

Environment Monitoring Report

Bi-annual Environment Monitoring Report
January 2016

PAK: MFF – Renewable Development Sector Investment Program (Tranche 1)

Prepared by Punjab Power Management Unit, Government of 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-2286 REDSIP: BAEMR (Jul-Dec 2015), Punjab component, approved for disclosure

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L-2286 BAEMR (Jul-Dec 2015) Punjab HPPs.docx

Dear Liaquat Sb.,

The BAEMR (Jul-Dec 2015) of L-2286 REDSIP (Punjab component) is approved for disclosure. I am sending this through gmail as the file is heavy. Please have it uploaded on ADB website and share the weblink with me.

Thanks and regards,

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Annual Environmental Monitoring Report

Project Number: 2286-PAK

July to December 2015

Pakistan: Renewable Energy Development Sector Investment Program (REDSIP)
Punjab.

Financed by the Asian Development Bank (ADB)

Prepared by Prepared by Environment and Social Cell- PPMU

For Punjab Power Management Unit,
Energy Department, Govt. Of Punjab.

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

Table of Contents

Part I	Introduction.....	1
1.	Introduction	1
1.1	Punjab Power Management Unit (PPMU)	1
1.1.1	Environment & Social Development Cell (ESDC)	1
1.1.2	Functions:.....	2
1.2	Construction Activities And Project Progress During Previous 6 Months: ..	3
1.2.1	Marala HPP:.....	3
1.2.2	Pakpattan HPP	4
1.2.3	Deg Outfall and Chianwali HPPs	4
1.3	Changes in project organization and Environmental management team ..	5
1.4	Relationships with Contractors, owner, lender, etc.	5
Part II	Environmental Monitoring	6
2.	Monitoring	6
2.1	Area of Non-Compliance	7
2.2	Findings/Recommendations	7
2.3	Conclusion	8
Part III	Environmental Management.....	10
3.1	Environmental Clearances	10
3.2	EMMP as a part of Bidding Documents	10
3.3	Clauses in the Bidding Documents	10
3.4	Site Visits for Environmental Monitoring	14
3.5	EMS, SSEMP and work plans	14
3.6	Site Inspection and Audits	14
3.7	Non Compliance Notices	15
3.8	Issues Covered	15
3.9	Public/Community Consultation on Environmental Safeguards	15

List of Annexes

Lay-out plans of awarded projects	Annex-A
Photographs of the project sites	Annex-B
Policies	Annex-C
Meeting Record	Annex-D
Training Record	Annex-E
Environmental Monitoring Reports	Annex-F
Corrective Action Plan	Annex-G
Environmental Management plan table	Annex-H

Abbreviations

ADB	Asian Development Bank
ADB TA	ADB Technical Assistance (Grant for Project preparation)
AEDB	Alternative Energy Development Board
CHPP	Chianwali Hydropower Project
COI	Corridor of Impact
DOHPP	Deg out-fall Hydropower Project
ESDC	Environmental and Social Development Cell
EA	Executing Agency
EPD	Environmental Protection Department
EPA	Environmental Protection Agency
SSEMP	Site Specific Environmental Management Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
GoP	Government of Pakistan
HPP	Hydro-Power Project
IEE	Initial Environmental Examination
IPDP	Indigenous People Development Plan
I&PD	Irrigation and Power Department (Punjab)
MHPP	Marala Hydropower Project
OHPP	Okara Hydropower Project
PHPP	Pakpattan Hydro Power Project
P&D	Planning and Development Department
PD	Project Director
PFD	Punjab Forest Department
PPDCL	Punjab Power Development Company Limited
PPMU	Punjab Power Management Unit
PPTA	Project Preparatory Technical Assistance
PPEs	Personal Protective Equipments
PEPA	Pakistan Environmental Protection Act
REDSIP	Renewable Energy Development Sector Investment Program
ROW	Right-of-Way
SC	Supervisory Consultants
UCC	Upper Chenab Canal
TOR	Terms of Reference
WAPDA	Water and Power Development Authority

Part I Introduction

1. Introduction

The Government of Pakistan availed Project Preparatory Technical Assistant (PPTA) extended by Asian Development Bank (ADB) for development of Renewable Energy resources in the country and feasibility studies of Marala, Chianwali, Deg Outfall, Okara and Pakpattan Hydro Power Projects (HPPs) were updated by the Consultants M/s ENTEC AG in 2005, hired by ADB. Accordingly a Loan Project Agreement was signed between Government of the Punjab and ADB vide No. 2286/87 – PAK for construction of five (05) HPPs, feasibility studies of additional five (05) HPPs and capacity development.

The Government of Punjab, Pakistan is implementing the project of “Renewable Energy Development Section Investment Program (REDSIP)”, with the Assistance of Asian Development Bank (ADB Loan no. 2286-PAK).

The Environment Management Plans (EMPs) including Environmental Management Monitoring Plans (EMMPs) for each site were prepared as a part of IEEs, and made a part of the respective Contract Document. As the contract is EPC/TURNKEY, according to which the final design is the responsibility of Contractor, therefore the Site Specific Environmental Management Plans (SSEMPs) are prepared and being implemented after the finalization of design.

The purpose of this monitoring report is to satisfy the environmental requirements of Pakistan Environmental Protection Act (PEPA), 1997 and ADBs’ environmental safeguards, as well as in observance of Tranche-II projects and subprojects environmental impact. The final goal is to make proposed project up to the standard of environmental and ecological requirements. The monitoring was done during construction period to study the impact made by construction, the environmental quality along proposed project areas, as well as the implementation of environmental protection measures.

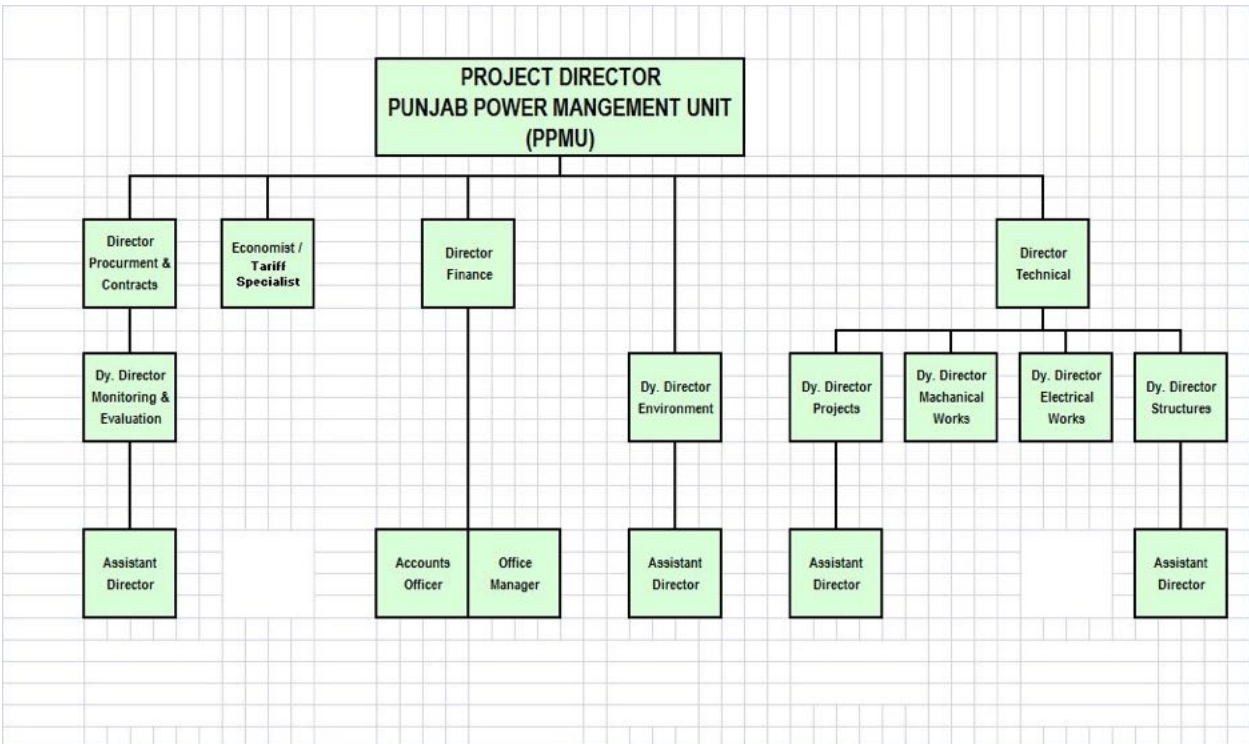
1.1 Punjab Power Management Unit (PPMU)

Punjab Power Management Unit (PPMU) has been established to plan, procure and implement the ADB funded Renewable Energy Projects of Punjab in Public sector.

1.1.1 Environment & Social Development Cell (ESDC)

To take care of all the responsibilities and tasks related to environment, land, and social (including involuntary resettlement and indigenous people) and provide oversight on occupational health, safety and environment safeguards in the working environment, an Environment & Social Development Cell (ESDC) has been established since the beginning of the projects.

Figure 1: Organizational Structure of PPMU



1.1.2 Functions:

- Part-A: Construction of five HPPs (OCR Loan 2286-PAK)
 1. Construction of Marala HPP (7.62 MW) RD. 2+850 UCC, Distt. Sialkot
 2. Construction of Deg Out-Fall (4.04 MW) RD.282+340 UCC Distt. Sheikhpura
 3. Construction of Pakpattan (2.82 MW) RD.112+350, Pakpattan Canal
 4. Construction of Okara (4.16 MW) RD.199+000 LBDC, Distt. Okara
 5. Construction of Chianwali (5.38 MW) RD.130+000 UCC Distt. Gujranwala
- Part-B: Feasibility Studies of additional five HPPs (OCR Loan 2286-PAK)
 1. Lower Chenab Canal (LCC), (7.55 MW), RD. 0 +000
 2. Khanki Barrage (KB), (14.9 MW), Right Bypass

3. Qadirabad Barrage (QB), (23.00 MW), Right Bypass
 4. Upper Chenab Canal (UCC), (3.58 MW), RD. 133+ 296
 5. QadirabadBalloki Link Canal (QBLC), (7.68 MW), RD. 304+985
- Part-C Capacity Development of Energy Deptt. (ADF Loan 2287-PAK))
 1. Construction of office complex of PPDCL and Allied entities of Energy Department.
 2. Management Consultants for Office Complex Building.
 3. Capacity Development through Consultants, seminars, local/foreign training

Table 1: Program Basic Information.

The Program	Renewable Energy Development Investment Program (REDSIP) Multi – Tranche Financing Facility (MFF).
Subproject	Tranche – I subproject.
Sponsoring Agency	ADB & Govt. of Punjab
Executing Agency	AEDB
Implement Agency	Energy Deptt. Punjab
Type of Financing	Loan amount US \$ Million. OCR Loan 2286-PAK; ADF Loan 2286-PAK;
Loan Signing Date	October 05, 2007
Loan Effectiveness Date	November 30, 2007

1.2 Construction Activities And Project Progress During Previous 6 Months:

1.2.1 Marala HPP:

- The installation and operation of dewatering system for Power House.
- Construction of Spill way, Civil Works and other miscellaneous works.

- Import and Installation of Embedded parts for Spillway.
- Common earth filling works of UCC for raising the banks.
- Excavation of power channel.
- Construction of colony.
- Import of radial gate at associated equipment's of spillway as well as some plant and equipment of powerhouse.

1.2.2 Pakpattan HPP

- Construction of Spill way, Civil Works including concrete, steel, reinforcement earth works, stone aprons, and other miscellaneous works.
- Import and Installation of Embedded parts for Spillway.
- Common earth filling works of UCC for raising the banks.
- Excavation of power channel.
- Construction of colony.
- Import of radial gate at associated equipment's of spillway as well as some plant and equipment of powerhouse.

1.2.3 Deg Outfall and Chianwali HPPs

- Colony and Access Roads works in progress.
- The installation and operation of dewatering system at Spill way.
- The installation and operation of dewatering system for Power House.
- Construction of Spill way, Civil Works including concrete, steel, reinforcement earth works, stone aprons, and other miscellaneous works.
- Import and Installation of Embedded parts for Spillway.
- Common earth filling works of UCC for raising the banks.
- Excavation and dewatering of powerhouse.
- Excavation of power channel.

1.3 Changes in project organization and Environmental management team

There is no Change occurred in ESDC of PPMU over the reporting period however the Environmental Specialist of the Supervision Consultant had been hired. There is only one environmental specialist working on contractor site and the deficiency in Environmental working team had been conveyed.

1.4 Relationships with Contractors, owner, lender, etc.

Undoubtedly, Contractors constitute the most important tier in the implementation process of the project. Interaction with the Contractors aimed at infusing adequate knowledge to maintain the required degree of environmental standards during the project execution. For this purpose, frequent site visits were made and the Contractors/workers were guided on an intensive scale. Contractors were advised, inter-alia, on the following points;

- Immediate hiring of Environmental staff in replacement of Mr. Abdullah Bashir for ensuring environmental safeguards compliance on each site as guided by ADB.
- Adaptation of proper sanitation and waste disposal practices at site.
- Minimization of air pollution by water sprinkling with appropriate frequency.
- Awareness to maintain acceptable standards of noise at site (i.e. below 85db (A)).
- Adaptation of suitable measure to control soil erosion.
- Imparting instructions to workers on health and safety.
- Awareness amongst workers to avoid cutting trees/bushes, hunting and fishing.
- Corrective Action Plans (CAPs) had been prepared for CHPP & DHPP as instructed by ADB representative.

In addition to the above the Contractors will also comply with all the recommendations made in the Environmental Management Plans (EMPs) for respective IEEs/EIAs of the subprojects as well as all the conditions of No Objection Certificates (NOC) from relevant Environmental Protection Agencies (EPAs), including NEQS and all applicable regulations/guidelines etc.

The Contractor is directed through formal and informal correspondence on any of the matter relating to Environmental Issue. Informal Meetings have been a common practice during process on SSEPM finalization, however, formal correspondence also have been employed where deemed necessary.

Part II Environmental Monitoring

2. Monitoring

The ESDC of PPMU, SC and the Contractors are jointly responsible for internal monitoring of environmental aspects of ongoing subprojects. They have to check the level of the compliance with the ADBs' safeguard policy, regulations and guidelines during the project implementation. Frequent visits have been conducted by PPMU and SC to monitor the implementation of environmental and social safeguards.

As there are no major Environmental impacts on any of the four awarded project sites, all of the subprojects fall under Category "B" in accordance with ADBs' Environmental Assessment Guidelines, 2003 and required IEEs, which were prepared and approved by ADB and EPD.

The contractor was required to special consideration on the following points:

1. Waste water inlets from camp offices/residences should be diverted to the septic tank and there should be no mixing of wastewater with drinking/groundwater.
2. Solid waste must be removed and COI /project area should be clear from solid waste.
3. Site Specific Environmental Management Plan for CHPP, DHPP, MHPP& PHPP must be implemented with true spirit of ADB policy and local laws.
4. Sanitation and waste water disposal at camp site has been monitored and found that
 - a) Waste Management Plan prepared and got approved from the Engineer but not being implemented properly,
 - b) Septic tanks/soaking pits are not being made functional properly specially at DOHPP & CHPP, where toilets and washing area had direct outlet into the canal,
 - c) Lined washing areas not provided.

The contractor was advised again and again to comply with the conditions prescribed in the SSEMPs regarding above mentioned non-compliant areas.

5. Camp site security and security during construction phase of the project:
 - a). Proper fencing/locking of storage rooms containing hazardous material provided.
 - b) Guards for security have been employed but lack in numbers.

6. No damage to archaeological sites observed.
7. Social Balance and Public Relations:
 - a) No complaint/conflict observed
 - b) Job opportunities are preferably provided to the locals.
8. Noise and Vibrations are found within NEQS limits.
9. Air Quality has been monitored visually and water sprinkling has not been made properly owing to lack of dedicated vehicle for this purpose.
10. Flora and Fauna are not unnecessarily damaged.
11. Un-necessary cutting/uprooting of trees avoided and killing/shooting /poaching of wild animal species controlled.

2.1 Area of Non-Compliance

Although Environmental protection requirements are being followed up to certain extent, however some issues have been observed which are as follows:

1. Lack of environmental staff on contractor and Consultant side,
2. No net /balloon system present to prevent falling hazard
3. No designated Solid waste area present at CHPP.
4. Lack of Adequate First-Aid room at CHPP& DHPP.
5. Lack of concrete /tough tiled bed at the Fueling areas of all of the sites.
6. Lack of concrete beds at generators foundation on all of the sites.
7. Some PPE,s are not appropriate to the relevant job.
8. Some sheds made of wooden planks and bamboos were observed which are serious threat for safety of the workers,
9. Training Need Assessment(TNA)has beenconducted at all the sites and it has been observed that proper trainings in many areas at all the sites.

The Contractor has been provided continuous guidance and help to implement the SSEMPs.

2.2 Findings/Recommendations

Following findings/recommendations have been made based on the monitoring of the subprojects:

1. Contractors are recommended to follow ADB environmental safeguard guidelines for Sub-projects at all the sites with true spirit of SSP and relevant SSEMPs.
2. Contractor has been advised to implement the corrective action plan (CAPs) prepared & Signed by contractor, consultants & clients.
3. it was directed strongly to:
 - take Mitigation measures for health & safety as per SSEMP;
 - It must be ensured that all staff should use PPEs
 - Excavated & storage area of each site should be fenced.
 - Contractors are advised for the placement of safety signs.
4. Due to the use of well-maintained construction machinery and vehicles, the impact on air quality can be classified as insignificant however negligence in water sprinkling is causing dust emission which has been times and again pointed out.
5. No significant noise & vibration impacts reported by local residents. Contractors are ensured to observe timings for noise management.
6. No complaint was lodged regarding environmental safeguards at site.
7. All the concerned staff has been instructed to improve OHS performance levels including use of PPEs, implementation of working hours etc. but to make sure the use of PPEs and the OHS performance is the responsibility of contractor which is not satisfactory and must be given due attention.
8. Contractors are bound to level and refill the excavated areas to original shape and restore after civil works.
9. Contractors are bound to restore civic structures, community services (if any) which remained under their use during implementation of subprojects.
10. It is strongly recommended where work at height
 - Ensure the use of Safety belts and
 - Ensure that, Safety net has been positioned where work at height is in progress.

2.3 Conclusion

According to environmental monitoring surveys, it is concluded that the construction activities have little effect on the environment. Although mitigation measures are being taken, and no major impacts are expected. The non-compliance of above mention points is unaffordable, so it must be ensured that this practice wouldn't be repeated again. It is to be ensured that Contractors should adopt appropriate measures for the better environmental management practices at site and improve Occupational Health and Safety performance. All the above observations recorded are indicative of overall achievement of targets set forth in case various subprojects, so far as mitigation measures are concerned. Well planned and well

managed environmental training of staff by the Contractor will help to improve safeguards compliance during implementation, adaptation of appropriate measures with respect to health and safety of labor force, alleviation of poverty and vulnerability of the local communities at respective subproject sites.

Part III Environmental Management

3.1 Environmental Clearances

In accordance to PEPA 1997, for every developmental project, obtaining of environmental approval namely “No Objection Certificate (NOC)” from concerned Environment Protection Agency (EPA) is mandatory prior to construction. Therefore Environmental Approvals from the Environmental Protection Agency were obtained for all of the five subprojects initially in 2006, and got extended in March 2011.

3.2 EMMP as a part of Bidding Documents

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

3.3 Clauses in the Bidding Documents

Environment related clauses included in the bidding documents are as follows:

9. Contractor’s Responsibilities

9.8 The Contractor shall record the condition of roads, agricultural land and other infrastructure prior to transport of materials required for the contract works and commencement of construction. The contractor shall fully reinstate pathways, other local infrastructures and agricultural lands to at least their original conditions upon construction completion.

9.9 Protection of the environment

The Contractor shall comply with all applicable national and local environmental regulations and guidelines The Contractor shall (a) establish an operational system for managing environmental impacts, (b) carry out all the monitoring and mitigation measures set forth in the Initial Environmental Examination (IEE) and Environmental Management Plan (EMP) for the Project attached hereto and (c) allocate the budget required to ensure that such measures are carried out, and actual cost for the implementation of such measures shall be reimbursed by the employer to the Contractor from Provisional Sum. The Contractor shall submit to the Employer quarterly reports on the carrying out of such measures.

6.9 Environmental Protection and Miscellaneous

6.9.1 Environmental Management

The Contractor shall comply with all legal duties and obligations regarding the protection of the environment as laid down Laws and Regulation of Governments of Pakistan and Punjab.

6.9.2 Water Quality

The Contractor shall submit proposals for the Employer's Representative's approval for all waste water and foul effluent from offices, workshops and site accommodation to be collected and treated at a waste treatment plant prior to discharge into open water courses into ground water. Where construction methods involve pumping of ground water, the Contractor shall submit proposals for monitoring and the disposal of water discharges.

6.9.3 Waste Management

The Contractor is fully responsible for the day-to day management on waste collection & disposal. The Contractor must make arrangements for waste management for the collection and the disposal of domestic and industrial refuse, by handling, transport or storage of scheduled wastes outside the premises and its safe disposal at a location approved by the Employer Representative.

The Contractor must ensure that all the necessary utensils such as proper storage containers or bins for refuse and kitchen wastes, special storage containers for scheduled wastes, temporary sewerage plants or toilet facilities are provided at the premises.

The Contractor must also comply with the following environmental conditions throughout the construction stage:

All effluents produced must be treated to comply Law and Regulation of Government of Pakistan before discharge into area approved by the Employer's Representative. The effluent shall never be discharged into canal without treatment;

Temporary sewage treatment for toilet facilities in accordance with the specifications as prescribe by the Law and Regulation must be provided at the Contractor's site office and worker's camps before the commencement of any works;

Open burning of solid wastes including biomass waste and construction debris is strictly not permitted;

Handling and disposal of scheduled wastes must comply with the requirements of the Law and Regulations of Government of Pakistan;

Waste oil and grease arising from the earthworks and construction activities must not be disposed into any nearby watercourse. These wastes must be stored in proper drums/containers and either reused or disposed at the site as approved/licensed by the Director General of Environmental Quality.

6.9.4 Avoidance of Nuisance

The Contractor shall take all reasonable precautions to avoid causing a nuisance with dust noise or vibrations arising from his operations. This provision is in addition to but not in substitution for the provisions of the Conditions of Contract.

The Contractor shall not obstruct, as far as possible, the normal rights of way of the users of the public roads and where this is necessary and unavoidable, he shall provide barriers, roads signs, warning lights, etc. required for proper traffic control including getting the necessary permits from the Police Department and other local authorities and paying all fees in connection therewith.

The Contractor shall be responsible for clearing and cleaning all existing streets, roads, drains, etc. at regular intervals, or when directed by the Employer's Representative and keep the approaches to the site clear of mud and obstruction.

The Contractor shall be liable and shall indemnify the Employer in respect of any claims or proceedings arising out of his neglect in taking care to avoid creating a nuisance when carrying out the Works.

6.9.5 Borrow and Disposal of Materials

a. Surplus Suitable Materials

The Contractor shall dispose-off all surplus suitable materials to areas designated by the Employer. The surplus suitable materials shall be compacted to the requirements for earthworks Specification.

b. Borrow Pits and Stockpiles

The Contractor shall submit proposals for the Employer's Representative's approval giving the location of borrow pits and stockpiles and proposals for their management to ensure acceptability of the materials.

The Contractor shall be responsible for locating borrow pits and stockpiles, in addition to, designated borrow pits and stockpiles. Whether the Contractor obtains materials from the designated or his own borrow pit, it shall be the responsibility of the Contractor to ascertain the suitability of the pit with respect to the quantity and quality of the materials, which shall be acceptable to the Employer's Representative. The Contractor shall pay all necessary leases, fees, taxes, levies or royalties to the appropriate authorities and observe all relevant regulations. The Contractor shall keep the borrow pits free from ponding water and the excavation neat and tidy and shall carry out necessary erosion protection and other mitigation measures as acceptable to the Employer's Representative.

Where suitable material is stockpiled for later use the Contractor shall ensure that the formation is cleared of all vegetation unless otherwise approved by the Employer's Representative. Stockpiled material shall be finished with a sloping, compacted surface to ensure run-off to keep the stockpile free of ponding water. Where required the Contractor shall provide a drainage ditch around the stockpile to prevent the ingress of water or other measures acceptable to the Employer's Representative. The Contractor shall also be responsible for disposal of surplus materials to designated places as approved by Employer's Representative.

6.9.6 Notice to Service Authorities

The Contractor shall make at his own expense all necessary arrangements for notifying the service authorities of required connections, removals and relocations of all public utilities and services affected by the Works.

Sufficient time shall be allowed for such notification as may be required by the relevant authorities so that appropriate action can be taken regarding the execution of the removals and relocation.

6.9.7 Utilities and other Services

The Contractor shall be responsible for locating the position of all utilities, including mains, overhead and underground cables, pipes, sewers and drains, and where necessary shall adopt such methods of excavation as may be required by the appropriate authorities or Employers to ensure that no damage is caused to them.

The Contractor shall make good, at his own expense, any damage whatever to existing utilities to the complete satisfaction of and in accordance with the instructions of the relevant authority or Owner concerned, and shall keep the Employer indemnified at all times from all claims, costs and expenses which may be brought against or incurred by the Employer for or on account of any damage (whether permanent, temporary or recurring) to the said utilities. All utilities, which are encountered in the course of the Works, shall be adequately supported, slung up, strutted or otherwise protected from damage to the satisfaction of the persons or authority in which they may be vested.

Due allowance shall be made by the Contractor for the effect on the phasing of the Works of relocations to existing public and private mains and utilities necessitated by the Works. The Contractor shall ensure that such existing mains and utilities are not interrupted without the written consent of the relevant authority or the owner of the utilities concerned.

If any privately owned utilities for water, electricity, telephone, drainage. etc., passing through the Site are affected by the Works, the Contractor shall provide an approved equivalent alternative service in full working order to the satisfaction of the Employer of the utility and the Employer's Representative, before the cutting of the existing utility, and until the completion of the permanent replacement of the utility.

6.9.8 Prohibition of Advertising

The Contractor shall treat the Contract and everything written as private and confidential. In particular, the Contractor shall not publish any information, advertisement, drawing or photograph relating to the Works and shall not use the site for advertising purposes, except with the written consent of the Employer and subject to such conditions as he may prescribe.

6.9.9 Explosives

The Employer's Representative shall have the power to regulate, restrict or prohibit the use of explosives, explosive powered tools, or the like in the Works if in his opinion it is necessary to do so for the safety of persons or property or to safeguard the Works.

No blasting shall be carried out in any part of the Works without the written permission of the Employer's Representative. Such permission shall not absolve the Contractor from any of his obligations or liabilities under the Contract and he shall take all necessary precautions including the use of blasting nets or mats to avoid damage, loss or injury to persons and to public or private property.

The Contractor shall keep the Employer's Representative fully informed at all times when blasting is proposed to be carried out and of any details that may be required by the Employer's Representative concerning strength of charges and their positions.

Explosives shall not be used within 30 m, or such greater or lesser distance as the Employer's Representative may direct, of concrete placed in the Works, of any existing structure, pipeline, electric cable or overhead power or telephone lines, etc.

The Contractor shall obtain at his own expense the necessary licenses for the use, handling, transporting and storage of explosive and shall comply at all times with the requirements of the Police Department, and other authorities having jurisdiction in the area of the works, as may be conditional upon the granting of such licenses.

Environmental Issues:

1. General Condition of Contract:
2. Special Condition of Contract:
3. Contract Forms / Contract Agreement :

3.4 Site Visits for Environmental Monitoring

To check the compliance level of Contractors on environmental and social safeguards, the subprojects sites are frequently visited by ESDC of PPMU and SC. The main objective was to assess that the project implementation meets the ADB's safeguard policy requirements and GoP rules/regulations. Besides environmental monitoring of subprojects, the environment team also kept on guiding Contractors/Workers and Supervisory Consultants, with particular emphasis on environmental safeguards and health and safety of workers as well as local community.

3.5 EMS, SSEMP and work plans

The four awarded projects namely MHPP, DOHPP, CHPP & PHPP are on the construction stage, As there are no major adverse environmental impacts or any major changes from EMP of feasibility level.

The SSEMPs of MHPP, DOHPP, CHPP & PHPP are being implemented.

3.6 Site Inspection and Audits

Site inspections and audits of the sub projects are being performed with the time of Physical work.

3.7 Non Compliance Notices

As mentioned earlier in environmental monitoring, no major environmental degradation or violation has yet been observed, however Workers not wearing safety belts, no net /balloon system present to prevent falling hazard, Solid waste area not present at CHPP.

If any environmental impact observed at construction of subprojects, the non-compliance notices will be communicated accordingly.

3.8 Issues Covered

All the environmental issues observed on the sites have been Communicated/ covered accordingly. A detailed Corrective Action Plan (CAP) has been prepared and signed to ensure the proper implementation of Environmental Safeguards.

3.9 Public/Community Consultation on Environmental Safeguards

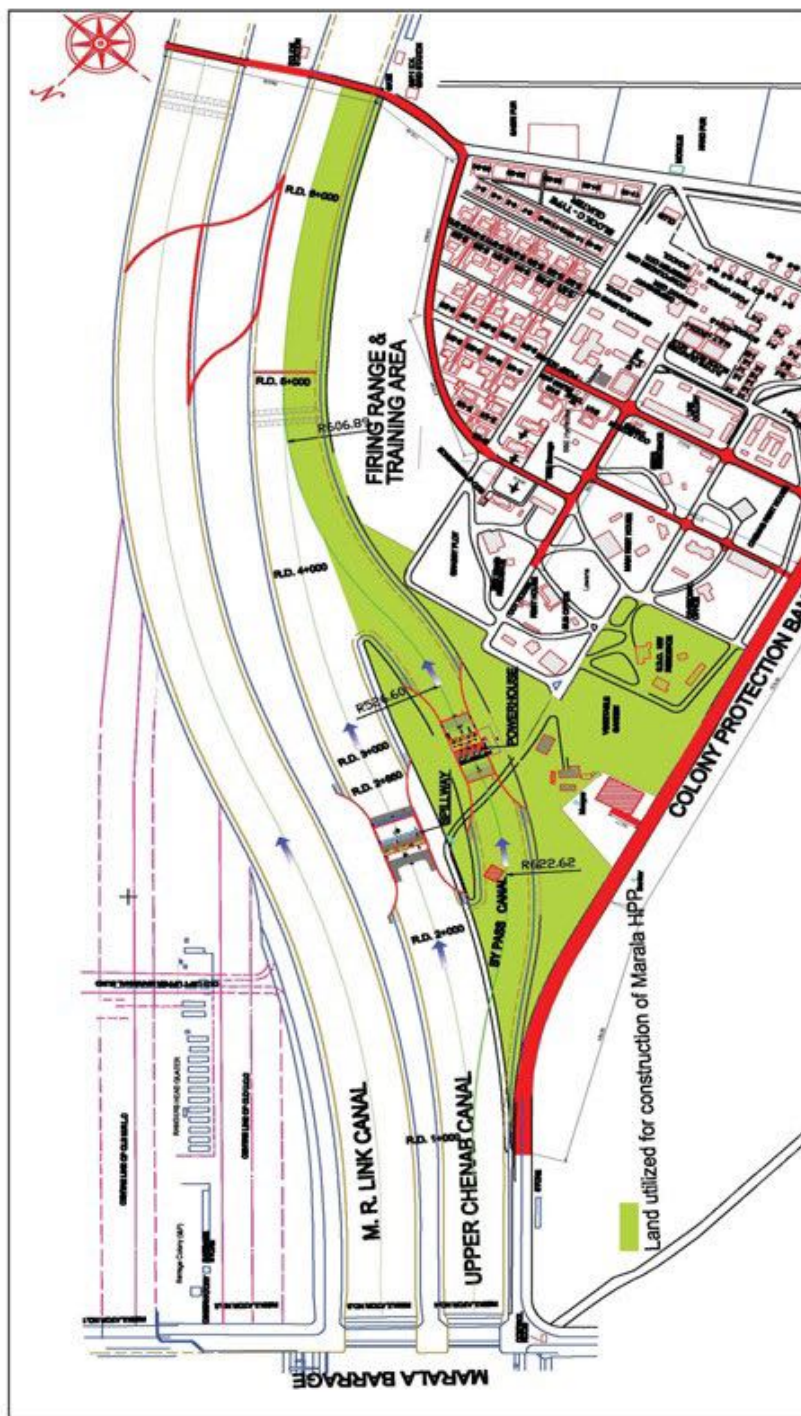
During each visit to subprojects sites, the public and community were consulted about implementation of environmental safeguards, they were satisfied and as such no complaint was received regarding environmental safeguards. However, to redress the complaints (if any), the PPMU has formulated a Grievance Redress Committee.

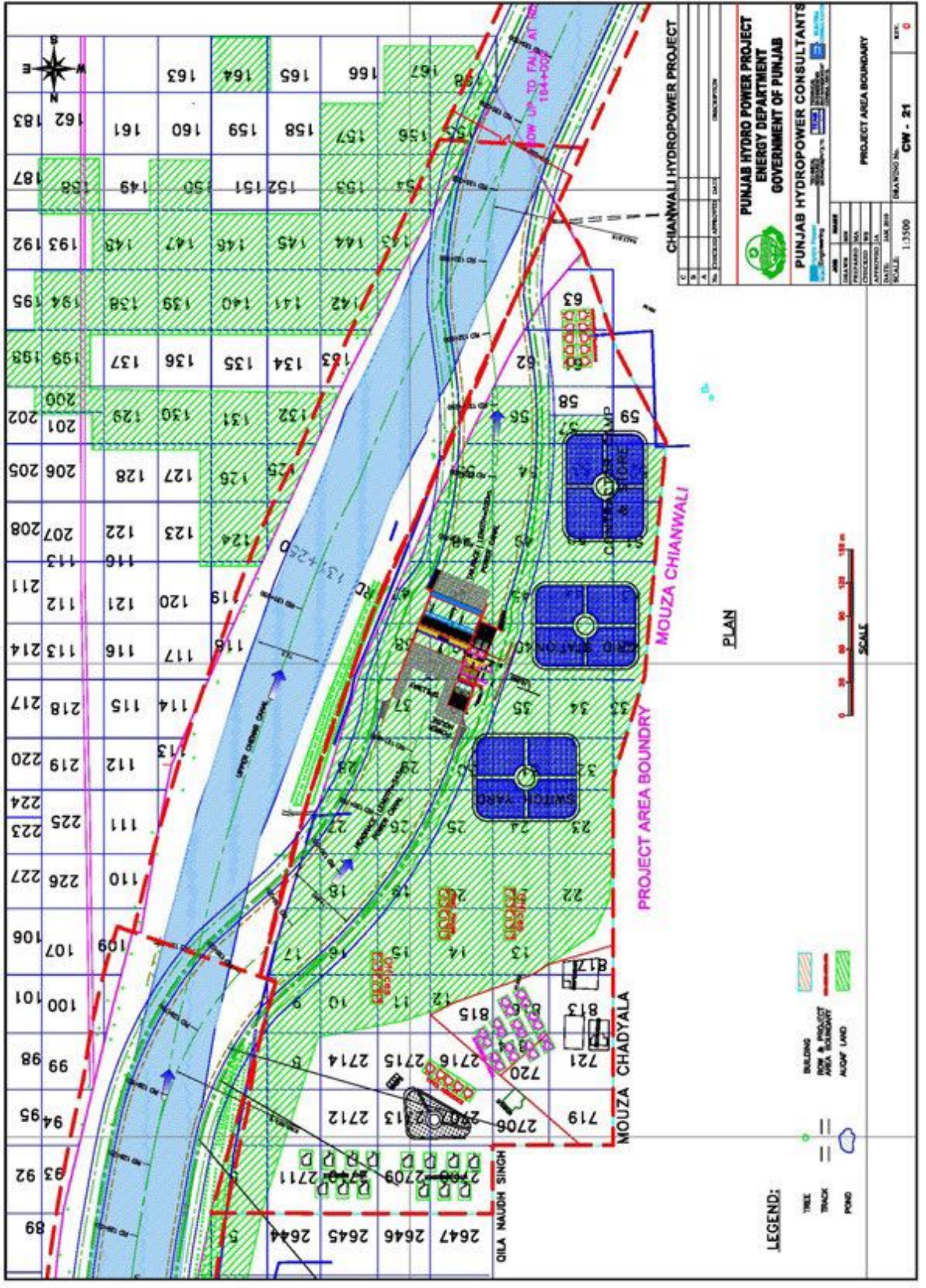
A complaint register has also been managed on each site where civil work has been started, however no complaint regarding environmental issues has been reported yet.

Annex-A

Lay Out Plans of Awarded Projects







Annex-B

Photographs of the Subproject Sites



Steel Worker working using



First Aid box at site



Safety signs at site



Safety Signs at



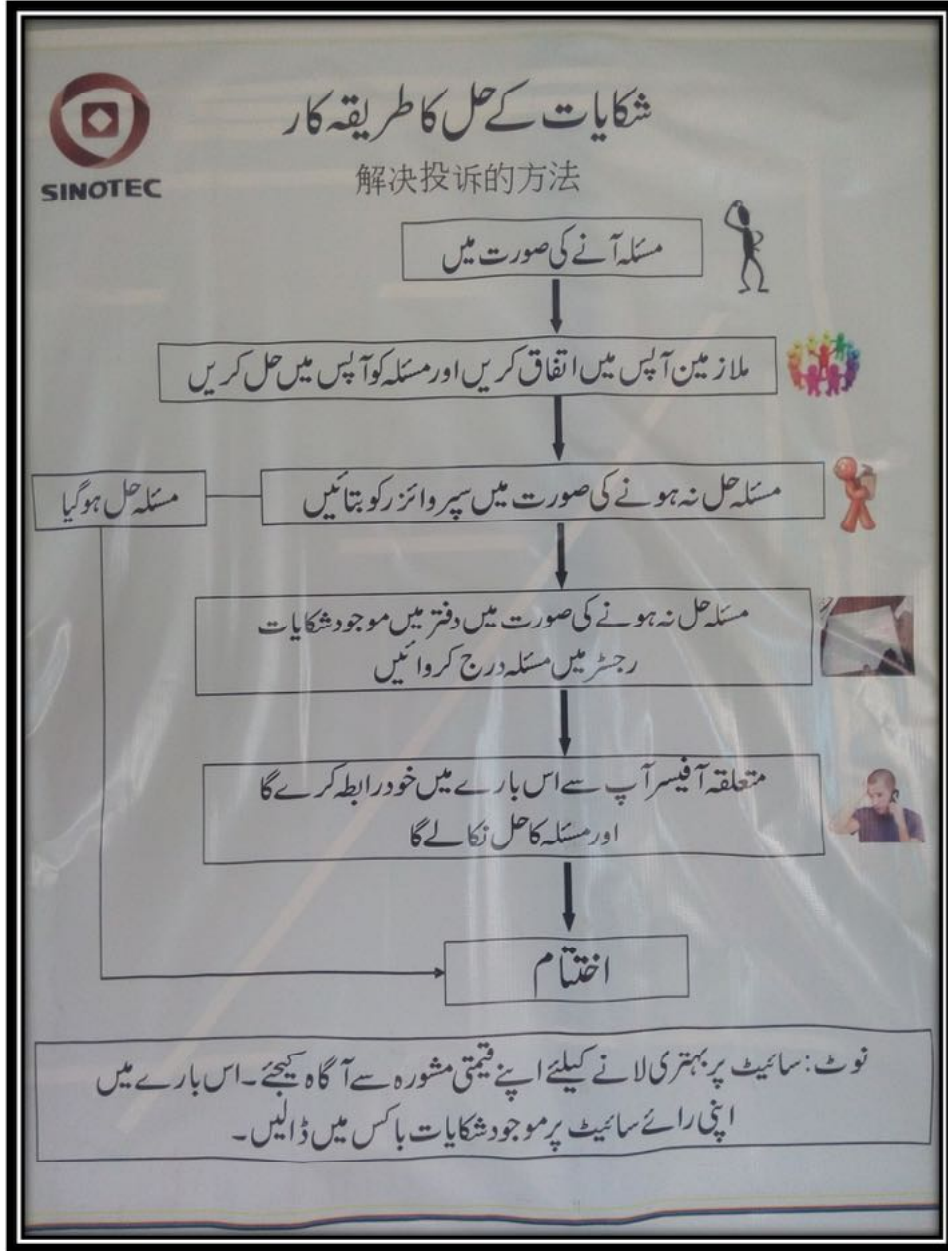
Complaint Box at the camp area to record the



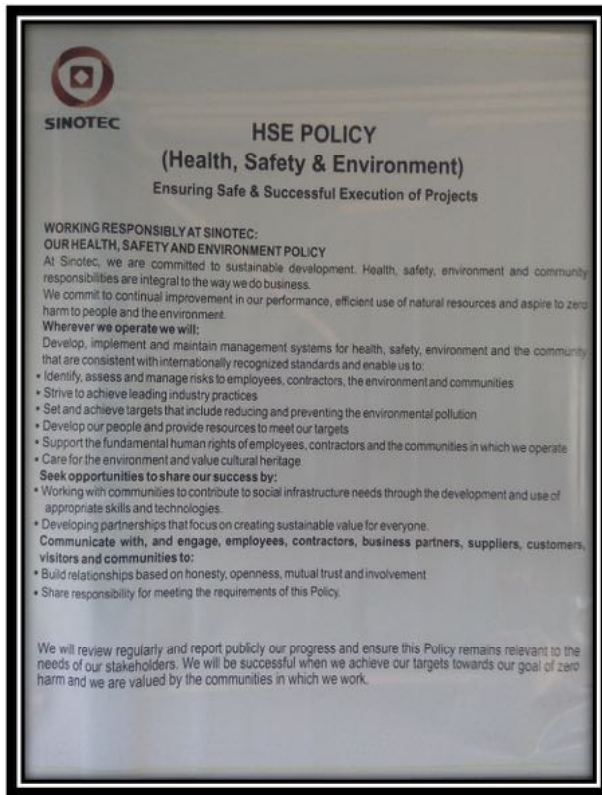
Workers working without



No designated washing area for mixers
at site



Grievance Policy at all sites



HS



中电国际技术股份有限公司
SINOTEC CO., LTD

HSE Meeting list

Location: CHP Date: 20-07-15

[illegible]



中电国际技术股份有限公司
SINOTEC CO., LTD

HSE Meeting list

Location: CTP Date: 25-08-15

PARTICIPANTS			
SR. NO.	NAME OF PARTICIPANTS	POSITION/DEPARTMENT	SIGNATURE
①	Qasim	CM	<u>Qasim</u>
②	shahid	Are	<u>shahid</u>
③	Kashif	Contractor	<u>Kashif</u>
④	waqas	Contractor	<u>waqas</u>
Remarks: "CTP" site representative shows a good culture attitude towards the HSE.			



中电国际技术股份有限公司
SINOTEC CO., LTD

HSE Meeting list

Location: DHP Date: 25-10-15

PARTICIPANTS			
SR. NO.	NAME OF PARTICIPANTS	POSITION/DEPARTMENT	SIGNATURE
①	umer	R.E	(umer)
②	Ali Khan	A.R.E	(Ali Khan)
③	Sajid	CM	(Sajid)
④	Abdullah	Env. Expert	(Abdullah)
⑤	Mr. Thong	P.M	Mr. Thong
⑥	Mr. Shuii	project arch.	Mr. Shuii

Remarks: consultants plays a vital role in HSE developments & P.M is Agreed to follow the ADB Guidelines.



Location: DHP Date: 25-07-15

Pakistan Office: 33-A, Block-G, Gulberg-III, Lahore Tel: +92 42 35881238-9 Fax: +92 42 35881241

Annex-E

Training Records



中电国际技术股份有限公司
SINOTEC CO., LTD

TRAINING ATTENDANCE SHEET

Training

Topic/Agenda: use of ladder/

Project Site CTP Location: Chianwali

Date: 10-12-15

Trainer Name & Designation: Awais Mahmood, Env. Expert

PARTICIPANTS			
SR. NO.	NAME	POSITION/DEPARTMENT	SIGNATURE
①	Waqar	Labour	
②	Farhan	11	
③	Fawad	11	
④	Qasim	11	

Trainer's Signature



中电国际技术股份有限公司
SINOTEC CO., LTD

TRAINING ATTENDANCE SHEET

Training

Topic/Agenda: incident reporting

Project Site DHP Location: Sheikhupura

Date: 25-12-15

Trainer Name & Designation: Awais Mahmood e Abdullah

PARTICIPANTS			
SR. NO.	NAME	POSITION/DEPARTMENT	SIGNATURE
①	Mashood Ali	Labour	<u>Mashood</u>
②	Baqar Ali	"	<u>Baqar</u>
③	Allah Ditta	"	<u>Ditta</u>
④	Mala Khan	"	<u>Mala</u>

Trainer's Signature

Awais Mahmood e Abdullah



中电国际技术股份有限公司
SINOTEC CO., LTD

TRAINING ATTENDANCE SHEET

Training

Topic/Agenda: work at height & safety belt

Project Site DHP Location: sheichupura

Date: 10-12-15


Trainer Name & Designation: Awais Mahmood, Env. Expert.

PARTICIPANTS			
SR. NO.	NAME	POSITION/DEPARTMENT	SIGNATURE
①	wajahat	labour	wajahat
②	Nathariyal	"	Nathariyal
③	George Mashi	"	George Mashi
④	Danijal	"	Danijal

Trainer's Signature

Annex-F

Environmental Monitoring Reports



LABORATORY TEST REPORT

Reference: 846/AEL/SCL

Client: SINOTEC Company Ltd, Gulberg III, Lahore

Date of issue of report: 08-12-2015

Date of sampling: 04-12-2015

Nature/source of sample(s): Ground Water Sample from water site Area (PHP)

Testing specifications: APHA-USA

Sr. No.	Parameter	Unit	Result	NEQS Limiting Values
1	pH	---	7.5	6.5-8.5
2	Taste	---	Ok	Non Objectionable
3	Odour	---	Ok	Non Objectionable
4	Turbidity	NTU	1	5
5	Total Hardness as CaCO ₃	mg/l	98	<500
6	Total Suspended Solids (TSS)	mg/l	19	200
7	TDS	mg/l	520	<1000
8	Colour	TCU	3	15
9	Grease & Oil	mg/l	N.D.	10
10	Total Coli form	Number/100ml	N.D.	0/100 ml
11	E-Coli	Number/100ml	N.D.	0/100 ml
12	Total Count	Number/100ml	N.D.	0/100ml
13	Aluminum	mg/l	N.D.	≤ 0.2
14	Antimony	mg/l	N.D.	≤ 0.005
15	Arsenic	mg/l	0.01	≤ 0.05
16	Barium	mg/l	N.D.	0.7
17	Boron	mg/l	N.D.	0.3
18	Cadmium	mg/l	N.D.	0.01
19	Chloride	mg/l	62	250
20	Chromium	mg/l	N.D.	≤ 0.05
21	Copper	mg/l	0.009	2.0
22	Cyanide	mg/l	N.D.	≤ 0.05
23	Fluoride	mg/l	0.03	≤ 1.5
24	Lead	mg/l	N.D.	≤ 0.05
25	Manganese	mg/l	N.D.	≤ 0.5
26	Mercury	mg/l	N.D.	≤ 0.001
27	Nickel	mg/l	N.D.	≤ 0.02
28	Nitrate	mg/l	1.9	≤ 50
29	Zinc	mg/l	0.5	5.0

*N.D=Not Detected

Laboratory temperature

Results: All the measured parameters are physically & chemically are in compliance with The NEQS-Pakistan limiting values

Suite # 4, 2nd Floor, Link Arcade, Model Town Link Road, Lahore, Pakistan

Off: 042-35887517, 35841688, 35925693 Fax: 042-35855508

E-mail: ectech_ectech@yahoo.com

A sister concern of ECTECH Environment Consultants.

The Laboratory is accredited as Environmental Laboratory by the Environmental Protection Agency, Government of the Punjab, Lahore.



LABORATORY TEST REPORT

Reference: 872-15/AEL/SCL
Client: Sinotec Co. Ltd. Lahore (Sheikhupura Site)
Date of issue of report: 11-12-2015
Date of sampling: 10-12-2015
Nature/source of sample(s): Fired Stacks Monitoring (Power Generator-Site area)
Testing specifications: Flue Gas Analyzer-LANCOM-III & ISO Kinetic Casella

Reference point	CO (mg/Nm ³)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	Particulate Matter (mg/Nm ³)
Power Generator-Site Area	524	179	217	138.9
Fuel	Diesel			
NEQS-Pakistan Limiting Values	800	1700	600	300

Comments: All tested parameters are in compliance with the National Environment Quality Standards of Pakistan

Terms & Conditions

- This laboratory test report relates to the specific sample/s as provided by the client or collected by the laboratory staff according to the instructions of the client.
- This report should be reproduced as a whole and not in parts.
- In case sampling is done by the client then the laboratory does not hold itself responsible as to the sample/s being representative of any batch or process or the entire production lot or lot.
- The responsibility of the ethical use of the results reported in this report lies with the client. Consequently, the laboratory is absolved of its responsibility for any claims that may result through the use by the client or others, of the results appearing in this report.
- The left over sample/s (if so available) shall be retained for fifteen days after the issuance of the report unless otherwise negotiated between the client and the laboratory.



Manager (Laboratory)

Countersigned by:
(Dr. Muhammad Hanif)

Ph.D. - Analytical Chemistry, Post Doctorate - Analytical Chemistry, Advisor Laboratory
Director General (R), PCSIR Laboratories Complex, Lahore
Director General (ex) Ministry of Environment, Government of Pakistan



Laboratory Analyst

Suite # 4, 2nd Floor, Link Arcade, Model Town Link Road, Lahore, Pakistan
Phone: 042-35887517, 35925693, 35841688 Fax: 042-35855508
E-mail: ectech_ectech@yahoo.com

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Annex-G

Corrective Action Plan (CAP)

Corrective Action Plan of Environmental Safeguards for DHP & CHP

Dec-2015

Sr. No.	Location	Category	Issues/Observation	Corrective Action	Advantages to contractor	Target Date of January
1	All sites	Level-1	Rough surface & heavy dust at all the roads inside the site	<ul style="list-style-type: none"> Continuous sprinkling at the site Put fine gravel at the roads to avoid the surface roughness & dust 	Required Less Sprinkling & Reduce your fuel cost + Time	31 st
2	All sites Batching Plant	Level-3	Heavy Slush + sludge was observed Roughness of the bed where mixer stands for filling the concrete material	<ul style="list-style-type: none"> Make a drainage along the bed of batching plant Make a Concrete bed at that filling area to avoid the roughness & slushy material Make a settling tank/soaking pit along the drainage of the batching plant material to avoid water body contamination Testing of that settled water is required 	Reduce & contain the wastage of concrete material after being settled down Save the surface water body & leaching as well as soil contamination	15 th
3	All sites Fueling area	Level-3	Too much Roughness of the bed of fueling area	<ul style="list-style-type: none"> Immediately build the tough tile/Concrete bed at the fuel area 	Save soil contamination & tyres of vehicle	15 th
4	All sites	Level-3	Bamboo & wooden planks built shed were observed at both sites Suspended & damaged electrical wires were observed	<ul style="list-style-type: none"> Replace the bamboo with steel pipe to strengthen the structure in case of natural disaster Proper ducting of electrical wires is required & replace the damaged wires with new one 	No accident save the repute & good will of the company Save accidental cost	15 th
5	All site generator area	Level-2	Roughness & oily bed of the generators	<ul style="list-style-type: none"> Immediately build the bed of concrete at for the generators at site or colony area 	Save soil contamination	20 th
6	All sites	Level-3	Only cotton gloves were observed in every category of the work	<ul style="list-style-type: none"> Choose the other types of gloves that suits the labour according to their work 	Reduce incidents/accidents	15 th
7	All sites	Level-3	Training Need Assessment (TNA) is observed at the sites regarding the use of PPE.s & other working categories	<ul style="list-style-type: none"> Starts training at the sites more frequently to develop a culture of the safety 	HSE Culture developed & accidental cost is minimized which increase the profit	15 th
8	All sites	Level-3	Less HSE Representatives	<ul style="list-style-type: none"> Hire the new HSE Professional Train the foreman/worker regarding the HS&E 	HSE Culture developed & less accidental cost	15 th
9	All sites	Level-2	Concrete mixer/heavy vehicle washing is observed everywhere	<ul style="list-style-type: none"> Designate a washing area of batching plant for the concrete mixer Heavy vehicles should be washed at a designated area that contain proper drainage system 	The washed concrete material is used at the batching plant bed	20 th

Level-1 corrective action required till the end of Dec. 2015
Level-2 Corrective action required till the 2nd decade of January 2016
Level-3 Corrective action required till the mid of January 2016

Monitoring Plan

Sr. No.	Description	Monitoring location	Monitoring parameter	Frequency of monitoring
1.	Quality of drinking water	Campsite	All drinking water parameters	Quarterly
2.	Waste Water Generation	Colony toilets, batching plant	All waste water parameters	Bi-annually
3.	Emission of dust, smoker	Generator area, batching plant area, material storage area	Dust, Smoke	Quarterly
4.	Noise	Generator area, Peter Engine	Noise measurement	Once a week throughout the construction phase.

2016.1.13
Contractor's Representative:
Representative:
Sinotec:

SENIOR ENGR.
Consultants Representative:
PHC:

AD(R&E)
Client
PPMU:

Annex-H

Implementation of IEE Environmental Management Plan

Environmental aspect and potential impact	Remedial measures	Action to date	Action required/comment
Earth Works for construction of diversion canal, powerhouse causing loss of land use and trees.	<p>Maximize re-use of material in different construction phase and avoid or reduce the need to find areas for the deposition of excavated materials.</p> <p>Tree planting have been programmed on canal banks to replace the existing tree plantation on the right bank of the canal within the Irrigation department RoW.</p> <p>Store top agricultural soil and reuse when the diversion canal is renovated.</p>	<p>Contractor using the excavated material for upgrading & leveling of soil bed.</p> <p>No considerable cutting of flora</p>	The top soil layer has been stored and would be reused as the renovation of the diversion Canal takes place
Operation of construction equipment and construction activities and contamination of soils, loss of water quality and water pollution.	<p>Fuel storage & refueling will have adequate containment away from the canal.</p> <p>Equipment to be properly maintained & any waste petroleum products will be collected, stored, & disposed of at approved sites as per hazardous site.</p>	<p>Fuel Storage & Refueling tanks are maintained & monitored regularly.</p> <p>Equipment's are not maintained properly by the contractor.</p> <p>Improper Disposal system present at site</p>	<p>storage area for Hazardous material should be constructed'</p> <p>Maintenance should be ensured.</p> <p>Proper disposal system should be constructed and maintain.</p>
Construction activities causing disruption of existing	Appropriate rain-storm-water channels will be constructed	Rain storm water channel have been constructed of adequate capacity and strength	Rain storm water channel is in working condition

canal system and the supply of irrigation water.			
Construction Camp & Residential colony. Social impacts & pollution from wastewater & solid waste	Camps & residential colony will have properly designed sewage system for wastewater effluent and solid waste collection	<p>Septic tanks/soaking pits has been constructed at camp side while some of them are not in working condition</p> <p>No waste water sewerage tank present at Colony sites</p>	<p>Sewage systems have to improve</p> <p>Construct Septic tank for colonies</p>
Dust particulate causing health impacts for workers and villagers	<p>All precautions to be taken to reduce dust level emissions from batching plants & portable crushers.</p> <p>Regular water spraying at all mixing sites & temporary service roads will be undertaken.</p> <p>All delivery vehicles will be covered with tarpaulin. Mixing equipment will be sealed & equipped as per existing standards.</p>	<p>In portable crushers and batching plant maximum cover of material used to avoid dust emissions. Workers have not been provided with dust masks to avoid the Particulate Matter (PM)</p> <p>Water boozers are not working continuously for sprinkling of water.</p> <p>All delivery vehicles covered continuously with covering materials.</p>	<p>Dust masks should be provided to workers</p> <p>Water sprinkling has been observed but the frequency of sprinkling is not adequate.</p> <p>Continuously Monitor the delivery vehicles</p>
Construction activity Noise from Vehicles, Plant & Equipment causing noise pollution	<p>All construction equipment & plants will conform to EPA NEQS noise standards.</p> <p>All vehicles & equipment to be fitted with noise abatement devices.</p> <p>Generator workers provided with earplugs</p>	<p>Noise level of vehicles & Generators have been tested by 3rd party (EPA registered & using APHA-USA specification) Founded that Noise level falls within NEQS Limit.</p> <p>Ear plugs/Muffs have been provided to workers.</p>	The contractor using the services of EPA registered lab.

		Workers not wearing Ear plugs/Muffs.	Workers training required
<p>Construction Activities &</p> <p>Accident Risks</p>	<p>Safety signs Should be installed on all routes affected by construction work particularly during work from the existing road on the left bank.</p> <p>Workers will be provided helmets, masks & safety goggles etc.</p> <p>A readily available first aid unit with dressing materials</p> <p>Road safety education will be given to construction vehicle drivers.</p> <p>Traffic management will be ensured during road construction periods.</p>	<p>Safety signs installed at construction sites and routes.</p> <p>PPEs are not provided in adequate No. & some of them are not adequate to job.</p> <p>First Aid Box present at every site.</p> <p>Periodical training of drivers has been carried out regularly.</p> <p>Traffic management has been ensured but required continuous monitoring.</p>	<p>The contractor should ensure the provision of PPEs at all of the sites.</p> <p>Workers training required</p>
<p>Construction Activities causing disruption to Public Utilities</p>	<p>Any public utilities impacted, such as water wells, power/phone lines etc. must be relocated to suitable places, in consultations with local beneficiaries</p>	<p>No considerable public utilities being affected</p>	<p>No activities at sight disrupts the public utility</p>