed controls.</li> <li>7. Contractor shall take adequate measures to minimize noise nuisance in the vicinity of construction sites by way of adopting available acoustic methods.</li> </ol>	<p>Necessary actions are being carried out and Contractor have arranged noise measurement equipment for monitoring</p>
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<p><b>Soil Erosion / Surface Run-off</b></p>	<p><b>SCHEDULE WORKS IN SENSITIVE AREAS (e.g. NEAR RIVERS) FOR DRY SEASON</b></p> <ol style="list-style-type: none"> <li>1. 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).</li> <li>2. Installation of TD and EC before works construction within 50m of water bodies.</li> <li>3. Clearing of green surface cover to be minimized during site preparation.</li> <li>4. Meaningful water quality monitoring up and downstream at any tower site during construction within a river or stream bed. Rapid reporting and feedback to CSC.</li> <li>5. Back-fill should be compacted properly in accordance with LESCO design standards and graded to original contours where possible.</li> <li>6. Cut areas should be treated against flow acceleration while filled areas should be carefully designed to avoid improper drainage.</li> <li>7. Stockpiles should not be formed within such distances behind excavated or natural slopes that would reduce the stability of the slopes or cause slippage.</li> <li>8. Measures shall be taken to prevent ponds of surface water and scouring of slopes. Newly eroded channels shall be backfilled and restored to natural contours.</li> <li>9. 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 but CSC after consulting with concerned authorities.</li> <li>10. Replanting trees to be done before the site is vacated and handed back to MEPCO with appropriate trees (other vegetation cover as appropriate) to ensure interception of rainwater and the deceleration of surface run-off.</li> </ol>	<p>Being carried out in coordination with GSC &amp; ESC PMU</p>	<p>Contractor/GSC should provide schedule to E&amp;S cell before start of construction activities and coordinate.</p>
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<p><b>Exploitation, Handling, Transportation and Storage of Construction materials</b></p>	<p>(Consider also for future trances if civil works)</p> <ol style="list-style-type: none"> <li>1. Use only EPA licensed sites for raw materials in order to minimize adverse environmental impacts.</li> <li>2. 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:             <ol style="list-style-type: none"> <li>i) Conditions that apply for selecting sites for material exploitation.</li> <li>(ii) Conditions that apply to timing and use of roads for material transport.</li> <li>(iii) Conditions that apply for maintenance of vehicles used in material transport or construction.</li> <li>(iv) Conditions that apply for selection of sites for material storage.</li> <li>(v) Conditions that apply for aggregate production.</li> <li>(vi) Conditions that apply for handling hazardous or dangerous materials such as oil, lubricants and toxic chemicals.</li> </ol> </li> </ol>	<p>Sufficient space available at existing and new grid stations for storage of materials which are away from local communities.</p>	<p>Contractor/GSC should follow these conditions in consultation of W&amp;S cell.</p>
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<p><b>Construction Waste Disposal</b></p>	<ol style="list-style-type: none"> <li>1. Waste management plan to be submitted to the GSC and approved by LESCO ESU one month prior to starting of works. WMP shall estimate the amounts and types of construction waste to be generated by the project.</li> <li>2. Investigating whether the waste can be reused in the project or by other interested parties without any residual environmental impact.</li> <li>3 Identifying potential safe disposal sites close to the project, or those designated sites in the contract.</li> <li>4 Investigating the environmental conditions of the disposal sites and recommendation of most suitable and safest sites.</li> <li>5. 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.</li> <li>6. Used oil and lubricants shall be recovered and reused or removed from the site in full compliance with the national and local regulations.</li> <li>7. Oily wastes must not be burned. Disposal location to be agreed with local authorities/EPA.</li> <li>8. Waste breaker insulating oil to be recycled, reconditioned, or reused at DISCO's facility.</li> <li>9. Machinery should be properly maintained to minimize oil spill during the construction.</li> <li>10. Machinery should be maintained in a dedicated area over drip trays to avoid soil contamination from residual oil spill during maintenance.</li> <li>11 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.</li> </ol>	<p>Materials are being re-used where necessary and lubricants which are to be used in Power Transformers are already being recycle at Power Transformer Reclamation Workshop of LESCO as and when required. For these subproject, new materials shall be used.</p>	<p>Improvement in coordination is required</p>
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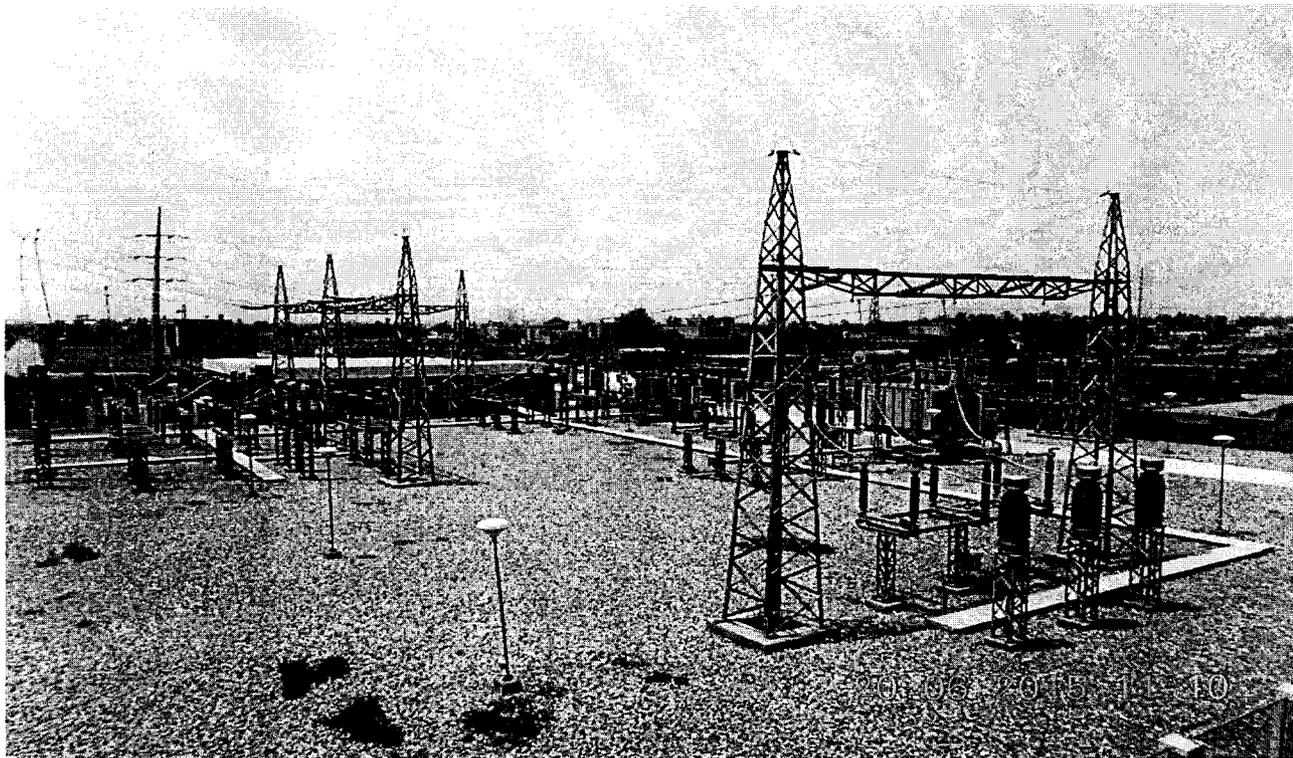
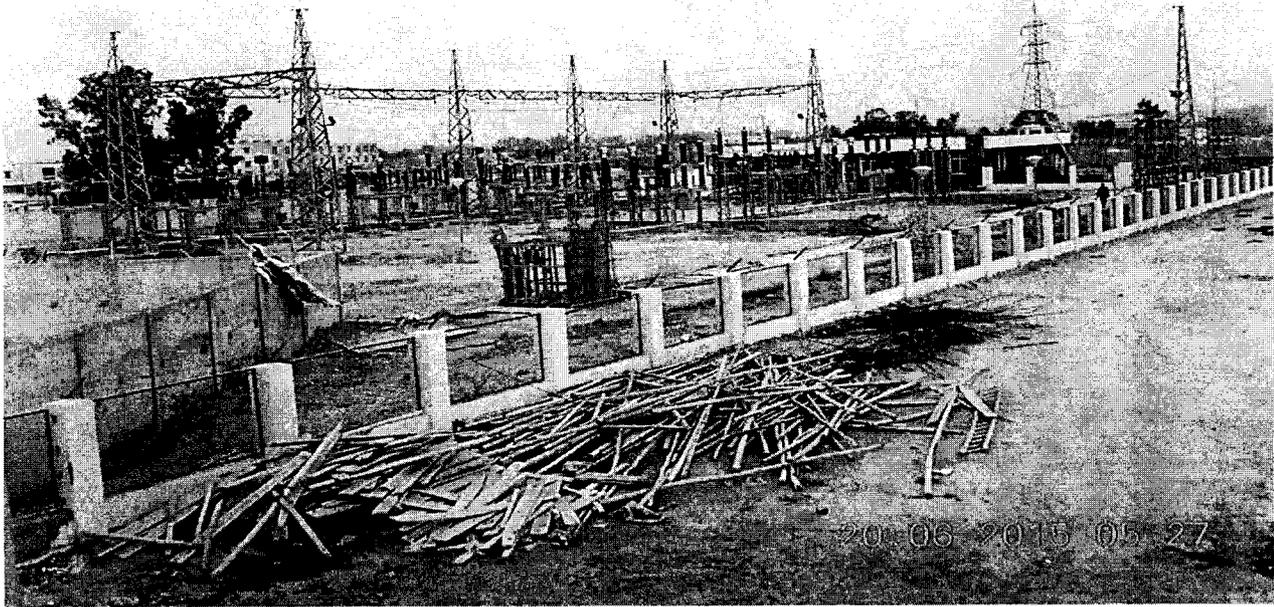
<p><b>Work Camp Operation and Location</b></p>	<ol style="list-style-type: none"> <li>1. Identify location of work camps in consultation with local authorities. The location shall be subject to approval by the LESCO. If possible, camps shall not be located near settlements or near drinking water supply intakes.</li> <li>2. Cutting of trees shall not be permitted and removal of vegetation shall be minimized.</li> <li>3. 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.</li> <li>4. 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.</li> <li>5. The Contractor shall organize and maintain a waste separation, collection and transport system.</li> <li>6. 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.</li> <li>7. At the conclusion of the project, all debris and waste shall be removed. All temporary structures, including office buildings, shelters and toilets shall be removed.</li> <li>8 Exposed areas shall be planted with suitable vegetation.</li> <li>9.LESCO and Construction Supervising Consultant shall inspect and report that the camp has been vacated and restored to pre-project conditions.</li> </ol>	<p>Work Camps are located within the boundary of subprojects sites</p>	<p>Contractor/GSC should submit the plan to E&amp;S cell.</p>
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<p><b>Loss of Trees and Vegetation Cover of the Areas for Towers and Temporary Work-space</b></p>	<ol style="list-style-type: none"> <li>1. Tree location and condition survey to be completed one month before tender.</li> <li>2. 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.</li> <li>3. 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.</li> <li>4. At completion all debris and waste shall be removed and not burned.</li> <li>5. 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.</li> <li>6. 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.</li> <li>7. 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.</li> <li>8. Landscaping and road verges to be re-installed on completion.</li> <li>9. Compensatory planting of trees/shrubs/ornamental plants (at a rate of 3:1) in line with best international practice.</li> <li>10. After work completion all temporary structures, including office buildings, shelters and toilets shall be removed.</li> </ol>	<p>Contractor should ensure to follow these measures.</p>
<p>All necessary arrangements have been made while designing the route of transmission lines. Contractor(s) is directed for restoration of sites of towers and ROW. Compensation for AHs are being prepared.</p>		

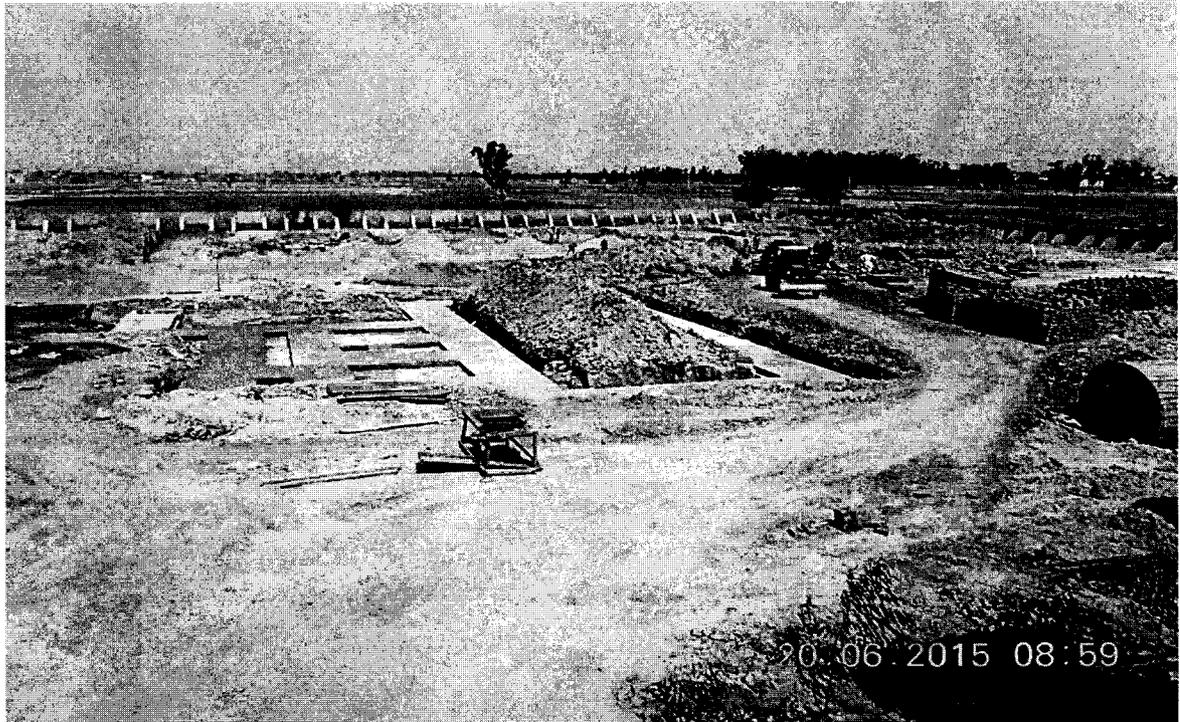
<p><b>Safety Precautions for the Workers</b></p>	<p>1. Providing induction safety training for all staff adequate warning signs in health and safety matters, and require the workers to use the provided safety equipment. 2. Providing workers with skull guard or hard hat and hand toe shoes.</p>	<p>Contractor have been directed to ensure the use of PPEs for workers and all the staff.</p>	<p>Strict compliance is required</p>
<p><b>Traffic Condition</b></p>	<p>1. Submit temporary haul and access routes plan one month prior to start of works. 2. Routes in vicinity of schools and hospitals to be avoided.</p>	<p>Paved road are available for transportation.</p>	<p>Improvement in coordination with E&amp;S cell is required</p>
<p><b>Social Impacts</b></p>	<p>1. Potential for spread of vector borne and communicable diseases from labour camps shall be avoided (worker awareness orientation and appropriate sanitation should be maintained). 2. Complaints of the people on construction nuisance / damage close to ROW to be considered and responded to promptly. 3. Contractor should make alternative arrangements to avoid local community impacts.</p>	<p>Public Consultations and Orientations regarding STDs and other diseases are being done regularly</p>	<p>Improvement in coordination with E&amp;S cell is required</p>
<p><b>Institutional Strengthening and Capacity Building</b></p>	<p>Capacity building activities were taken by Environmental Officer in Tranche 1. Environmental Management Unit (EMU) was setup within LESCO under Chief Engineer (Dev) in Tranche 1. Development of strengthening plan for the EMU should be taken up with resources.</p>	<p>Continuous process and trainings plan has been implemented.</p>	<p>More training need to be imparted to all concerned. Vacant seats should be fulfilled with appropriate staff and ADB should define the carrier path and support for sustainability of this cell.</p>

**Annex IV**

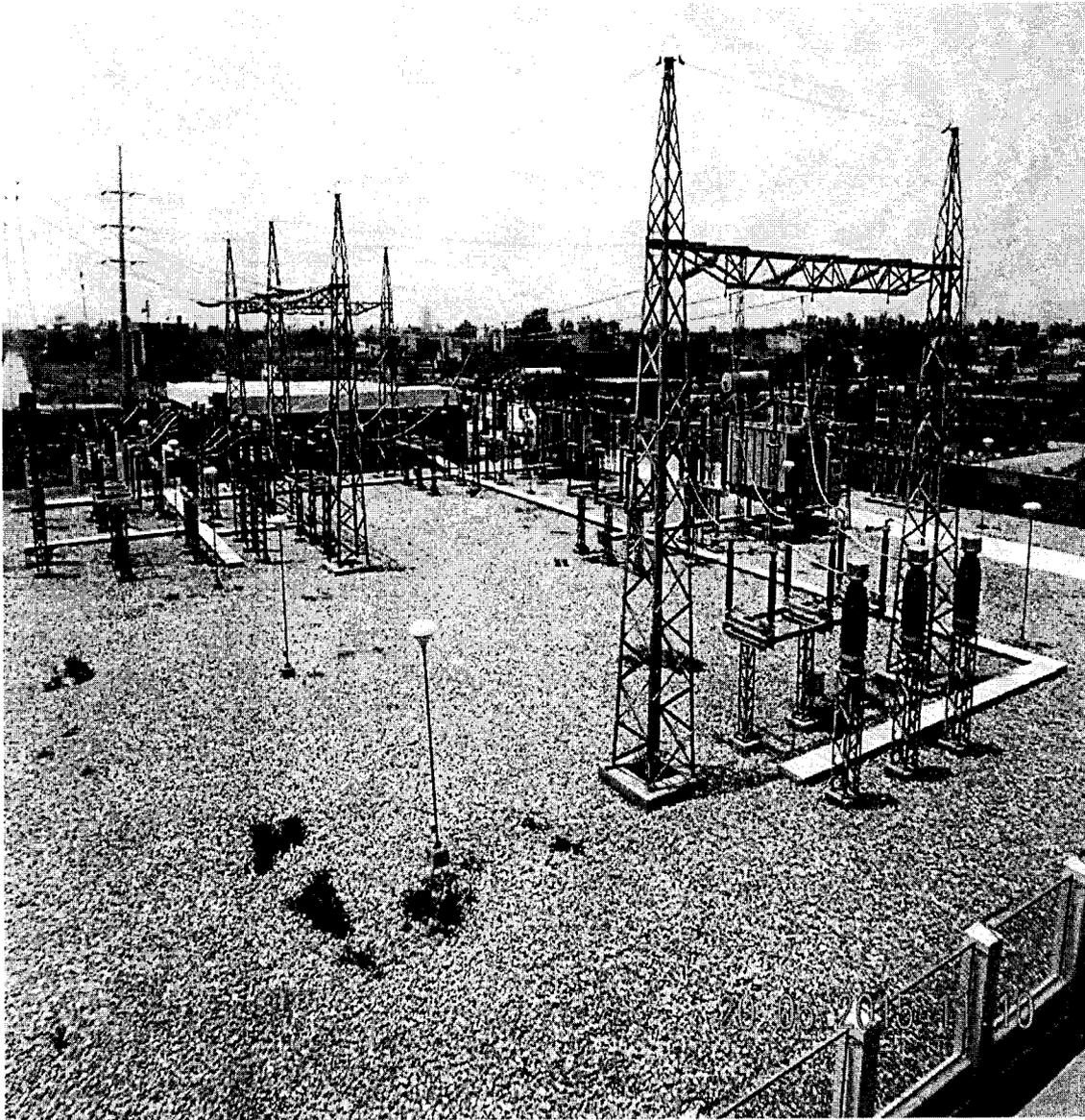
**PICTURES**



**132 KV Grid station DHA Rahber**



**132 KV Grid Station Central Park**



**DHA RAHBER GRID STATION**