

Environment Monitoring Report

Bi-annual Environment Monitoring Report
August 2016

PAK: MFF – Power Transmission Enhancement
Investment Program (Tranche 3)

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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L2972 PDEIP: BAEMRs (Jan-Jun 2016) of GEPCO, HESCO, IESCO, LESCO approved for disclosure
Safia Shafiq

to:

Liaqat Ali

01/09/2016 12:44 PM

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6 Attachments



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L2972 MEPCO BAEMR (Jan-Jun 2016).docx

Dear Liaqat Sb.,

The attached BAEMRs (Jan-Jun 2016) of GEPCO, HESCO, IESCO and LESCO under L2972 PDEIP are approved for disclosure. Please have them uploaded on ADB website and share the weblinks with me.

Thanks and regards,

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**BI – ANNUAL ENVIRONMENTAL
MONITORING REPORT (BAEMR)**



Project Number: 2972 – PK, Tranche – III
{January – June, 2016}

Islamic Republic of Pakistan

Power Distribution Enhancement Investment
Project (PDEIP) – Tranche – III
Multi – Tranche Financing Facility (MFF)

Financed by the ASIAN DEVELOPMENT BANK

Prepared By:

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For Islamabad Electric Supply Company (IESCO),
Pakistan Electric Power Company (PEPCO).

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

Asian Development Bank

ABBREVIATIONS

ADB	Asian Development Bank
AJ&K	Azad Jammu & Kashmir
CED	Chief Engineer Development
E&SS	Environmental and Social Safeguard
EA	Executing Agency
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
GOP	Government of Pakistan
GSC	Grid Station Construction
GS	Grid Substation
IA	Implementing Agency
IEE	Initial Environmental Examination
IESCO	Islamabad Electric Supply Company
kV	Kilo – Volt
MOW&P	Ministry of Water and Power
MFF	Multi – Tranche Financing Facility
NEQs	National Environmental Quality Standards
NOC	No Objection Certificate
PD	Project Director
PDEIP	Power Distribution Enhancement Investment Program / Project
PEPA	Pakistan Environmental Protection Act
PEPCO	Pakistan Electric Power Company
MU	Management Unit
TL	Transmission Line

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Part I INTRODUCTION

1.1 IESCO

1. Islamabad Electric Supply Company Ltd. (IESCO) is a public utility company, having more than 02 Million consumers and provides service to 04 Nos. Northern Districts of the Punjab Province (Rawalpindi, Attock, Jhelum and Chakwal); Capital Territory (Islamabad); and Southern parts of Azad Jammu & Kashmir (AJK). IESCO jurisdiction map is placed at **Annex - A**.

1.2 Directorate of CE (Development) / Management Unit (MU)

2. To carry out and handle investment projects IESCO has established Management Unit (MU) under the supervision of Chief Engineer (Development). The MU comprises of four sections.

- i) Planning Scheduling & Coordination,
- ii) Procurement,
- iii) Project Finance, and;
- iv) Environment & Social Safeguard.

3. The organizational structure of MU – IESCO and main responsibilities of each section are given in **Annex - B**.

1.3 Environmental & Social Safeguard Section – Management Unit

4. The Environmental & Social Safeguard (E&SS) Section of MU, IESCO provides an overall supervision and advisory services during the Pre - Construction phase, Construction phase & Post – Construction phase of the project. The unit also assists and advises GSC Directorate, Construction Directorate and other IESCO departments on environmental and social matters overall. Presently, the E&SS Section has one Environmental and one Social Impact expert under the supervision of a Deputy Manager Environmental and Social Safeguard (E&SS). Organizational structure of E&SS – MU IESCO is attached as below.

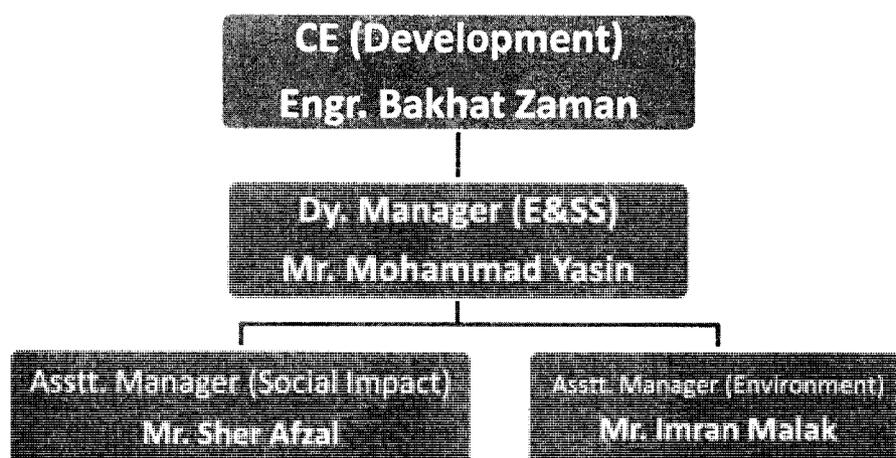


Figure 01: Management Structure of E&SS – MU – IESCO.

1.4 Power Distribution Enhancement Investment Program (PDEIP) – Tranche – III.

5. Program basic information is provided in **Table 1**.

Table 1: PROGRAM BASIC INFORMATION.

The Program:	Power Distribution Enhancement Investment Program (PDEIP). Multi – Tranche Financing Facility (MFF).
Sub – Project:	Tranche – III subproject.
Sponsoring Agency:	Government of Pakistan, Ministry of Water & Power (MoW&P).
Executing Agency:	Pakistan Electric Power Company (PEPCO).
Implement Agency:	Islamabad Electric Supply Company (IESCO).
Type of Financing:	Loan amount US \$ 24.55 Million. Loan No. 2972 – PK; Tranche – III Subproject.
Loan Signing Date:	September 09, 2013.
Loan Effectiveness Date:	December 10, 2013.
Closing Date:	January 31, 2018.
Last ADB Review Mission Date:	May 22 – June 03, 2016. (May 31, 2016 at IESCO Head Office, Islamabad).

1.5 Scope of the Work – Tranche-III Sub-projects

6. IESCO Tranche – III subproject includes 03 Nos. New Grid Station, 13 Nos. Extensions / Augmentations of Grid stations and 08 Nos. Transmission Lines. The detail scope of work of Tranche – III subproject is attached as **Annex – C**.

1.6 Present Status of the Project:

7. The civil works of Tranche-III works have been awarded for the construction of transmission lines and grid stations. The detail of works awarded is tabulated below, whereas the physical progress charts are given at **Annex-D**.

Pack age.	Lot No.	Description of Work.	Length of T/L (KM).	Nos. of Locations.	Awarded to.	Contract Signed Date.	Civil Work (% age).
03 Nos. 132 kV Grid Stations (Turnkey Basis).							
ICB – 01.	01	i) Chakri Road Rawalpindi	-	1	M/s Sinosteel China.	October 12, 2015.	No physical activities started yet.
		ii) Sangani – II, Islamabad.	-	1			
		iii) Barakahu, Islamabad.	-	1			
05 Nos. 132 kV Transmission Lines (Turnkey Basis) .							
ICB – 01.	02	i) F/F Chakri Road G/S.	12.445	56	M/s ICC Pvt Ltd. Lahore.	March03, 2014.	38%
		ii) F/F Sangani – II G/S.	-	-			No physical activities started yet.
		iii) F/F Barakahu G/S.	-	-			52%
		iv) KTM – Chakri Road.	10.533	55			80%
		v) Zero Point – Sangani.	22.500	66			
03 Nos. 132 kV Transmission Lines (By IESCO) .							
		i) Burhan – New Wah.	9.66	33	Work executed by IESCO through GSC Directorate IESCO.		50%
		ii) Rawat – Sowan.	9.450	23			100%
		iii) In – Out for Chakri Road Grid Station.	15.750	-			100%

1.7 Relationships with Contractors

8. In this period (Jan-June 2016) orientation sessions for M/s ICC Pvt. Ltd. were arranged on 03-06-2016 and 30-06-2016. M/s SMEC Lahore, also visited M/s ICC office and met with ICC officials & subcontractor representatives on 08-06-2016 to discuss Environment and Social safeguard issues.

9. The meetings were attending by the IESCO's E&SS Staff, Officials of M/s SMEC, Lahore, Representatives of M/s ICC Private Limited, Lahore and representatives of sub-contractors engaged by M/s ICC for the subject contract. The details of participants are as follow;

Name of Participants.	Designation.	Organization	
Meeting dated 30.06.2016.			
Mr. Mohammad Yasin.	D.M (E&SS).	E&SS – MU, IESCO.	
Mr. Sher Afzal	A.M (Social Impact)		
Mr. Muhammad Afzal.	Project Manager.	M/s ICC Private Limited, Lahore.	
Mr. Sajid Mehmood.	Principal Manager.		
Mr. Muhmmad Hussain	Environmentalist.		
Meeting dated 08.06.2016.			
Mr. Mohammad Yasin.	D.M (E&SS).	E&SS – MU, IESCO.	
Mr. Imran Malak.	A.M (Environment).		
Mr. Sher Afzal	A.M (Social Impact)		
Ms. Ummul Baneen.	Environmentalist.	M/s SMEC, Lahore (The Facility Consultant).	
Mr. Muazzam Mukhtar	Sociologist.		
Mr. Muhammad Afzal.	Project Manager.	M/s ICC Private Limited, Lahore.	
Mr. Sajid Mehmood.	Principal Manager.		
Mr. Muhmmad Hussain	Environmentalist / HSE Officer.		
Mr. Muhammad Asif.	Site Engineer.		
Mr. Muhammad Amir.	Site Representative.	M/s G.L.C.C.	Sub-contractors engaged by M/s ICC.
Mr. Abdul Rauf.	Site Representative.	M/s U.D.A.S.	
Mr. Ahsan Ahmed.	Site Representative.	M/s A.A.	
Mr. Muhammad Akram.	Site Representative.	M/s DEVCO.	
Meeting dated 03.06.2016.			
Mr. Mohammad Yasin.	D.M (E&SS).	E&SS – MU, IESCO.	
Mr. Imran Malak.	A.M (Environment).		
Mr. Sher Afzal	A.M (Social Impact)		
Mr. Sajid Mehmood.	Principal Manager.	M/s ICC Private Limited, Lahore.	
Mr. Muhmmad Hussain	Environmentalist / HSE Officer.		

10. The detail of Environmental & Social Monitors (ESM)/HSE Officers of the contractors' responsible for implementation and monitoring of EMP in the field is as below:

No.	Package	Lot No.	Name of Contractor.	Name of Person.	Designation.
03 Nos. 132 kV Grid Stations					
01.	ICB - 01	I	M/s Sinosteel China.	Not on board.	
05 Nos. 132 kV Transmission Lines.					
02.	ICB - 01.	II	M/s ICC Pvt. Ltd. Lahore.	Mr. Muhmmad Hussain	Environmentalist / HSE.

Part II ENVIRONMENTAL MONITORING

2.1 Monitoring.

11. Environmental Monitoring of the projects is being carried out by the contractors under the supervision of Environmental and Social Safeguard (E&SS) section PMU. IESCO identified the locations and approved the Testing schedule of M/S ICC (Pvt) Ltd for the Month of May – June, 2016. The test reports of this period have not been received. M/s ICC, Lahore submitted the Water Test Reports, Noise Measurement Data, Water Consumption Detail and Monthly Monitoring Checklists for the period May, 2015 to April, 2016. Summary of Monitoring is attached at **Annex – E**.

2.2 Monitoring Status:

Description of Indicator.	Remarks.
Summarizes the previous six months monitoring data and provide explanations of any instances where environmental standards or guidelines are exceeded.	The reports submitted by the contractor's indicate that environmental parameters meet the NEQs. Summary of Monitoring is attached at Annex – E .
<ul style="list-style-type: none"> • Noise and Vibration. • Water Quality. • Air Quality. • Flora and Fauna Monitoring. 	Monitoring of Environmental parameters is attached at Annex – F .

The analysis of water supplied to M/S ICC office (Water taken from filtration plant) showed presence of biological contamination. Hence they were informed to change the water source. The contractor is now supplying water from another filtration plant, after due verification that it is safe for drinking as evident from subsequent analysis of the said water sample.

Part III ENVIRONMENTAL MANAGEMENT

3.1 Compliance Status with Statutory Requirements

12. The loan agreement of the project requires the Implementing Agency (IA) to implement the project in compliance with statutory / regulatory requirements of the country and requirements of ADB Guidelines (May 2003). The detail of environmental & social compliance regarding statutory / regulatory requirements in accordance to ADB & National Law is tabulated below.

No.	Regulatory Requirements.	Status of Compliance.
01.	Preparation of Environmental Assessment Reports.	EIA Prepared.
02.	Clearance from ADB.	Clearance given by ADB.
03.	Clearance / Obtaining of No Objection Certificate (NOC) from the Environmental Protection Agency (EPA).	No Objection Certificate (NOC) / Clearance issued by Punjab Environmental Protection Agency (Punjab – EPA) on June 30, 2014.
		No Objection Certificate (NOC) / Clearance issued by Pakistan Environmental Protection Agency (Pak – EPA) Islamabad on April 26, 2016.

3.2 EMP as a part of Bid Documents.

13. Environmental Management & Mitigation Plan (EMMP) & Monitoring Plan of the approved EIA Reports have been made part of all the bidding documents of civil works of Tranche – III sub projects.

3.3 Clauses in the Bid Documents.

14. Sufficient clauses have been included in the bid documents and the Contractor is bound to comply with and carry out all the monitoring and mitigation measures as set in the Environmental and Social Assessment reports and EMP. Detail of all the clauses included in the bid documents are given at **Annex – G**.

3.4 Other Monitoring Indicators.

Description of Indicator.	Remarks.
<p>EMS, SSEMP and work plans. Report on delivery of documents, required amendments etc.</p>	<ul style="list-style-type: none"> • EMP prepared. • Addendum to the EIA report prepared for relocated Bara Kahu Grid Station site and the same was submitted to Pak –EPA, PEPCO & ADB. • IESCO approved the monitoring plan of M/S ICC for analysis of environmental parameters. • Internal monitoring is being carried out on regular basis to check the Implementation of EMP, status of implementation of EMP is attached as Annex – H. • SSEMP will be prepared for the grid station sites in consultation with M/S SMEC before the start of civil works.
<p>Non-compliance notices – summarizes the details on the number of notices given out and the issues covered. Summaries the ranking of issues.</p>	<ul style="list-style-type: none"> • The contractor M/S ICC has now appointed the HSE officer having relevant qualification.
<p>Corrective action plans - report on timeliness of preparation and completion.</p>	<p>Nil.</p>
<p>Consultation and complaints – report on any consultation undertaken and list any complaints received.</p>	<ul style="list-style-type: none"> • Consultation carried out during preparation of Environmental Assessment reports. • Complaint Registers have been placed at all work sites / camp sites, PMU & SDO offices concerned.

3.5 Compliance Status with Aid Memoire / Agreed Actions therein.

15. The compliance status with ADB Aid Memoire (22 May – 3 June, 2016) with regard to agreed actions during the previous review mission are as under;

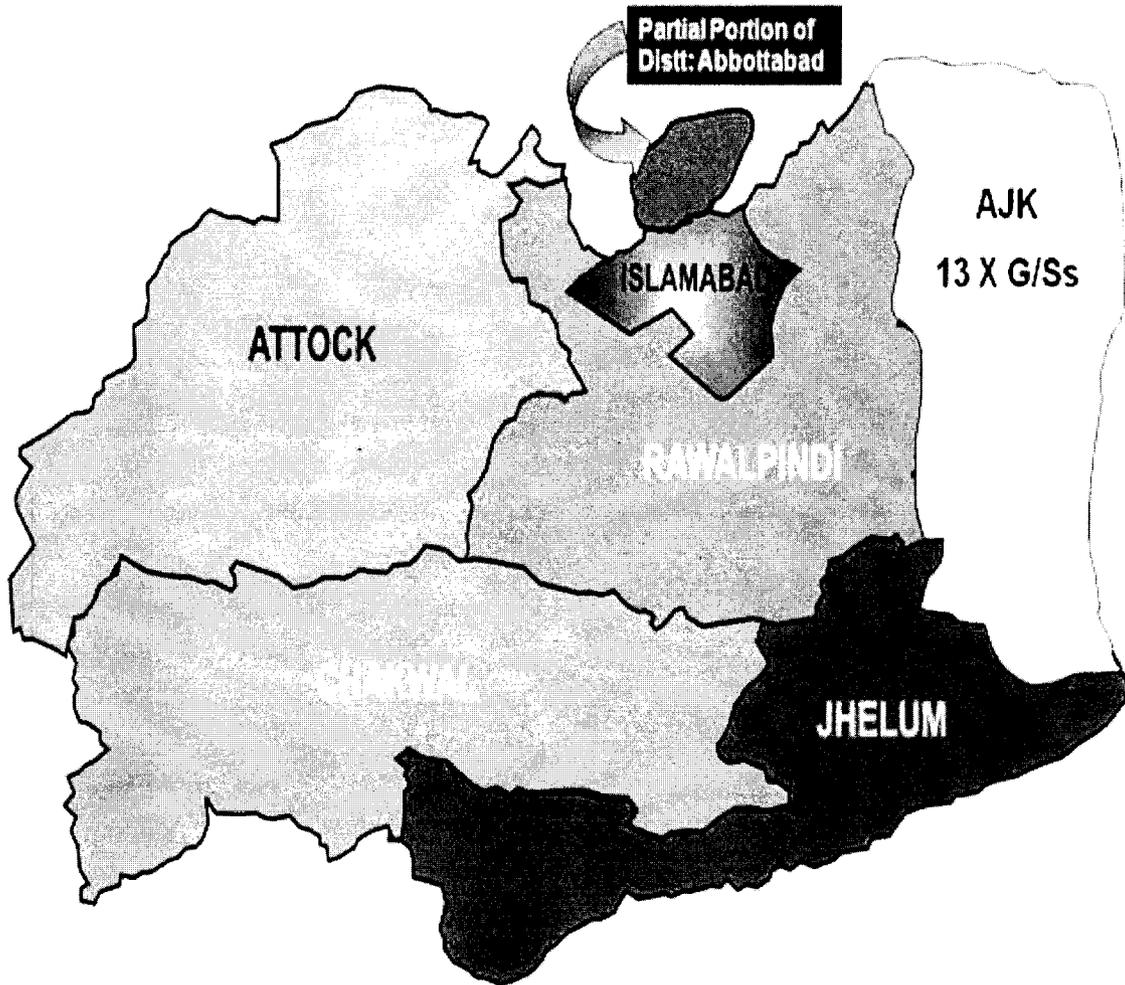
No.	Agreed Action.	Status of Compliance.
It was agreed that:		
d)	Monthly tripartite coordination meetings between the visited DISCOs, the supervision consultant and ADB safeguard consultant will be conducted.	Compliance being made.
e)	DISCOs will submit site-specific EMPs for all new grid stations to ADB for review at least 10 days before the contractor is given access to the site and;	Site specific EMP will be prepared for all new Grid Stations and will be submitted to ADB for review before the commencement of work at site.
f)	SMEC and the DISCOs will review all past and present grievances to ensure that there are no pending issues and facilitate their resolution.	Presently no complain with regard to environmental issues is pending. Compliance being made.

Part IV PROJECT PICTURES

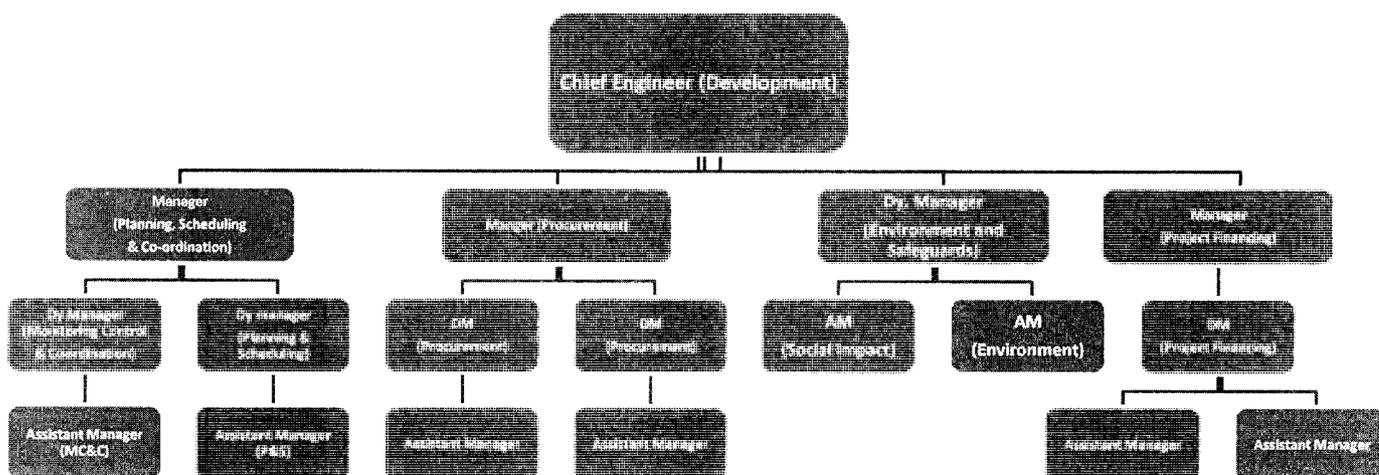
16. Project pictures are attached as **Annex -I**.

Annex - A.

IESCO JURISDICTION MAP



ORGANIZATIONAL STRUCTURE OF PMU - IESCO



Annex - C.**DETAIL SCOPE OF WORK OF TRANCHE - III SUBPROJECT**

No.	Project Component	
01.	New Grid Station.	03 Nos.
	i. 132 kV Bara Kahu Grid Station.	
	ii. 132 kV Chakri Road Grid Station.	
	iii. 132 kV Sangani – II Grid Station.	
02.	Extension of Power Transformers	04Nos.
	i. 132 kV Rajjar Grid Station.	
	ii. 132 kV Fateh Jang Grid Station.	
	iii. 132 kV F – 11 Grid Station.	
	iv. 132 kV Sowan Grid Station.	
03.	Augmentation of Power Transformers	09 Nos.
	i. 132 kV Kamalabad Grid Station.	
	ii. 132 kV KTM Grid Station.	
	iii. 132 kV New Wah Grid Station.	
	iv. 132 kV Jhelum Grid Station.	
	v. 132 kV Rawalpindi Cantt (REPCO) Grid Station.	
	vi. 132 kV Zero Point Grid Station.	
	vii. 132 kV I – 10 Grid Station.	
	viii. 132 kV I – 8 Grid Station.	
	ix. 132 kV Chaklala Grid Station.	
04.	Transmission Lines (New)	04 Nos.
	i. 132 kV Feed for Bara Kahu Grid Station Transmission Line.	
	ii. 132 kV Feed for Chakri Road Grid Station Transmission Line.	
	iii. 132 kV Feed for Sangjani –II Grid Station Transmission Line.	
	iv. 132 kV KTM – Chakri Road Transmission Line.	
05.	Transmission Lines (Remodelling / Replacement)	04 No.
	i. 132 kV Sangjani – Zero Point Transmission Line.	
	ii. 132 kV Burhan – New Wah Transmission Line.	
	iii. 132 kV New Rewat – Sowan Transmission Line.	
	iv. 132 kV in – out Construction at Chakri Grid Station Transmission Line.	

Annex - D.

PROJECT PROGRESSIVE PROGRESS STATUS

▪ 132 kV Feed for Chakri Road Grid Station Transmission Line.

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		67%		21%		88%	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under report		Total	
		Percentage		Percentage		Percentage	
		100%		0%		100%	
03.	Foundations Total No. of Towers = 56	Progress till Previous Period		Concreted during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		14	25%	19	27.54%	33	52.54%
04.	Erection Total No. of Tower =56	Progress till Previous Period		Erected during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		0	0%	0	0%	0	0%
05.	Stringing Total Length of Line = 12.445 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km	%	Km	%
		0	0%	0	0%	0	0%

▪ **132 kV KTM – Chakri Road Transmission Line.**

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		79%		0%		79%	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
03.	Foundations Total No. of Towers = 55	Progress till Previous Period		Concreted during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		34	61.82%	0	0%	34	61.82%
04.	Erection Total No. of Tower = 55	Progress till Previous Period		Erected during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		14	25.45%	03	5.45%	17	30.90%
05.	Stringing Total Length of Line = 10.533 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km.	%	Km.	%
		0	0%	0	0%	0	0%

▪ **132 kV Zero Point – Sangjani Transmission Line.**

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		86.36%		05.33%		91.69%	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
03.	Foundations Total No. of Towers = 66	Progress till Previous Period		Concreted during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		41	62.12%	12	13.69%	53	75.71%
04.	Erection Total No. of Tower = 66	Progress till Previous Period		Erected during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		20	30.30%	26	36.41%	46	65.71%
05.	Stringing Total Length of Line = 22.500 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km.	%	Km.	%
		7.20	32%	9.747	43.32%	16.947	75.32%

▪ **132 kV Burhan – New Wah Transmission Line.**

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		100%		0%		100%	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
03.	Foundations Total No. of Towers = 33	Progress till Previous Period		Concreted during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		10	30.30%	12	36.37%	22	66.67%
04.	Erection Total No. of Tower = 33	Progress till Previous Period		Erected during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		10	30.30%	12	36.37%	22	66.67%
05.	Stringing Total Length of Line = 9.66 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km.	%	Km.	%
		2	20.70%	3	31.05%	05	51.75%

▪ **132 kV Rawat - Sowan Transmission Line.**

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		100%		0%		100%	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
03.	Foundations Total No. of Towers = 23	Progress till Previous Period		Concreted during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		23	100%	0	0%	23	100%
04.	Erection Total No. of Tower = 23	Progress till Previous Period		Erected during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Nos.	%	Nos.	%	Nos.	%
		23	100%	0	0%	23	100%
05.	Stringing Total Length of Line = 9.450 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km.	%	Km.	%
		9.450	100%	0	0%	9.450	100%

* 100% work completed 29-05-2016.

▪ **132 kV In - Out Chakri Road Transmission Line.**

01.	Survey	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
02.	Soil Investigation	Progress till Previous Period		Progress during the Period under Report		Total	
		Percentage		Percentage		Percentage	
		Not Applicable.		Not Applicable.		Not Applicable.	
03.	Stringing Total Length of Line = 15.750 Km	Progress till previous Period		Stringing during the Period under Report		Total	
		Physical	Percentage	Physical	Percentage	Physical	Percentage
		Km.	%	Km.	%	Km.	%
		15.750	100%	0	0%	15.750	100%

* 100% work completed on 28.11. 2015.

Annex – E.**MONITORING STATUS / CHART**

No.	Description.	Status of Compliance
01.	Establishment of PMU in IESCO.	Yes.
02.	Induction of E&SS Section and Staff in PMU.	Yes.
03.	Preparation of Environmental Assessment Reports (EIA Reports).	Yes.
04.	Clearance & approval of IEE / EIA Reports from ADB.	Yes.
05.	Approval of IEE / EIA Reports from CEO, IESCO.	Yes.
06.	Uploading of EIA Reports on IESCO website.	Yes.
07.	Submission to Concerned EPA / EPD.	Yes.
08.	Public Hearing Sessions / Events.	Public Hearing Event for Punjab – EPA was held on 26 th March, 2014 in Rawalpindi.
		Public Hearing Event for Pak – EPA was held on 11 th April, 2016 in Islamabad.
09.	Clearance / Obtaining No Objection Certificate (NOC) from the EPA / EPD.	No Objection Certificate (NOC) / Clearance issued by Punjab – EPA on 30 th June, 2014.
		No Objection Certificate (NOC) / Clearance issued by Pak – EPA on 26 th April, 2016.
10.	Training on Environment Issues.	Yes.
11.	Internal Monitoring & Field Visit.	On going
12.	External Monitoring & Field Visit.	Ongoing. Conducted by M/S SMEC.
13.	EMMP is made part of Bidding Documents	Yes.
14.	Provision made in BOQ of Bidding Documents for Environmental & Social Issues.	Yes.
15.	Status of implementation of EMMP & Monitoring Parameters.	Provided in the report.



No.	Description.	Status of Compliance
15.	Environmental Audit.	-
16.	Project Present Status.	Provided in the report.

Annex - E_ Cont.

1. TESTING / REPORTING TABLE

Package No.	Lot No.	Description of Work.	Contractor's Name.	Reporting Period. (Month)	Status of Compliance by the Contractors.	Remarks.
	I	03 Nos. 132 kV Grid Stations (Sangjani - II, Chakri Road & Bara Kahu) .				
ICB - 01.	i.	Environmental & Social Checklist.	M/s Sino Steel China.			No Physical Activities started yet.
	ii.	Environmental & Social Compliance Report.				
	iii.	Water Test Reports.				
	iv.	Air Test Reports.				
	v.	Noise Measurements.				
	vi.	Daily Water Consumption Data.				
	II.	A. 132 kV Feed for Chakri Road Grid Station Transmission Line.				
ICB - 01.	i.	Environmental & Social Checklist.	M/s ICC (Pvt.) Ltd, Lahore.	July 2015 To May 2016.	Submitted on monthly basis.	Satisfactory. Work in Progress.
	ii.	Environmental & Social Compliance Report.		-	Submitted on quarterly basis.	-do-
	iii.	Water Test Reports.			Carried out.	In line with NEQS.
	iv.	Air Test Reports.			-do-	-do-
	v.	Noise Measurements.			-do-	-do-
	vi.	Daily Water Consumption Data.			-do-	
	II	B. 132 kV for Sangjani - II Grid Station Transmission Line.				
ICB - 01.	i.	Environmental & Social Checklist.	M/s ICC (Pvt.) Ltd, Lahore.	-	-	No Physical Activities started yet.
	ii.	Environmental & Social Compliance Report.		-	-	

Package No.	Lot No.	Description of Work.	Contractor's Name.	Reporting Period. (Month)	Status of Compliance by the Contractors.	Remarks.
	iii.	Water Test Reports.			-	
	iv.	Air Test Reports.		-	-	
	v.	Noise Measurements.			-	
	vi.	Daily Water Consumption Data.				
	II	C. 132 kV Feed for Bara Kahu Grid Station Transmission Line.				
ICB - 01.	i.	Environmental & Social Checklist.	M/s ICC (Pvt.) Ltd, Lahore.	-	-	No Physical Activities started yet.
	ii.	Environmental & Social Compliance Report.		-	-	
	iii.	Water Test Reports.		-	-	
	iv.	Air Test Reports.		-	-	
	v.	Noise Measurements.		-	-	
	vi.	Daily Water Consumption Data.				
	II	D. 132 kV I - 16 to Chakri Road Grid Station Transmission Line.				
ICB - 01.	i.	Environmental & Social Checklist.	M/s ICC (Pvt.) Ltd, Lahore.	July 2015 To May 2016.	Submitted on monthly basis.	Satisfactory. Work in Progress.
	ii.	Environmental & Social Compliance Report.		-	Submitted on quarterly basis.	-
	iii.	Water Test Reports.			Carried out.	In line with NEQS.
	iv.	Air Test Reports.			-do-	-do-
	v.	Noise Measurements.			-do-	-do-
	vi.	Daily Water Consumption Data.				-do-
	II	E. 132 kV Sang Jani to Zero Point Transmission Line.				
ICB - 01.	i.	Environmental & Social Checklist.	M/s ICC (Pvt.) Ltd, Lahore.	July 2015 To May 2016.	Submitted on monthly basis.	Satisfactory. Work in Progress.
	ii.	Environmental & Social		-	Submitted on	-

Package No.	Lot No.	Description of Work.	Contractor's Name.	Reporting Period. (Month)	Status of Compliance by the Contractors.	Remarks.
		Compliance Report.			quarterly basis.	
	iii.	Water Test Reports.			Carried out.	In line with NEQS.
	iv.	Air Test Reports.			-do-	-do-
	v.	Noise Measurements.			-do-	-do-
	vi.	Daily Water Consumption Data.			-do-	



Annex - F.

ENVIRONMENTAL MONITORING PARAMETERS / DATA

A. WATER TEST REPORTS



PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES
 Ministry of Science & Technology Government of Pakistan
 Khiaban-e-Johar, H-8/1 Islamabad
 www.pcrwr.gov.pk

WATER QUALITY TEST REPORT (CHEMICAL ANALYSIS)

Report Serial No.	Chem-870	Total No. Of Pages	1
Client Name & Address	ICC (Pvt) Limited Rawalpindi.		
Sampling Date	16-11-15	Sampling Time	11:00(am)
NWQN Sampling Code.	CL-0405(4)-15	Client Code	ICC Office Satellite Town
Temperature of sample at receipt °C	20 °C	Sample Receipt Date	16-11-15
Date(s) of Analysis	16-11-15 to 18-11-15	Reporting Date	18-11-15

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
1.	Color	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductive	(µS/cm)	0.3	APHA,22 nd Edition	NGVS	770	±5.0%
3.	pH	-	0.03	APHA,22 nd Edition	6.5-8.5	7.02	±5.3%
4.	Turbidity	NTU	0.2	APHA,22 nd Edition	<5	BDL	-

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA,22 nd Edition	NGVS	332	±9%
6.	Bicarbonate	ppm	5.0	APHA,22 nd Edition	NGVS	332	±9%
7.	Calcium	ppm	2.0	APHA,22 nd Edition	NGVS	101	±12%
8.	Carbonate	ppm	5.0	APHA,22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA,22 nd Edition	250	40	±8%
10.	Hardness	ppm	5.0	APHA,22 nd Edition	500	362	±6%
11.	Magnesium	ppm	1.0	APHA,22 nd Edition	NGVS	27	±14%
12.	Potassium	ppm	0.2	APHA,22 nd Edition	NGVS	1.5	±9.1%
13.	Sodium	ppm	1.0	APHA,22 nd Edition	NGVS	37	±9.3%
14.	Sulfate	ppm	0.4	APHA,22 nd Edition	NGVS	33	±4%
15.	Nitrate(N)	ppm	0.06	APHA,22 nd Edition	10	3	±0.75%
16.	TDS	ppm	-	APHA,22 nd Edition	1000	424	-

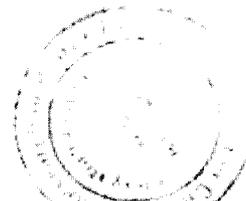
NGVS: No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limits QC: Quality Control CSS: Customer Service Section, PSQCA: Pakistan Standard Quality Control Authority NEQS: National Environment Quality Standards, NSDWQ: National Standard for Drinking Service Quality.

Terms & Conditions

- Test result in this report relate only to the test item/sample submitted and tested.
- The test report shall not be reproduced except in full, without written approval of NWQI-PCRWR
- Water Quality Parameters exceeding the WHO Drinking Water Guideline values (Guideline for Drinking Water Quality, third edition, 2004) National Environment Quality Standards (1999) and Pakistan Standards Quality Control Authority/National Standard for Drinking Water Quality (PAKI:PA, 2010) are highlighted.

Prepared by	Abdul Jabbar	Tech. Manager (Chem.)	Raheela Noreen
Tech. Manager (QC)	Fouzia Altaf	Tech. Manager (CSS)	Muhammad Asghar

NWQI-TR-19
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 Revision Date: 19-11-2015





PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES
 Ministry of Science & Technology Government of Pakistan
 Khiaban-e-Johar, H-8/1 Islamabad
 WWW.PCRWR.GOV.PK

WATER QUALITY TEST REPORT (CHEMICAL ANALYSIS)

Report Serial No.	Chem-870	Total No.Of Pages	1
Client Name & Address	ICC (Pvt) Limited Rawalpindi.		
Sampling Date	16-11-15	Sampling Time	11:00(am)
NWQN Sampling Code.	CL-0405(4)-15	Client Code	ICC Store Adyala Road
Temperature of sample at receipt °C	20 °C	Sample Receipt Date	16-11-15
Date(s) of Analysis	16-11-15 to 18-11-15	Reporting Date	18-11-15

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
1.	Color	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductive	(µS/cm)	0.3	APHA,22 nd Edition	NGVS	824	±5.8%
3.	pH	-	0.03	APHA,22 nd Edition	6.5-8.5	7.19	±5.3%
4.	Turbidity	NTU	0.2	APHA,22 nd Edition	<5	BDL	-

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA,22 nd Edition	NGVS	342	±9%
6.	Bicarbonate	ppm	5.0	APHA,22 nd Edition	NGVS	342	±9%
7.	Calcium	ppm	2.0	APHA,22 nd Edition	NGVS	105	±12%
8.	Carbonate	ppm	5.0	APHA,22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA,22 nd Edition	250	40	±8%
10.	Hardness	ppm	5.0	APHA,22 nd Edition	500	382	±6%
11.	Magnesium	ppm	1.0	APHA,22 nd Edition	NGVS	28	±14%
12.	Potassium	ppm	0.2	APHA,22 nd Edition	NGVS	1.4	±9.1%
13.	Sodium	ppm	1.0	APHA,22 nd Edition	NGVS	36	±9.3%
14.	Sulfate	ppm	0.4	APHA,22 nd Edition	NGVS	36	±4%
15.	Nitrate(N)	ppm	0.06	APHA,22 nd Edition	10	4	±1%
16.	TDS	ppm	-	APHA,22 nd Edition	1000	453	-

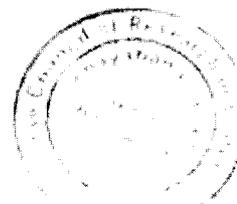
NGVS:No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limits QC: Quality Control CSS: Customer Service Section,PSQCA: Pakistan Standard Quality Control Authority NEQS: National Environment Quality Standards,NSDWQ: National Standard for Drinking Service Quality

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 Revision No: 19
 Revision Date: 19-11-2015





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WATER QUALITY TEST REPORT (CHEMICAL ANALYSIS)

Report Serial No.	Chem-870	Total No.Of Pages	1
Client Name & Address	ICC (Pvt) Limited Rawalpindi		
Sampling Date	15-02-16	Sampling Time	02:00(pm)
NWQN Sampling Code.	CL-0405(4)-16	Client Code	ICC Store Adyala Road
Temperature of sample at receipt °C	20 °C	Sample Receipt Date	15-02-16
Date(s) of Analysis	15-02-16 to 18-02-16	Reporting Date	19-02-16

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
1.	Color	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductive	(µS/cm)	0.3	APHA,22 nd Edition	NGVS	776	±5.8%
3.	pH	-	0.03	APHA,22 nd Edition	6.5-8.5	7.05	±5.3%
4.	Turbidity	NTU	0.2	APHA,22 nd Edition	<5	BDL	-

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA,22 nd Edition	NGVS	332	±9%
6.	Bicarbonate	ppm	5.0	APHA,22 nd Edition	NGVS	332	±9%
7.	Calcium	ppm	2.0	APHA,22 nd Edition	NGVS	103	±12%
8.	Carbonate	ppm	5.0	APHA,22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA,22 nd Edition	250	41	±8%
10.	Hardness	ppm	5.0	APHA,22 nd Edition	500	363	±6%
11.	Magnesium	ppm	1.0	APHA,22 nd Edition	NGVS	28	±14%
12.	Potassium	ppm	0.2	APHA,22 nd Edition	NGVS	1.6	±9.1%
13.	Sodium	ppm	1.0	APHA,22 nd Edition	NGVS	37	±9.3%
14.	Sulfate	ppm	0.4	APHA,22 nd Edition	NGVS	33	±4%
15.	Nitrate(N)	ppm	0.06	APHA,22 nd Edition	10	5	±0.75%
16.	TDS	ppm	-	APHA,22 nd Edition	1000	431	-

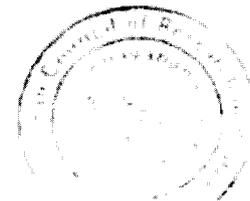
NGVS:No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limits QC: Quality Control CSS: Customer Service Section,PSQCA: Pakistan Standard Quality Control Authority NEQN: National Environment Quality Standards,NSDWQ: National Standard for Drinking Service Quality

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PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES

Ministry of Science & Technology Government of Pakistan

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WATER QUALITY TEST REPORT (CHEMICAL ANALYSIS)

Report Serial No.	Chem-920	Total No.Of Pages	1
Client Name & Address	ICC.(Pvt) Limited Rawalpindi		
Sampling Date	15-02-16	Sampling Time	02:00(pm)
NWQN Sampling Code	CI-0405(4)-16	Client Code	ICC Office Satellite Town
Temperature of sample at receipt °C	20 °C	Sample Receipt Date	15-02-16
Date(s) of Analysis	15-02-16 to 18-02-16	Reporting Date	19-02-16

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
1.	Color	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductive	(µS/cm)	0.3	APHA,22 nd Edition	NGVS	784	±5.8%
3.	pH	-	0.03	APHA,22 nd Edition	6.5-8.5	7.45	±5.3%
4.	Turbidity	NTU	0.2	APHA,22 nd Edition	<5	BDL	-

PHYSICAL & AESTHETIC PARAMETERS

Sr.#	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ,2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA,22 nd Edition	NGVS	332	±9%
6.	Bicarbonate	ppm	5.0	APHA,22 nd Edition	NGVS	332	±9%
7.	Calcium	ppm	2.0	APHA,22 nd Edition	NGVS	101	±12%
8.	Carbonate	ppm	5.0	APHA,22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA,22 nd Edition	250	40	±8%
10.	Hardness	ppm	5.0	APHA,22 nd Edition	500	362	±6%
11.	Magnesium	ppm	1.0	APHA,22 nd Edition	NGVS	27	±14%
12.	Potassium	ppm	0.2	APHA,22 nd Edition	NGVS	1.4	±9.1%
13.	Sodium	ppm	1.0	APHA,22 nd Edition	NGVS	37	±9.3%
14.	Sulfate	ppm	0.4	APHA,22 nd Edition	NGVS	35	±4%
15.	Nitrate(N)	ppm	0.06	APHA,22 nd Edition	10	5	±0.75%
16.	TDS	ppm	-	APHA,22 nd Edition	1000	431	-

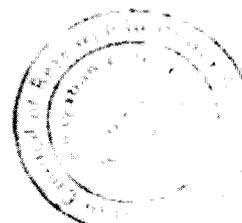
NGVS: No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limits QC: Quality Control CSS: Customer Service Section, PSQCA: Pakistan Standard Quality Control Authority NEQS: National Environment Quality standards, NSDWQ: National Standard for Drinking Service Quality

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- Water Quality Parameters exceeding the WHO Drinking Water Guideline values (Guideline for Drinking Water Quality, third edition, 2004) National Environment Quality Standards (1999) and Pakistan Standards Quality Control Authority/National Standard for Drinking Water Quality (PAKEPA, 2010) are highlighted.

Prepared by	Abdul Jabbar	Tech.Manager (Chem.)	Rahela Noreen
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NWQL-TR-12
Revision No: 12
Revision Date: 12-01-2016



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WATER QUALITY TEST REPORT [CHEMICAL ANALYSIS]

Report Serial No	Chem-492	Total No. of Pages	1
Client Name & Address	ICC Store, Adeela Road, Rawalpindi		
Sampling Date	18-05-16	Sampling Time	02:00pm
NWQL Sample Code	MCL-0349-16	Client Code	Filtered water
Temperature of sample at receipt °C	20°C	Sample Receipt Date	18-05-16
Date(s) of Analysis	18-05-16 to 20-05-16	Reporting Date	23-05-16

PHYSICAL & AESTHETIC PARAMETERS

Sr. #	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ, 2010)	Results	Measurement Uncertainty
1.	Color*	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductivity	(µS/cm)	0.3	APHA, 22 nd Edition	NGVS	910	±5.8%
3.	pH	-	0.03	APHA, 22 nd Edition	6.5-8.5	7.28	±5.3%
4.	Turbidity	NTU	0.2	APHA, 22 nd Edition	<5	BDL	-

MAJOR CHEMICAL PARAMETERS

Sr. #	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ, 2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA, 22 nd Edition	NGVS	322	±9%
6.	Bicarbonate	ppm	5.0	APHA, 22 nd Edition	NGVS	322	±9%
7.	Calcium	ppm	2.0	APHA, 22 nd Edition	NGVS	73	±14%
8.	Carbonate	ppm	5.0	APHA, 22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA, 22 nd Edition	250	55	±8%
10.	Hardness	ppm	5.0	APHA, 22 nd Edition	500	362	±6%
11.	Magnesium	ppm	1.0	APHA, 22 nd Edition	NGVS	44	±14%
12.	Potassium	ppm	0.2	APHA, 22 nd Edition	NGVS	2.2	±9.1%
13.	Sodium	ppm	1.0	APHA, 22 nd Edition	NGVS	40	±9.3%
14.	Sulfate	ppm	0.4	APHA, 22 nd Edition	NGVS	51	±6.1
15.	TDS*	ppm	-	APHA, 22 nd Edition	1000	501	-

NGVS: No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limit, QC: Quality Control CSS: Customer Service Section, PSQCA: Pakistan Standard Quality Control Authority, NEQS: National Environmental Quality Standards

Quality of Water*	Safe <input checked="" type="checkbox"/>	Unsafe <input type="checkbox"/>
Quality of Wastewater*	Safe <input type="checkbox"/>	Unsafe <input type="checkbox"/>

Non-Accredited parameters are indicated by asterisk

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- Test results in this report relate only to the test item/sample submitted and tested.
- The test report shall not be reproduced except in full, without written approval of NWQL-PCRWR
- Water Quality Parameters exceeding the WHO Drinking Water Guideline values (Guidelines for Drinking-Water Quality, third editions, 2004) National Environmental Quality Standards (1999) and Pakistan Standard Quality Control Authority/National Standard for Drinking Water Quality (NSDWQ, 2010, PAKEPA) are highlighted.

Prepared by	Sabeen Sabir	Tech. Manager (Chem.)	Farah Naz	Tech. Manager (QC)	Dr. Fariza Akhter
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NWQL-TR-11
Revision No.: 12
Revision Date: 27-10-2015





	PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES Ministry of Science & Technology, Government of Pakistan Khilab-e-Johar, H-8/1, Islamabad www.pcrwr.gov.pk		LAB 04S 17025
	WATER QUALITY TEST REPORT (MICROBIOLOGICAL ANALYSIS)		

Report Serial No	Micro-493	Total No. of Pages	1
Client Name & Address	ICC Store (Adeela Road) Rawalpindi.		
Sampling Date & Time	18-05-16, 02:00pm	Client Sample Code	Filtered water
NWQL Sample Code	MCL-0349-16	Sample Receipt Date	18-05-16
Temperature of sample at receipt °C	20°C	Humidity (%) at receipt	41%
Date (s) of Analysis	18-05-16 to 19-05-16	Reporting Date	20-05-16

Sr. #	Parameter	Unit	Det. Limit	Reference Method	Permissible Limits		Results	Uncertainties/ Confidence Interval
					Potable water (PSQCA/NSD WQ 2010)	Bottled water (PSQCA)		
1.	Total Coliforms	MPN/100ml CFU/100ml	<2	APHA, 22 nd Edition	-ve	-ve	-ve	-
2.	Fecal Coliforms	MPN/100ml CFU/100ml	<2	APHA, 22 nd Edition	-ve	-ve	-ve	-
3.	E. coli	-ve/-ve	<2	APHA, 22 nd Edition FAO, 1998 (Internal method based on APHA Standard Methods 9221B-C)	-ve	-ve	-ve	-

WHO: World Health Organization
 MPN: Most Probable Number
 USEPA: United States Environmental Protection Agency
 AOAC: Association of Official Analytical Chemists
 APHA: American Public Health Association
 FAO: Food & Agriculture Organization
 PSQCA: Pakistan Standard Quality Control Authority

Quality of Water * Safe Unsafe

Non-Accredited parameters are indicated by asterisk

Terms & Conditions:

- Test results in this report relate only to the test item/sample submitted and tested.
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- Water Quality Parameters exceeding the WHO Drinking Water Guideline values (Guidelines for Drinking-Water Quality, third editions, 2004) and Pakistan Standard Quality Control Authority/National Standard for Drinking Water Quality (NSDWQ, 2010, PAKEPA) is highlighted

Prepared by	Sabeen	Tech. Manager (Micro.)	Kiran Anwaar	Tech. Manager (QC)	Dr. Fouzia Altaf
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	PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES Ministry of Science & Technology, Government of Pakistan Khloban-e-Johar, H-8/1, Islamabad www.pcrwr.gov.pk		LAB 048 17025
WATER QUALITY TEST REPORT (CHEMICAL ANALYSIS)			

Report Serial No	Chem-491	Total No. of Pages	1
Client Name & Address	ICC Office, Rawalpindi		
Sampling Date	18-05-16	Sampling Time	02:00(p.m)
NWQL Sample Code	MCL-0348-16	Client Code	Filtered water
Temperature of sample at receipt °C	20°C	Sample Receipt Date	18-05-16
Date (s) of Analysis	18-05-16 to 20-05-16	Reporting Date	23-05-16

PHYSICAL & AESTHETIC PARAMETERS

Sr. #	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ, 2010)	Results	Measurement Uncertainty
1.	Color*	-	-	Sensory evaluation	Colorless	Colorless	NA
2.	Electrical Conductivity	(µS/cm)	0.3	APHA, 22 nd Edition	NGVS	842	±5.8%
3.	pH	-	0.03	APHA, 22 nd Edition	6.5-8.5	7.23	±5.3%
4.	Turbidity	NTU	0.2	APHA, 22 nd Edition	<5	BDL	-

MAJOR CHEMICAL PARAMETERS

Sr. #	Water Quality Parameter	Units	Det. Limit	Reference Method	Permissible Limits (PSQCA/NSDWQ, 2010)	Results	Measurement Uncertainty
5.	Alkalinity	ppm	-	APHA, 22 nd Edition	NGVS	322	±9%
6.	Bicarbonate	ppm	5.0	APHA, 22 nd Edition	NGVS	322	±9%
7.	Calcium	ppm	2.0	APHA, 22 nd Edition	NGVS	73	±14%
8.	Carbonate	ppm	5.0	APHA, 22 nd Edition	NGVS	BDL	-
9.	Chloride	ppm	2.0	APHA, 22 nd Edition	250	31	±8%
10.	Hardness	ppm	5.0	APHA, 22 nd Edition	500	332	±6%
11.	Magnesium	ppm	1.0	APHA, 22 nd Edition	NGVS	36	±14%
12.	Potassium	ppm	0.2	APHA, 22 nd Edition	NGVS	1.9	±9.1%
13.	Sodium	ppm	1.0	APHA, 22 nd Edition	NGVS	41	±9.3%
14.	Sulfate	ppm	0.4	APHA, 22 nd Edition	NGVS	46	±5.5
15.	TDS*	ppm	-	APHA, 22 nd Edition	1000	463	-

NGVS: No Guideline Value Set WHO: World Health Organization APHA: American Public Health Association, BDL: Below Detection Limit, QC: Quality Control CSS: Customer Service Section, PSQCA: Pakistan Standard Quality Control Authority, NEQS: National Environment Quality Standards

Quality of Water*	Safe <input checked="" type="checkbox"/>	Unsafe <input type="checkbox"/>
Quality of Wastewater*	Safe <input type="checkbox"/>	Unsafe <input type="checkbox"/>

Non-Accredited parameters are indicated by asterisk

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Prepared by	Sabeen	Tech. Manager (Chem.)	Farah Naz	Tech. Manager (QC)	Dr. Fouzia Akhter
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NWQL-TR-11
Revision No.: 12
Revision Date: 27-10-2015





 PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES Ministry of Science & Technology, Government of Pakistan Khloban-e-Johar, H-8/1, Islamabad www.pcrwr.gov.pk	 Pakistan National Accreditation Council	LAB 048 17029
WATER QUALITY TEST REPORT (MICROBIOLOGICAL ANALYSIS)		

Report Serial No	Micro-492	Total No. of Pages	1
Client Name & Address	ICC Office, Rawalpindi		
Sampling Date & Time	18-05-16, 02:00pm	Client Sample Code	Filtered water
NWQL Sample Code	MCL-0348-16	Sample Receipt Date	18-05-16
Temperature of sample at receipt °C	20°C	Humidity (%) at receipt	41%
Date (s) of Analysis	18-05-16 to 20-05-16	Reporting Date	23-05-16

Sr. #	Parameter	Unit	Det. Limit	Reference Method	Permissible Limits		Results	Uncertainties/ Confidence Interval
					Potable water (PSQCA/NSD WQ 2010)	Bottled water (PSQCA)		
1.	Total Coliforms	MPN/100ml CFU/100ml	<2	APHA, 22 nd Edition	-ve	-ve	18	
2.	Fecal Coliforms	MPN/100ml CFU/100ml	<2	APHA, 22 nd Edition	-ve	-ve	01	
3.	E. coli	-ve/-ve	<2	APHA, 22 nd Edition FAO, 1998 (Internal method based on APHA Standard Methods 9221B-C)	-ve	-ve	-ve	

WHO: World Health Organization
 MPN: Most Probable Number
 USEPA: United States Environmental Protection Agency
 AOAC: Association of Official Analytical Chemists

APHA: American Public Health Association
 FAO: Food & Agriculture Organization
 PSQCA: Pakistan Standard Quality Control Authority

Quality of Water * Safe Unsafe

Non-Accredited parameters are indicated by asterisk

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Prepared by	<i>Sabeen</i>	Tech. Manager (Micro.)	<i>Kiran Anwaar</i>	Tech. Manager (QC)	<i>Dr. Fouzia Altaf</i>
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NWQL-TR-10
 Revision No. : 11
 Revision Date: 27-10-2015

Location/
water source to
be changed.

Due to the presence biological contamination in the water test report, M/s ICC (Pvt) Ltd was informed to change the source of the water for the office.

Annex - G.**CLAUSES IN THE BIDDING DOCUMENTS**

The Clauses included in the bidding documents are;

- i. **Required Personnel:** The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4 (Bidding Forms).
- ii. The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements:

No.	Position.	Total Work Experience (Year).	Experience in Similar Work (Years).
01.	Project Manager.	15	10
02.	Lead Design Engineer (Civil).	10	05
03.	Lead Design Engineer (Electrical).	10	05
04.	Construction Manager	10	05
05.	Environmentalist / HSE Officer.	05	03
06.	Social / Resettlement Officer.	05	03

- iii. **Employer's Requirement / Supplementary Information:**

SI-03. Environmental Issues:

The Contractor shall comply and carry out all the monitoring and mitigation measures as set forth in the Environmental & Social Management Plan (EMP). The EMP & Environmental Monitoring Plan are attached as Annexure with bidding document.

- iv. **General Condition of Contract:**

Protection of Environment

46. Protection of Environment	46.1 The Contractor shall observe the environment mitigation measures that are set out in the Environmental Management
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	<p>Plan (EMP) that has been prepared for the Project.</p> <p>46.2 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of operations as set forth in the EMP.</p> <p>46.3 The Contractor shall ensure that emissions, surface discharges and effluent from its activities shall not exceed the values stated in the Specifications, or as prescribed by the applicable laws.</p> <p>46.4 The contractor shall Comply with all applicable environmental laws and regulations of Pakistan.</p> <p>46.5 The contractor shall</p> <ul style="list-style-type: none"> a) Establish an operational system for managing environmental impacts. b) Carry out all of the monitoring and mitigating measures set forth in the EIA and the EMP. c) Allocate the budget required to ensure that such measures are carried out, and the actual costs for the implementation of such measures shall be reimbursed by the employer to the contractor from provisional sums. The contractor shall submit to the employer quarterly reports on the carrying out of such measures. <p>46.6 The Contractor shall submit monthly & quarterly reports on carrying out such measures to the Employer.</p>
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v. Special Condition of Contract:

9.	Contractor's Responsibilities.
9.8.	The Contractor shall comply with all applicable national, provincial, and local Environmental laws and regulations.

	<p>The Contractor shall;</p> <ul style="list-style-type: none"> a) Establish an operational system for managing environmental impacts. b) Carry out all of the monitoring and mitigation measures set forth in the Initial Environmental Examination (“IEE”) and the Environmental Management Plan (EMP) attached hereto as Appendix 8 / Annexure – C c) Allocate the budget required to ensure that such measures are carried out. d) The Contractor shall submit to the Employer quarterly report on the carrying out of such measures and the actual costs for the implementation of such measures shall be reimbursed by the Employer to the Contractor from Provisional Sums”.
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vi. ***Contract Forms / Contract Agreement:***

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract (Reference GCC Clause 2):

- a) This Contract Agreement and the Appendices hereto
- b) Letter of Bid and Price Schedules submitted by the Contractor,
- c) Special Conditions,
- d) General Conditions,
- e) Specification,
- f) Drawings,
- g) ***Environmental & Social Mitigation Plan,***
- h) ***Environmental Monitoring Plan,***
- i) Other completed Bidding Forms submitted with the Letter of Bid,
- j) Any other documents part of the Employer’s Requirements.

Annex - H.

IMPLEMENTATION REPORT ON EIA / IEE MITIGATION REQUIREMENTS

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
DESIGN STAGE				
1. Contract Clauses	Ensure requirements and recommendations of environmental assessment are included in the contracts.	<ul style="list-style-type: none"> Include EMP Matrix in tender documentation and make contractors responsible to implement mitigation measures by reference to EIA/IEE in contract. 	IESCO Environmental and Social Unit (E&SS) with the design consultant.	<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Include preparation of EMP review and method statement WM plan, Temporary Drainage (TD) and Erosion Control (EC) Plan in contract as a payment milestone(s). 		<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Require environmental accident checklist and a list of controlled chemicals / substances to be included in the contractor's work method statement and tender documentation. 		<ul style="list-style-type: none"> Not Applicable
2. Procurement	Ensure environmentally responsible procurement.	<ul style="list-style-type: none"> Require in procurement specifications that transformers, transformer oil and other equipment are to be free from PCB and other petroleum fractions that may be injurious to environment or equipment. 	IESCO E&SS with the design consultant.	<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Require new switchgear to be free from CFCs in procurement specifications. SF6 gas insulated equipment to be effectively leak free with nominal SF6 top up less than 1% per year. 		<ul style="list-style-type: none"> Being complied.
3. Waste Disposal	Ensure adequate disposal options for all waste including transformer oil, residually contaminated soils, and scrap metal.	<ul style="list-style-type: none"> Create waste management policy and plan to identify sufficient locations for, storage and reuse of transformers and recycling of breaker oils and disposal of transformer oil, residually contaminated soils and scrap metal "cradle to grave". 	IESCO E&SS and Environmental Protection Agency (EPA) with the design consultant.	<ul style="list-style-type: none"> Not Applicable
		<ul style="list-style-type: none"> Include in contracts for unit rates for re-measurement for disposal. 		<ul style="list-style-type: none"> Not Applicable
		<ul style="list-style-type: none"> After agreement with local authority, 		<ul style="list-style-type: none"> Not Applicable

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		designate disposal sites in the contract and cost unit disposal rates accordingly.		
4. Hazardous Waste Disposal	To ensure responsible disposal of hazardous waste in line with best practice.	<ul style="list-style-type: none"> ▪ Waste management plan to identify any remaining PCB containing equipment to be replaced and appropriate method for disposal. 	IESCO E&SS with the Design Consultant.	<ul style="list-style-type: none"> ▪ Not Applicable
5. Prevent Spills & Contamination.	To prevent spills, contamination of soil groundwater and surface water.	<ul style="list-style-type: none"> ▪ Design of adequate secondary containment facilities in new substations to include concrete bases with bunding to prevent contamination from a major catastrophic failure and residual contamination from installation, maintenance and decommissioning. 	IESCO E&SS with the Design Consultant.	<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Review design of existing transformer and oil treatment location to aim to improve secondary containment facilities, concrete bases and bounding if retrofitting is technically feasible and will provide benefits at reasonable cost. 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Design all transformers to be located over bunds to comply with best international practice so that transformer oil and other residual contamination does not run to ground and can be captured for controlled disposal. (Commence designs in new substations). 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Integrate proposals with waste management policy and plan to identify sufficient locations for, storage and disposal of transformer oil and residually contaminated surface water or soil "cradle to grave". 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Include in contracts for unit rates for construction of bunds and new style drainage requirements. 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ In consultation with EPA identify designate residual oil disposal sites in each IESCO and design disposal accordingly. 		<ul style="list-style-type: none"> ▪ Not Applicable

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
6. Hydrological Impacts	To minimize hydrological and drainage impacts during construction.	<ul style="list-style-type: none"> Design of adequate major and minor culverts facilities to be integrated in design to avoid effects on hydrological flow in areas where it is sensitive, such as water courses or bridges and culverts. 	IESCO E&SS with the Design Consultant.	<ul style="list-style-type: none"> Complied.
7. Temporary Drainage and Erosion Control	Include mitigation in preliminary designs for erosion control and temporary drainage.	<ul style="list-style-type: none"> Identify locations where drainage or irrigation crossing ROW may be affected by works. 	IESCO E&SS and design consultant.	<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Include protection works in contract as a payment milestone(s). 		<ul style="list-style-type: none"> Complied.
8. Noise	Ensure cumulative noise impacts are acceptable in construction and operational phase.	<ul style="list-style-type: none"> Conduct detailed acoustic assessment for all residential, school, (other sensitive structures) within 50m of DGS and line. 	IESCO E&SS with the design consultant.	<ul style="list-style-type: none"> Not Applicable
		<ul style="list-style-type: none"> If noise at sensitive receiver exceeds the permissible limit, the construction activities should be mitigated, monitored and controlled. 		<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> If noise at sensitive receiver will exceeds the permissible limit in operational phase the design to include acoustic mitigation (noise barrier or relocation of noisy equipment) and monitoring. 		<ul style="list-style-type: none"> Complied.
9. Social Impacts	To ensure that the adverse impacts due to constructing lines over private land, property acquisition and resettlement are mitigated according to the LARP.	<ul style="list-style-type: none"> IESCO to prefer to select a site that will not affect any local public in property or house such that no additional land is required. 	IESCO E&SS / LACs.	<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Social preparation completed. LARP etc. (if required) in place IN CASE UNFORSEEN ADDITIONAL LAND IS REQUIRED. 		<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Acquisition of lands completed to minimize the uncertainty of people. 		<ul style="list-style-type: none"> Complied.
		<ul style="list-style-type: none"> Completed implementation of LARP and LARCs to provide compensation and assistance to the APs. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> All the payments / entitlements are paid according to the Entitlement Matrix, prepared according to the LARP. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> All the impacts identified by the EIA are 		<ul style="list-style-type: none"> Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		incorporated in to the project as well as the LARP and relevant entitlements included into the Entitlement Matrix.		
CONSTRUCTION STAGE				
Hydrology And Drainage Aspects.	To ensure the proper implementation of any requirements mentioned in EPA conditions of approval letter in relation to hydrology of the project.	▪ Consideration of weather conditions when particular construction activities are undertaken.	Contractor supervised by GSC or to actively supervise and enforce.	▪ Being Complied.
		▪ Limitations on excavation depths in use of recharge areas for material exploitation or spoil disposal.		▪ Complied.
		▪ Use of landscaping as an integrated component of construction activity as an erosion control measure.		▪ Complied.
		▪ Minimizing the removal of vegetative cover as much as possible and providing for its restoration where construction sites have been cleared of such areas.		▪ Complied.
2. Orientation for Contractor, and Workers.	To ensure that the GSC contractor and workers understand and have the capacity to ensure the Environmental requirements and implementation of mitigation measures.	▪ IESCO (Environmental Social Unit (E&SS) environmental specialist to monitor and progress all environmental statutory and recommended obligations.	IESCO E&SS, Contractor and the GSC and record details.	▪ Being Complied.
		▪ 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.		▪ Being Complied.
		▪ Agreement on critical areas to be considered and necessary mitigation measures, among all parties who are involved in project activities.		▪ Complied.
		▪ Continuous progress review and refresher sessions to be followed.		▪ Complied.
3. Water Quality.	To prevent adverse water quality impacts due to negligence and ensure unavoidable impacts are managed effectively.	▪ Compile temporary drainage management plan one month before commencement of works.	Contractor (IESCO E&SS & GSC to enforce).	▪ Not Applicable
		▪ Proper installation of temporary drainage and erosion control before works within 50m of water bodies.	Contractor has to	▪ Not Applicable

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
	Ensure adverse impacts on water quality caused by construction activities are minimized.	<ul style="list-style-type: none"> 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. 	check water quality and report to IESCO. GSC supervises implementation activities.	<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Storage of lubricants, fuels and other hydrocarbons in self-contained dedicated enclosures >50m away from water bodies. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Proper disposal of solid waste from construction activities. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Cover the construction material and spoil stockpiles with a suitable material to reduce material loss and sedimentation and avoid stockpiling near to water bodies. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Topsoil stripped material shall not be stored where natural drainage will be disrupted. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Borrow sites (if required) should not be close to sources of drinking water. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> CONTROL ALL DUSTY MATERIALS AT SOURCE. 		<ul style="list-style-type: none"> Being Complied.
4. Air Quality.	To minimize dust effectively and avoid complaints due to the airborne particulate matter released to the atmosphere.	<ul style="list-style-type: none"> 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). 	Contractor should maintain acceptable standard GSC to supervise activities.	<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Stockpiled soil and sand shall be slightly wetted before loading, particularly in windy conditions. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> Fuel-efficient and well-maintained haulage trucks shall be employed to minimize exhaust emissions. 		<ul style="list-style-type: none"> Being Complied.
		<ul style="list-style-type: none"> 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. 		<ul style="list-style-type: none"> Being Complied.
				<ul style="list-style-type: none"> Being Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		<ul style="list-style-type: none"> ▪ To plan to minimize the dust within the vicinity of orchards and fruit farms. ▪ Spraying of bare areas with water. ▪ Concrete plants, to be controlled in line with statutory requirements should not be close to sensitive receptors. 		<ul style="list-style-type: none"> ▪ Being Complied. ▪ Being Complied. ▪ Being Complied.
5. Ground Vibration.	To minimize ground vibrations during construction.	<ul style="list-style-type: none"> ▪ Review requirements for piling and use of powered mechanical equipment within 100m of SRs. ▪ Review conditions of buildings and conduct public consultation with SRs to establish less sensitive time for works involving piling and schedule works accordingly. ▪ Non-percussive piling methods to be used wherever practicable. ▪ Percussive piling shall be conducted in daylight hours. ▪ Hammer- type percussive pile driving operations shall not be allowed at night time. 	<p>Contractor should maintain the acceptable standards.</p> <p>GSC to supervise relevant activities.</p>	<ul style="list-style-type: none"> ▪ Being Complied. ▪ Being Complied. ▪ Being Complied. ▪ Being Complied.
6. Noise.	To minimize noise increases during construction.	<ul style="list-style-type: none"> ▪ Review requirements for use of powered mechanical equipment within 100m of SRs. ▪ Conduct public consultation with SRs to establish less sensitive time for works and schedule works accordingly. ▪ All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations and with effective silencing apparatus to minimize noise. ▪ Heavy equipment shall be operated only in daylight hours. ▪ Construction equipment, which generates excessive noise, shall be enclosed or fitted with effective silencing apparatus to minimize noise. ▪ Well-maintained haulage trucks will be used with speed controls. 	<p>Contractor should maintain the acceptable standards.</p> <p>GSC to supervise relevant activities.</p>	<ul style="list-style-type: none"> ▪ Being Complied. ▪ Being Complied. ▪ Being Complied. ▪ Being Complied. ▪ Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		<ul style="list-style-type: none"> ▪ Contractor shall take adequate measures to minimize noise nuisance in the vicinity of construction sites by way of adopting available acoustic methods. 		<ul style="list-style-type: none"> ▪ Being Complied.
<p>7. Soil Erosion/ Surface Run - off.</p>	<p>Prevent adverse water quality impacts due to negligence and ensure unavoidable impacts are managed effectively.</p>	<ul style="list-style-type: none"> ▪ SCHEDULE WORKS IN SENSITIVE AREAS (e.g. NEAR RIVERS) FOR DRY SEASON. ▪ In the short-term, temporary drainage and erosion control plan to be presented with tender. Temporary drainage and erosion control plan one month before commencement of works to protect all areas susceptible to erosion. (Permanent drainage works shall be in the final design). ▪ Installation of TD and EC before works construction within 50m of water bodies. ▪ Clearing of green surface cover to be minimized during site preparation. ▪ Meaningful water quality monitoring up and downstream at any tower site during construction within a river or stream bed. Rapid reporting and feedback to GSC. ▪ Back-fill should be compacted properly in accordance with IESCO design standards and graded to original contours where possible. ▪ Cut areas should be treated against flow acceleration while filled areas should be carefully designed to avoid improper drainage. ▪ Stockpiles should not be formed within such distances behind excavated or natural slopes that would reduce the stability of the slopes or cause slippage. ▪ Measures shall be taken to prevent ponds of surface water and scouring of slopes. Newly eroded channels shall be backfilled and restored to natural contours. ▪ Contractor should arrange to monitor and adjust working and adopt suitable measures to 	<p>Contractor and GSC.</p>	<ul style="list-style-type: none"> ▪ Being Complied.
	<p>To minimize soil erosion due to the construction activities of towers, stringing of conductors and creation of access tracks for project vehicles.</p>			<ul style="list-style-type: none"> ▪ Not Applicable
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			
	<ul style="list-style-type: none"> ▪ Being Complied. 			



Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		minimize soil erosion during the construction period. Contractor's TD and EC plan should be endorsed and monitored by GSC after consulting with concerned authorities.		
		<ul style="list-style-type: none"> ▪ Replanting trees to be done before the site is vacated and handed back to IESCO with appropriate trees (other vegetation cover as appropriate) to ensure interception of rainwater and the deceleration of surface run-off. 		<ul style="list-style-type: none"> ▪ To be complied.
8. Exploitation, Handling, Transportation and Storage of Construction Materials.	To minimize disruption and contamination of the surroundings, minimize and or avoid adverse environmental impacts arising out of construction material exploitation, handling, transportation and storage by using sources that comply with EPA license conditions.	<ul style="list-style-type: none"> ▪ (CONSIDER ALSO FOR FUTURE TRANCES IF CIVIL WORKS). ▪ Use only EPA licensed sites for raw materials in order to minimize adverse environmental impacts. 	Contractor and GSC to agree format of reporting.	<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ 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: 		<ul style="list-style-type: none"> ▪
		<ul style="list-style-type: none"> ▪ Conditions that apply for selecting sites for material exploitation. 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Conditions that apply to timing and use of roads for material transport. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Conditions that apply for maintenance of vehicles used in material transport or construction. 		<ul style="list-style-type: none"> ▪
		<ul style="list-style-type: none"> ▪ Conditions that apply for selection of sites for material storage. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Conditions that apply for aggregate production. 		<ul style="list-style-type: none"> ▪ Not Applicable
		<ul style="list-style-type: none"> ▪ Conditions that apply for handling hazardous or dangerous materials such as oil, lubricants and toxic chemicals. 		<ul style="list-style-type: none"> ▪ Not Applicable
		9. Construction Waste Disposal.		Minimize the impacts from the disposal of



Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
	construction waste.	estimate the amounts and types of construction waste to be generated by the project.	supervise and take action to ensure that contractor's complete relevant activities according to EIA / IEE / EMP requirement & NEQS.	
		▪ Investigating whether the waste can be reused in the project or by other interested parties without any residual environmental impact.		▪ Being Complied.
		▪ Identifying potential safe disposal sites close to the project, or those designated sites in the contract.		▪ Being Complied.
		▪ Investigating the environmental conditions of the disposal sites and recommendation of most suitable and safest sites.		▪ Being Complied.
		▪ 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.		▪ Being Complied.
		▪ Used oil and lubricants shall be recovered and reused or removed from the site in full compliance with the national and local regulations.		▪ Being Complied.
		▪ Oily wastes must not be burned. Disposal location to be agreed with local authorities/EPA.		▪ Being Complied.
		▪ Waste breaker insulating oil to be recycled, reconditioned, or reused at IESCO's facility.		▪ Not Applicable
		▪ Machinery should be properly maintained to minimize oil spill during the construction.		▪ Being Complied.
		▪ Machinery should be maintained in a dedicated area over drip trays to avoid soil contamination from residual oil spill during maintenance.		▪ Being Complied.
		▪ 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.		▪ Being Complied.
10. Work Camp	To ensure that the	▪ Identify location of work camps in	Contractor.	▪ Being Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
<p>Operation and Location (if required).</p>	<p>operation of work camps does not adversely affect the surrounding environment and residents in the area.</p>	<p>consultation with local authorities. The location shall be subject to approval by the IESCO. If possible, camps shall not be located near settlements or near drinking water supply intakes.</p>		
		<ul style="list-style-type: none"> ▪ Cutting of trees shall not be permitted and removal of vegetation shall be minimized. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ The Contractor shall organize and maintain a waste separation, collection and transport system. 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ To Be Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ To Be Complied.
		<ul style="list-style-type: none"> ▪ Exposed areas shall be planted with suitable vegetation. 		<ul style="list-style-type: none"> ▪ To Be Complied.
		<ul style="list-style-type: none"> ▪ IESCO and Construction Supervising Consultant shall inspect and report that the camp has been vacated and restored to pre-project conditions. 		<ul style="list-style-type: none"> ▪ To Be Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
<p>11. Loss of Trees and Vegetation Cover of the Areas for Towers and Temporary Work-space.</p>	<p>To avoid negative impacts due to removing of landmark, sentinel and specimen trees as well as green vegetation and surface cover.</p>	<ul style="list-style-type: none"> ▪ Tree location and condition survey to be completed one month before tender. 	<p>Design consultant, Contractor and GSC.</p>	<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ At completion all debris and waste shall be removed and not burned. 		<ul style="list-style-type: none"> ▪ To be Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ 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. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ The contractor will plant three (3) suitable new trees outside the 30 meter corridor of the transmission line in lieu of one (1) tree removed. 		<ul style="list-style-type: none"> ▪ To be Complied.
		<ul style="list-style-type: none"> ▪ Landscaping and road verges to be re-installed on completion. 		<ul style="list-style-type: none"> ▪ To be Complied.
		<ul style="list-style-type: none"> ▪ Compensatory planting of trees/shrubs/ornamental plants (at a rate of 3:1) in line with best international practice. 		<ul style="list-style-type: none"> ▪ To be Complied.
		<ul style="list-style-type: none"> ▪ After work completion all temporary structures, including office buildings, shelters and toilets shall be removed. 		<ul style="list-style-type: none"> ▪ To be Complied.

Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
12. Safety Precautions for the Workers.	To ensure safety of workers.	<ul style="list-style-type: none"> ▪ Providing induction safety training for all staff adequate warning signs in health and safety matters, and require the workers to use the provided safety equipment. 	Contractor and GSC.	<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ Providing workers with skull guard or hard hat and hard toe shoes. 		<ul style="list-style-type: none"> ▪ Being Complied.
13. Traffic Condition.	Minimize disturbance of vehicular traffic and pedestrians during haulage of construction materials and equipment.	<ul style="list-style-type: none"> ▪ Submit temporary haul and access routes plan one month prior to start of works. 	Contractor and GSC.	<ul style="list-style-type: none"> ▪ Not Applicable.
		<ul style="list-style-type: none"> ▪ Routes in vicinity of schools and hospitals to be avoided. 		<ul style="list-style-type: none"> ▪ Complied.
14 Impact on Wetlands (if relevant).	To ensure that damage to river ecosystems and wetlands and its ecosystem is minimized during construction.	<ul style="list-style-type: none"> ▪ Erection of towers in the wetlands will be avoided as far as possible. However, at places where realignment of the distribution is unavoidable, towers with maximum span will be used to minimize the impacts. 	Contractor and GSC.	<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Avoid disposal of wash water, solid waste and discarded packing etc. on wetlands. 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ Piling up of loose material should be done in segregated areas to arrest washing out of soil. In addition, these materials should not be tipped or stockpiled near wetlands. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Residual concrete from works should not be dumped close to wetlands. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Avoid temporary structures or stockpiling within banks of river and on wetlands. 		<ul style="list-style-type: none"> ▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Special measures will be adopted to minimize impacts on the wild birds, such as avoiding construction activities during the critical periods of breeding and feeding. 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ Staff working on the project should be given clear orders, not to shoot, snare or trap any bird (MANDATORY). 		<ul style="list-style-type: none"> ▪ Complied.
		<ul style="list-style-type: none"> ▪ Schedule construction for April to July and September to November to avoid the monsoons and periods of mass migration of 		<ul style="list-style-type: none"> ▪ Complied.

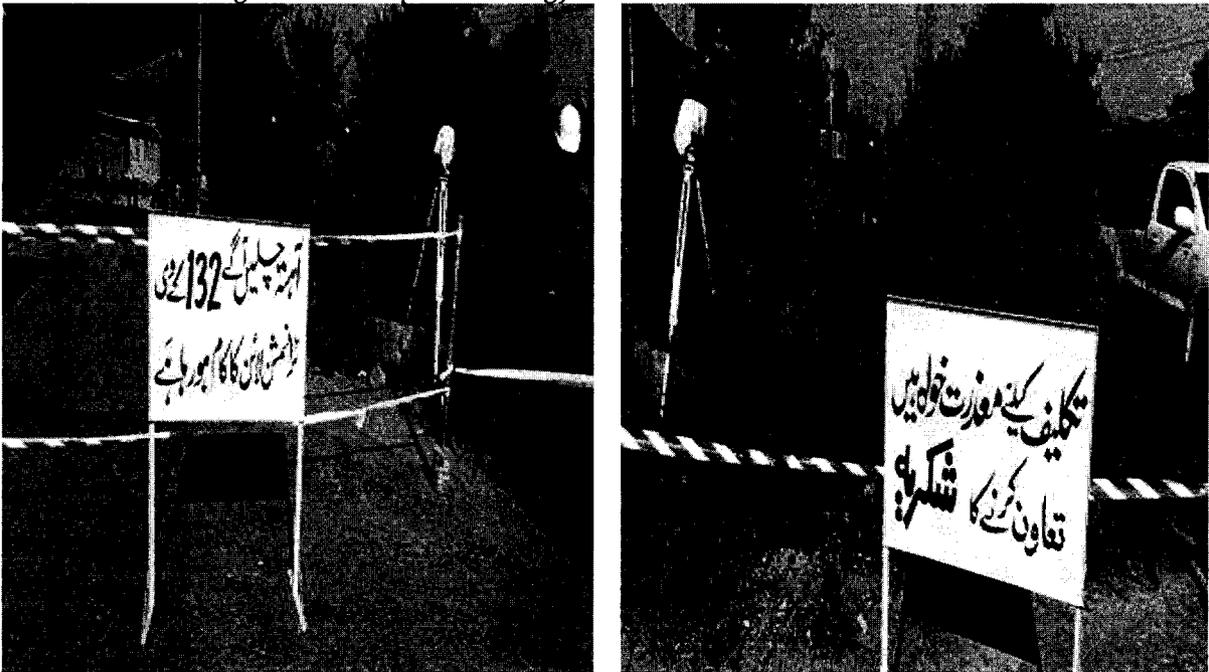
Environmental Concern	Objectives	Mitigation Measures Recommended	Implementation Responsibility.	Remarks.
		birds from Central Asia to the plains of Sindh and their return journey (December to March).		
		<ul style="list-style-type: none"> ▪ Construction activities confined to small areas to minimize impacts and encourage migratory birds to settle as normal. 		▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Contractor will prevent the workers from hunting and fishing for water birds and fish resources etc. 		▪ Complied.
		<ul style="list-style-type: none"> ▪ Food and fuel to be bought by contractor at local villages too boost local income. 		▪ Complied.
15.Social Impacts.	To ensure minimum impacts from construction labour force on public health.	<ul style="list-style-type: none"> ▪ Potential for spread of vector borne and communicable diseases from labour camps shall be avoided (worker awareness orientation and appropriate sanitation should be maintained). 	Contractor and the GSC.	▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Complaints of the people on construction nuisance / damage close to ROW to be considered and responded to promptly. 		▪ Being Complied.
		<ul style="list-style-type: none"> ▪ Contractor should make alternative arrangements to avoid local community impacts. 		▪ Being Complied.
		Identify and prevent any illegal encroachments under the DGLs.		

Annex - I.

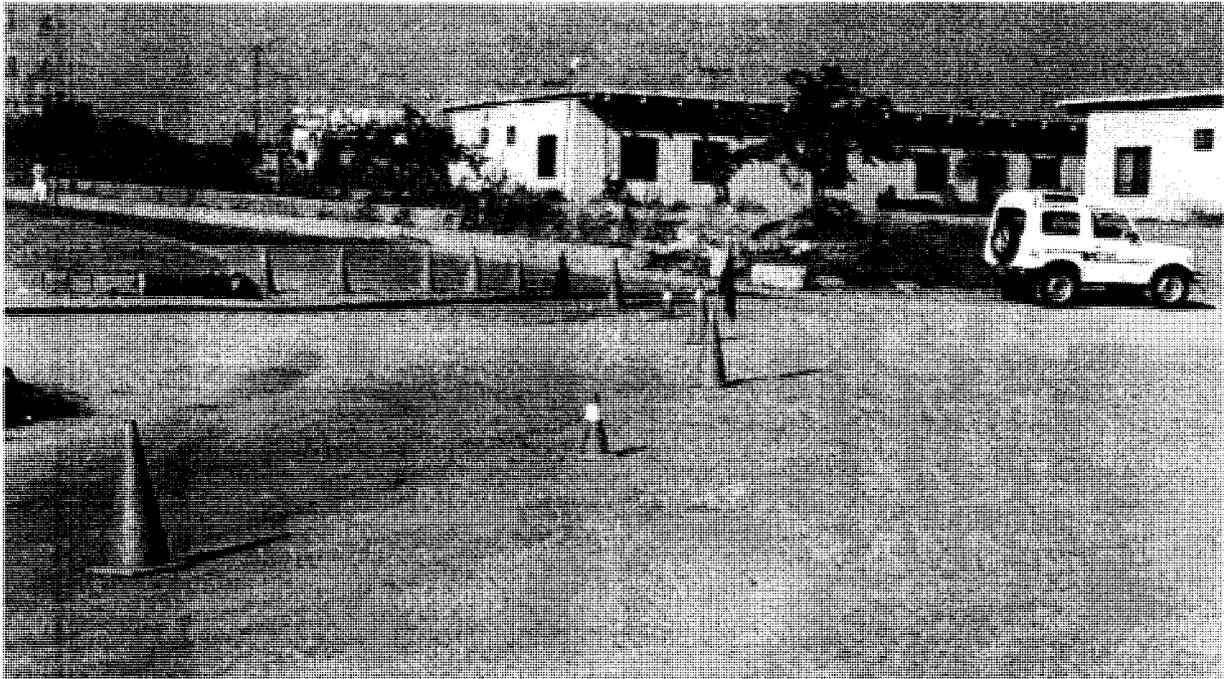
PHOTOGRAPHS



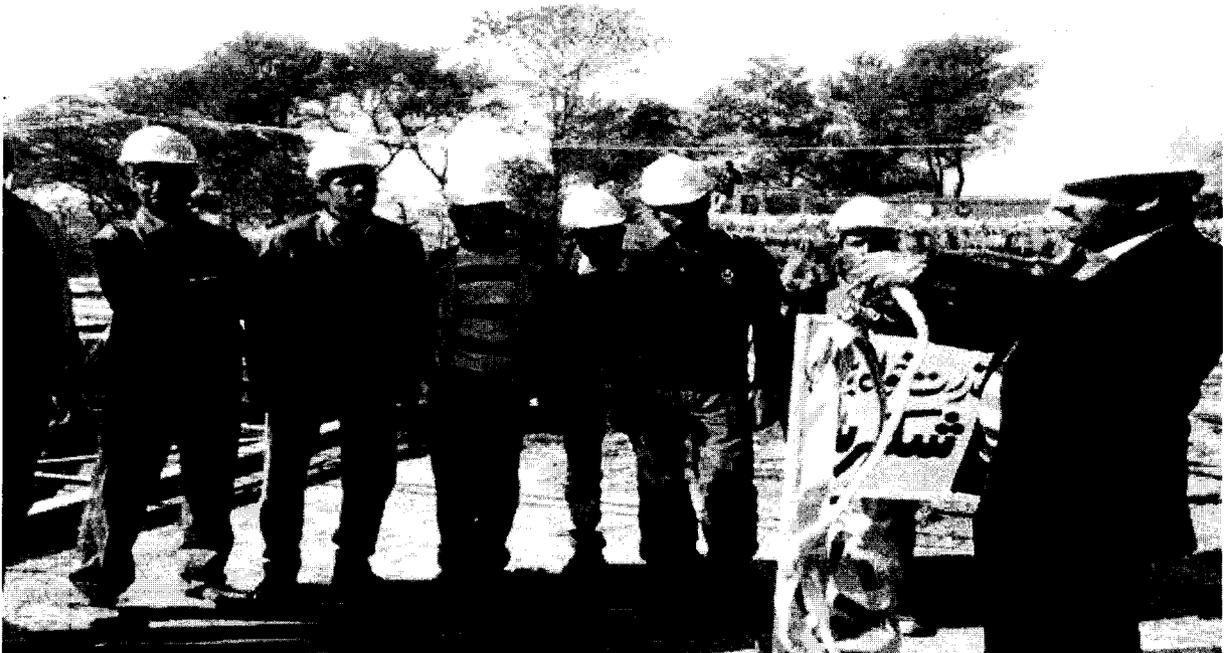
Pic 1: Work in Progress at Zeropoint – Sangjani Transmission Line site.



Pic 2: Safety signage at KTM – Chakri Road Transmission Line site.



Pic 3: Traffic Management at Zeropoint – Sangjani Road Transmission Line.



Pic 4: Safety Assembly at KTM – Chakri Road Transmission Line before work.



Pic 5: Discussing Environment & Social issues with M/s ICC Environmentalist on I-16-Chakri Road T/line site.



Pic 6: Meeting with M/s ICC & its sub-contractors at M/s ICC office Rawalpindi.

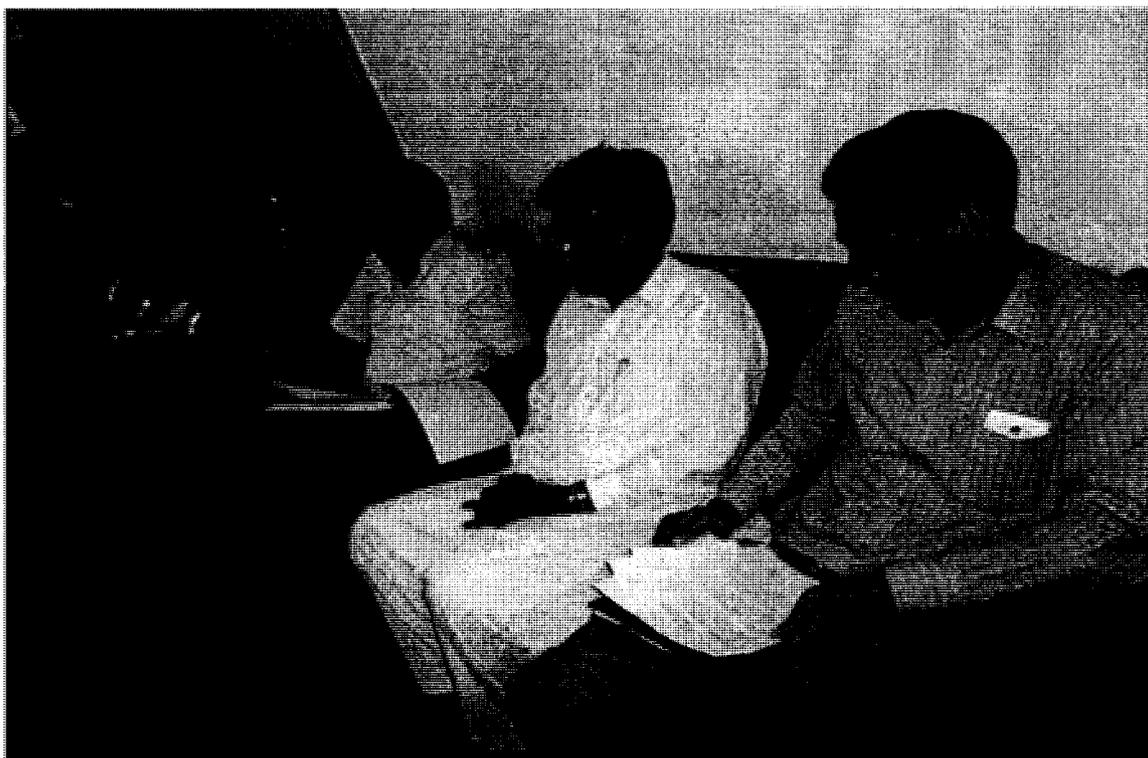


Fig 7: Meeting with M/s ICC & its sub-contractors at M/s ICC office Rawalpindi.



Fig 8: Public Consultation with affectees at Sowan – Rewat Transmission Line site.



Fig 9: Public Consultation with affectees of Zeropoint – Sangjani Transmission Line.