

Environmental and Social Monitoring Report

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Quarterly Report (July-September 2016)
September 2016

Pakistan: Patrind Hydropower Project

Prepared by Star Hydro Power Limited for the Asian Development Bank.

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STAR HYDROPOWER LIMITED

147 MW PATRIND HYDRO POWER PROJECT

ENVIRONMENTAL & SOCIAL MONITORING REPORT

(JULY-SEPTEMBER 2016)



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A COMPANY OF KOREA WATER RESOURCES CORPORATION

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Acronyms

ADB	Asian Development Bank
AJK-EPA	Azad Jammu & Kashmir Environmental Protection Agency
KPK	Khyber Pakhtunkhwa
CDP	Community Development Plan
EH&S	Environmental Health & Safety
EPCC	Engineering Procurement Contracts Contractor
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GRC	Grievance Redress Committee
IEE	Initial Environmental Examination
IDB	Islamic Development Bank
IFC	International Finance Corporation
ILO	International Labor Organization
KEXIM	Export Import Bank of Korea
NEQS	National Environmental Quality Standards
NTP	Notice To Proceed
PAPs	Project Affected Persons
PS	Performance Standard
RAP	Resettlement Action Plan
SHPL	Star Hydropower Limited

Introduction

i. Background

The Patrind Hydropower Project is run of river project located on the boundary of Khyber-Pakhtunkhwa and Azad Jammu & Kashmir. The purpose of the Project is to provide zero-emissions renewable electricity to the grid and also provide local and global environmental benefits as well as strong local socioeconomic benefits. The project has the total capacity of 147 MW. The project is being financed by multilaterals like IFC, ADB, IDB and KEXIM.

ii. Objectives:

The purpose of this Quarterly Environmental & Social Performance Report is to describe EPC contractor's compliance with the environmental and social performance requirements of IFC/ADB (including implementation of the Environmental Management Plan) and to assess any corrective actions implemented/proposed. This includes:

- A description of all significant health, safety, environmental and social activities and events that occurred during the reporting period.
- Provision of additional information about activities (i.e., status of permits or other approvals, ongoing public consultation etc.).
- Quantitative performance monitoring data summaries in comparison to appropriate ADB and IFC policies, guidelines and national requirements.
- An explanation of any cases of non-compliance with lender's guidelines or applicable regulatory limits that have occurred, identifying the cause and the corresponding corrective measures planned or underway to prevent future occurrences.
- Resettlement Action Plan activities and progress on the implementation of project within the Sustainable Development Strategy Framework

a. **Project Name and Summary Information**

i. **Project/Business Name**

Patrind Hydropower Project

ii. **Status of Construction**

The Notice to Proceed (NTP) for main works was issued by the Company to EPC Contractor on December 26, 2012. However the preliminary works under Preliminary Contract were initiated in October 2010 and were dovetailed in to the main contract. As of September 2016 the physical progress achieved is 98.7%.

iii. **Location of project**

Village Patrind, District Muzaffarabad, Azad Jammu and Kashmir

iv. **Nature**

Run of river Hydropower Project.

v. **Scale/size**

147 MW

vi. **Date of construction/operation commencement**

Preliminary works commencement: September 2011

Main works start after issuance of NTP: December 2012

vii. **Name, designation and signature of person responsible for preparing/reviewing the report**

	
Prepared By: Syed Atif Ali Shah Designation: Manager HSE	Reviewed By: Kyung Whan Lee Designation: Deputy Chief Executive Officer
	
Approved By: Waqar Ahmad Khan Designation: Chief Executive Officer	

b. Relevant Environmental Permits or Compliance Certificates

a) Summary of permit conditions and media covered:

As per NOC Issued by AJK-EPA, SHPL/EPC is bound to:

Condition	Status of compliance
Ensure compliance to NEQS and undertake mitigation measures suggested in the EIA report & EMP. Constitute Environmental/Post EIA Monitoring Committee and submit monitoring reports on quarterly basis and provide the copy of this approval and EIA report to the contractor for information and compliance activities.	Environmental Monitoring Unit has been established and mobilized on site after the issuance of Notice to Proceed to the EPC Contractor. Quarterly E&S Monitoring reports are being submitted to the EPA AJ&K. Post EIA monitoring was undertaken by EPA during last year. Approval and EIA report is part of EPC contract.
Compensate PAPs for loss of agricultural land, crops, property, and usage right etc. in accordance with the rates that agreed upon and adopt appropriate mechanism for RAP grievance redress. Employ local peoples for all unskilled jobs and implement CDP sooner than later. Ensure all public utilities such as water supply pipes, power phone line be not disturbed by the execution of the project.	Owners have been compensated for the loss of agricultural land, trees and property as per the market rates/replacement cost. For unskilled jobs local workers from affected communities (Alda, Patrind, Tarcheela, Boi, Sarati Shoran and Deedal) are being employed and for skilled jobs locals are being hired on priority basis as per the requirement and the qualification. During civil works special care is being taken not to disturb any of the public utilities.
Ensure occupational and community health and safety backed by a comprehensive emergency response plan. Adopt controlled techniques in accordance with Pakistan explosive act and also make sure the safety & security of wild animals and their habitats at the project site and in its environs with the prior consultation and adhering to the guidelines of forestry and wild life departments strictly.	Emergency response procedures are in implementation. Provision of PPEs, education sessions, availability of medical facilities, installation of sign boards and close supervision by EPCC & OE HSE staff are ongoing activities to ensure Occupational health and safety on project sites. Blasting activities are carried out in accordance with Pakistan Explosive Act. Monitoring of Fish fauna and flora has been undertaken during quarter.
For compliance of regulation 13, 14, 17 & 18 of IEE/ EIA regulations 2000 which enunciate the conditions for approval. Confirmation of compliance, entry, inspection and monitoring of the proposed project. The site to install the asphalt plant and other machinery would be selected in consultation with the agency (AJK- EPA). The findings of quality analysis on regular basis should positively be shared. Also, the spoil should be dumped at pre identified location.	Quality monitoring reports are being sent to EPA-AJK. Spoil is being dumped on approved sites. Installation of batching plant has been undertaken with consultation of EPA-AJK.

Communicate any change in the approved project to AJK-EPA and that would be commenced after obtaining the approval. The approval shall stand null and void if the conditions mentioned herein before are not fully complied with. It does not absolve the proponent of the duty to obtain any other approval or clearance that may be required and can be withdrawn at any time with any prior notice if deemed necessary in the public interest.

For the changes in the design of the weir site layout and Addendum to the EIA report was submitted to both the EPAs i.e. EPA AJ&K and KP covering the changes to be made in the design which was subsequently approved by both the EPAs on November 19, 2014.

Most of the conditions are common in both approvals with few exception of following issued by EPA KPK:

Condition	Status of compliance
Water in the pond created by construction of Patrind weir should be maintained at EI765m.amsl. Safety zone/adequate engineering measures should be provided to overcome fears of the residents regarding effects of pond to their houses. The level difference of 2 meter from 765m.amsl to 767m will act as safety zone so the owner of the land and housing structures falling within the zone should be compensated as per laid down procedure of compensation of the government.	The operation level of the Project is at 765 masl. The Company acquired the land at the level of 767 masl as per the condition of the EPA. The additional 2 meters shall act as safety zone and the owners were compensated as per the procedure.
The project management should contribute towards the repair of the road to be used during construction and operation activities of the project. The trees supposed to be submerged should be counted in the presence of all stake holders i.e. owners land collectors /patwari representing revenue department representative of EPA and forest/agriculture department. After the determination of exact number type and ownership of the trees be finalized and paid as per laid down procedure of the government	The owners have been compensated for the trees supposed to be acquired due to the land acquisition. The trees were counted in the presence of all stake holders i.e. owners land collectors /patwari representing revenue department representative of EPA and forest/agriculture department. Uneven section of project access road passing through Sarati village has been repaired with graders. Damaged portion, will be repaired if any. The maintenance of the access roads near the project area is part of Social uplift plan
Minimum flow of 2 cumecs in the downstream of weir in Kunhar River should be kept and provision for 10% extra of this amount of water for emergency in downstream should also be kept in plan. No extension would be permitted in the future in existing hydropower project without prior approval of the EPA /government of Khyber Pakhtunkhwa	Shall be applicable during the operation phase of the Project
Separate NOC is required for batching/crushing Plant	NOC was obtained from EPA KPK for installation of two batching plants near the weir site

b) Relevant Government Agencies

As the Project is located on the boundary of Khyber Pakhtunkhwa and Azad Jammu & Kashmir, Star Hydro Power Limited (the “Company”) had to seek approval of Environmental Impact Assessment (EIA) from following two Environmental Protection Agencies (EPAs).

- i. EPA Azad Jammu and Kashmir
- ii. EPA Khyber Pakhtunkhwa

c) Issuance dates and duration of validity

Issuing Authority	Issuance Date	Duration of Validity
EPA-AJK	10-08-2010	3 years
EPA-KPK	14-04-2011	Project construction phase

d) Renewal Requirements:

As per AJK-EPA review of IEE and EIA Regulations, 2009 “Once the Environmental Approval is accorded in favor of the proponent, shall be valid for the period of 3-years from the date of issuance. However, if construction is commenced during the 3 years period, the approval shall stand extended "automatically" for a further period of 3-years from the date of expiry of initially issued Approval”.

c. Incidents of Violations or Non-Compliance

HSE compliance monitoring has been undertaken as per usual during the reporting quarter. To ensure implementation of recommended procedures regular liaison was maintained with the EPC contractor and OE and subsequently with the site construction teams and sub-contractors. Efforts were made to ensure remedial and corrective actions highlighted by the Company and OE to mitigate HSE issues.

Incidents of violations and non-compliances by EPCC and its sub-contractors were included in daily, weekly and monthly reports. To prevent incident and mitigate risks, during the quarter, close supervision by HSE team has been carried out. Following non conformities were highlighted by OE through correspondence and during formal or informal meetings. Remedial measures and corrective actions have been undertaken mitigation measures:

- In month of July it was observed that most of the transit mixture are throwing sludge openly in the disposal area because access was blocked due to improper disposal of concrete in the disposal area. So corrective action was taken in this regard opened the access & made new trench for the disposal of concrete waste and sludge, Also warned the drivers not to throw concrete waste openly because it creates a lot of hurdles for other drivers who properly dispose the sludge & concrete.



- In front of M&E workshop beside the river Kyung dong labor has thrown some timber planks and bags full of waste, which is adulterating the surroundings. So corrective action was taken and removed all the material from that place and shifted it to the disposal area and asked Kyung Dong labors not to throw any kind of material beside river.



- At power house near tower crane during working hydraulic oil was leaked and entire of the hydraulic oil spread around, firstly HSE site staff barricaded the area and then corrective action was taken in this regard by removing the hydraulic oil manually with the help of viper, later water was sprinkled on the affected area and dry cloth was used to remove the lasting of oil properly. Poured oil was collected in the drum which was



- During the month of September it has been observed that some of transit mixtures are throwing concrete waste in Residual waste trench which effects the life of trench, so to resolve this issue new concrete waste trench has been prepared in order to dispose concrete waste properly.



Un-safe Act & Un-safe Conditions

To mitigate risks of accidents UA/UC Observation Card System was introduced to ensure maximum safety on site. To sensitize all staff/workers and to get information and feedback about site HSE issues, boxes holding UA/UC cards have been placed on prominent locations.

Warning Letters for Non-compliances

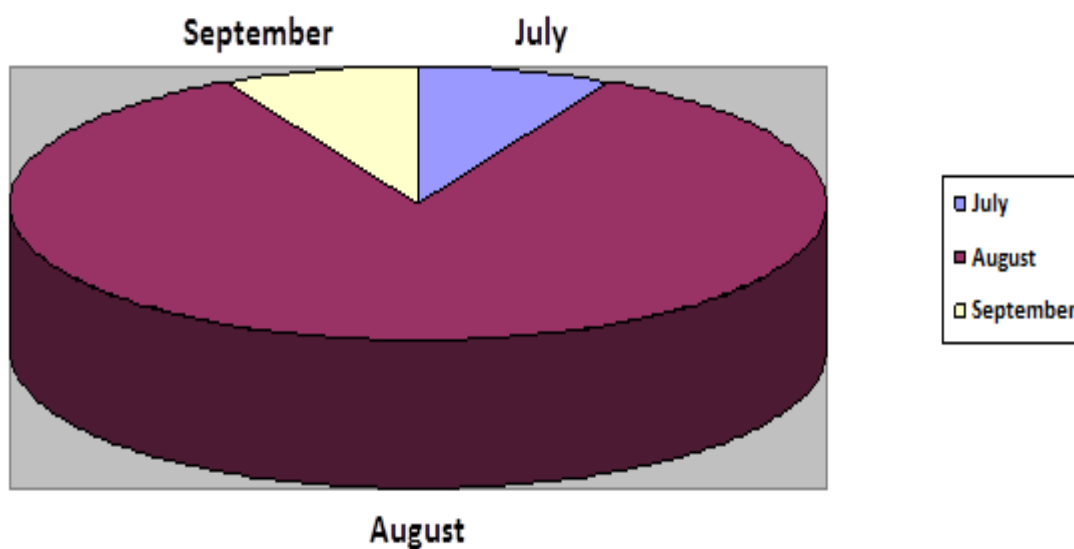
During reporting period, depending on nature and severity of violation warning letters have been issued. Verbal warning is given for the first time on minor violations. If any employee fails to abide by HSE policies after verbal warning a written warning letter is issued. 13 warning letters were issued for incident for violations of HSE procedures. List of warning letter is given in the table below. As per company's standard procedure after three warnings employee would not be able to continue his/her job. However, before removal it is important to ensure that individual has been informed / trained and provided with the necessary PPEs.

WARNING LETTERS

Sr.#	NAME	DATE			SITE	COMPANY	DESIGNATION	REASONS
		DD	MM	YY				
1.	Waqar Younis Awan	25	07	2016	PH Site	Daewoo E&C	HSE Helper	For coming late on Duty
2.	Mustafeed	07	08	2016	PH Site	GDYT	Labor	Working on cable trolley with proper scaffolding
3.	Kim Sung Hoon	23	08	2016	PH Site	Daewoo E & C	Construction Manager	Failure to Supervise
4.	Imran Ullah	04	08	2016	PH Site	HESPAK	Civil Engineer	Failure to Supervise
5.	M Noman	24	08	2016	PH Site	HESPAK	Civil Foreman	Unsafe Behavior
6.	Waqas Saeed	24	08	2016	PH Site	Pro Steel	Site Engineer	Failure to Supervise
7.	Ibrahim Asghar	19	08	2016	Weir Site	Daewoo E & C	HSE Officer	Failure to Supervise

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Sr.#	NAME	DATE			SITE	COMPANY	DESIGNATION	REASONS
		DD	MM	YY				
8.	Umer Saleem	17	08	2016	Weir Site	Daewoo E & C	HSE Officer	Failure to Supervise
9.	Kamran	17	08	2016	Weir Site	Sung Bo E & C	HSE Officer	Failure to Supervise
10.	Rizwan	17	08	2016	Weir Site	Sung Bo E & C	Welder	Unsafe Behavior
11.	Mr. Sun	17	08	2016	Weir Site	Sung Bo E & C	Construction Manager	Failure to Supervise
12.	Basharat	17	08	2016	Weir Site	Sung Bo E & C	Mason Foreman	Work at height without Body Harness
13.	Nadir Hussain	17	09	2016	Weir Site	Daewoo E & C	Rigger	Unsafe Behavior



d. Incidents of Environmental and Safety Accidents

a) Environmental Accidents and Mitigation

- No major environmental incident occurred during the reporting quarter on both the sites. However, minor soil contamination due to inappropriate handling of oil was observed.
- During the quarter, minor oil spillage was observed in front of the batching plant, power house and in workshop area due to the maintenance of the machinery and generators placed on the site. Corrective actions were taken immediately in this regard to stop oil spillage by removing the top layer of contaminated soil and dumping into the concrete waste trench in the disposal area to prevent environmental degradation.



- During the reporting quarter, the ratio of dust generation has been increased due to the change of weather. Corrective action was taken by in this regard and issued a revised water sprinkling schedule to the batching plant supervisor and asked him to follow the schedule to overcome the dust issues. Three water bowsers were assigned duty to sprinkle water on whole site, as well in the areas near community.



Following preventive and mitigation measures are adopted;

- Filter cartridges of the water filtration plant were changed on both the sites to ensure clean drinking water.



- Shotcrete activities have been undertaken to stabilize slopes and to mitigate risk of erosion and to minimize landslide risk.
- Excavated material is being dumped in designated disposal areas on both sites.
- According to the nature of work inspections have continuously been carried out during the reporting period to reduce the risk of accidents and impacts on environment and for proper maintenance of machineries and other equipment's.
- Quarterly Fish fauna and vegetation monitoring to have been undertaken.



- Proper disposal of Explosives material (Detonators & Tovex) with the permission of government authorities





- Bi Annually Water Quality Analysis to have been undertaken in the 4th quarter.
- Fumigation activity was conducted on both sides of the project.
- Hunting and fishing activities are prohibited on project sites.

b) Health and Safety Accidents and Mitigation

EPCC encourages and educates employees to take reasonable care for their own health and safety. Incidents are recorded for all workers/staff working for subcontractors and on rented vehicles/machinery.

Summary of health and safety incidents during quarter is in the table given below.

Incident	Frequency	Description	Media or Community Reaction
Fatality	1+0+0	In the month of July 2016, an incident occurred at bypass tunnel outlet wherein a worker (Mr. Tofique) fell down from the height on the 22 nd of July, the incident was reported by EPCC as Non-Occupational Act (human error).	Detailed report is attached as Annex-13 to this report.
First Aid Case	1+2+1	<ol style="list-style-type: none"> 1. On 19th July labor Abdul Majid injured the foot of labor due to Steel nail, he was given the first aid at site clinic and referred to CMH for further expert opinions and medication. 2. Pipe slipped from the hand of one person and hit the back of Mr. Hafez, he was sent to hospital after first aid and thorough examination report showed no internal injuries 3. One Labor at powerhouse site got the electric shock, shifted to hospital after first aid and discharged from hospital because thorough checkup report showed him fine. 4. On 21st Sept, 2016 at power house site small piece of steel 	None

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Incident	Frequency	Description	Media or Community Reaction
		bar hit from the height and hit the helmet of the worker working under the area, but he got a small injury on his head.	
Medical Treatment Case	0+0+1	1. On 18th Sept, 2016 at power house site little finger of labor got captured between two Steel segments in HRT and injured badly	None
Damage only incident and Near Miss	2+0+2	1. On 9 th July 2016 fire happened during welding activity, the area was immediately evacuated and no damaged or injury happened. 2. On 11 th July, 2016 Vehicle tire rolled over the power cable in front of batching plant and it caught a small fire, immediately the supply was disconnected and no injury or property damage happened. 3. On 22nd September at weir site Dump Truck turned over while unloading the stones. The driver jumped out and luckily no injury happened 4. On 10th September at power house site load not controlled operator due to over winding of sling wire	None
Property damage/environmental incident	0+0+0	None	None
Medical Checkup / Examination / Treatment		<p align="center">July, 2016</p> <p align="center">Persons visited the HSE clinic on both sites: Lower site = 291 Upper site = 247 Total= 538</p> <p align="center">August, 2016;</p> <p align="center">Lower site = 129 Upper site = 94 Total= 223</p> <p align="center">September, 2016;</p> <p align="center">Lower site = 110 Upper site = 90 Total= 200</p>	None

External Monitoring /Inspection

Sites HSE internal inspection has remained an ongoing activity. As part of external monitoring, The Lenders (IFC, ADB & KEXIM) Environmental & Social Monitoring Team

frequent visits the site. Star Hydro and technical advisor Mott MacDonald also visited site on August 10, 2016 and raised some issues which later on rectified by the concerned departments, other visits from Daewoo head office approaching time to time and inspecting sites.

Internal Inspections Conducted During Reporting Period

To mitigate safety incidents, machinery, equipment and electrical appliances are being inspected to ensure fitness through color coding system. List of inspections done during the quarter are attached as **Annex- 1**.

According to the nature of work being carried out on construction sites, inspections have continuously been carried out during the reporting period to reduce the risk of accidents and impacts on environment and for proper maintenance of machineries and other equipment regularly.

Following inspections have been undertaken during quarter;

- Heavy equipment inspection
- Batching Plant Inspection
- Site Overall Inspection
- Fire Extinguisher Inspection
- Health and Hygiene Inspection
- Gaseous concentration Inspection



Mitigation Measures

To ensure health and safety of both staff and labor on project area, following were some of the prominent activities EPCC undertook during the quarter:

1. Workers (attached with both Daewoo E&C and sub-contractors) have been provided with necessary Personal Protective Equipment (PPE) comprising of helmets, safety shoes and safety jackets and ankle belts to prevent injuries.
2. Warning letters have also been issued to the personnel found to perform activities that are against the rules and regulations of the HSE
3. Newly employed staff, labor and daily wagers were given HSE inductions so that they are aware of potential risks associated with the construction sites emergency procedures
4. Safety campaigns and awards are distributed to encourage and develop safe work behavior in labor and staff
5. To mitigate safety incidents, machinery, equipment and electrical appliances are being inspected to ensure fitness
6. Regular trainings/education sessions for staff and labor
7. Water sprinkling on project access road for community health and safety.

Permit To work (PTW)

For the following activities permit to work have been issued during the quarter. The list is presented in **Annex-2**.

- 1- Welding/ Open Flame Work
- 2- Excavation
- 3- Lifting
- 4- Explosive issue
- 5- Blast
- 6- Work at height

e. Labor Relations and Conditions

(i) Nature of labor dispute or grievance

No labor dispute or conflict with local community was observed or reported during quarter. Complaints box are positioned on each site on detectable location for the ease of labor in submitting complaints. Complaints of labor and local community have been entertained as per company rules & procedures. Details are attached **Annex- 12**.

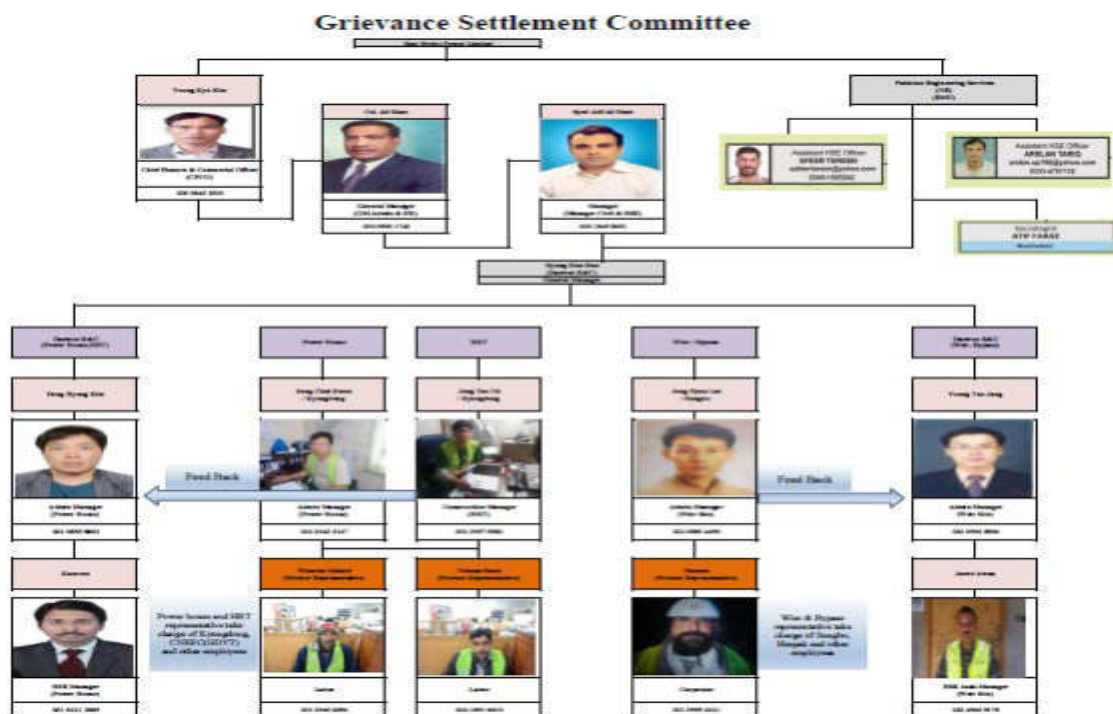
(ii) Legal requirements, Permit conditions and renewal requirements

During the reporting period, requirements related to labor's contracts, permits and other conditions remained constant and no change was observed.

EPCC and sub-contractors are providing insurance coverage in case of accident and death. Furthermore, a deduction is being made from salaries for Employees Old Age Benefits Institution (EOBI) as social security on KPK side.

(iii) Authorities in charge of investigation/recording

In case of any labor incident, site Construction Manager and HSE staff is responsible to record, investigate and address it appropriately.



To address any dispute or work related complaint received from staff /workers. Internal Grievance settlement Committee (GRC) comprising four representatives from labor one from each subcontractor, Planning Manager, Admin Manager and HSE Manager is

mandated to investigate the matter in an unbiased manner and resolve it amicably so that the concerned party or individual may be satisfied and a friendly / peaceful environment is reinstated at project site.

(iv) Corrective actions, deadlines, identification of responsible parties.

SHPL, OE and EPCC's HSE departments continuously indicates corrective actions for further compliance by construction team.

(v) Labor relations and living conditions for construction labor force

All staff/workers before induction have been educated to respect local norms and never involve in any conflict with locals. Furthermore, community liaison officer / coordinator who have been employed from local area, assist in managing these accommodations. Basic services like electricity, water and gas have been provided. Safety measures such as fire extinguishers and emergency contact numbers have been placed on main locations. Fire alarm system has been installed on main campus lower site and will be installed on new accommodations as well. Ambulance drivers are aware of all accommodations to have prompt access in case of any emergency. Following standards are implemented for adherence of local Labor standards:

- Government of Pakistan Labor Policy 2010.
- Standards for labor health and safety are executed according to EPC Construction Contract.
- EPC has made all necessary arrangements for payment, housing & feeding.
- The living conditions are up to merit with all necessities.
- Prefer to hire unskilled /skilled staff and labor from AJ&K or KP.

Compliance status based on applicable National and International laws/ regulation on labor including ILO core labor standards

As per conditions stipulated in the Project construction contract between Company and EPC contractor those have been made in light of National and International laws and standards, implementation during the quarter has been observed accordingly. Statuses of compliance with these laws are given in the table below;

Table: Compliance Status with International and National Labor Laws/Regulations

CONTRACTUAL TERMS/ CONDITIONS	STATUS OF COMPLIANCE DURING QUARTER
ENGAGEMENT OF STAFF AND LABOR	
Except as otherwise stated in the Project Requirements, the Contractor shall make arrangements for the engagement of all staff and labor, local (People living in project vicinity) or otherwise, and for their payment, housing, feeding and transport.	EPC contractor has made all necessary arrangements for the engagement of staff and labor and payment for their wages/ salaries, housing, feeding and transport. However, the local staff/workers do not need accommodation on project base camp.
The Contractor and its subcontractor(s) shall prefer, to the extent practicable and reasonable, to hire unskilled staff and labor, and skilled staff and labor with appropriate qualifications and experience, who are residents of AJ&K or KP especially who are the affected of the Project	More than 200 of unskilled jobs have been provided to nearby communities (Alda, Thori, Patrind, Tarcheela, Sarati, and other adjacent localities). Also preference has been given to local people who qualify for skilled positions
The Contractor shall, and shall ensure that its subcontractors shall, fulfill and observe the Environmental and Social Requirements in relation to the engagement of staff and labor	EPC Contractor has established a proper mechanism of daily and weekly reporting and consistent monitoring of HSE and related social issues. On the basis of recommendations, corrective measures are being taken accordingly
RATES OF WAGES AND CONDITIONS OF LABOR	
The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out or as prescribed under the Laws of the Country. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.	The minimum salary for the permanent worker is 14,000/- for 208 hours monthly according to the budget notification 2015 plus food and accommodation if required.
PERSONS IN THE SERVICE OF OTHERS	
The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.	Full compliance of the condition was observed during entire quarter
LABOR LAWS	
International Human Rights & Core Labor Standards The Contractor shall comply with all the relevant labor Laws applicable Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.	All regulations are in implementation. Local labor laws were devised in light of International Human Rights & Core Labor Standards; therefore, compliance with local standards is same with international laws /standards. Furthermore, Pakistan has ratified ILO's conventions on core labor standards.

The Contractor shall require its employees to obey all applicable Laws, including those concerning safety at work.	Site HSE status has been improved due to regular instructions and corrective measures.
Abolition of child labor	To ensure the abolition of child labor the Computerized National Identity Card (CNIC) has been made mandatory for induction which is only provided by the GOP after the age of 18.
Elimination of all forms of forced or compulsory labor	No forced labor observed /reported during quarter. Furthermore, during site inspections by SHPL, OE and EPCC's HSE staff, it is strictly checked that no forced labor has been undertaken on any site in any form.
Elimination of discrimination in respect of employment and occupation	No discrimination exists as all persons have been provided equal opportunities irrespective of color, race, origin and nationality. Only difference is the nature of job and relevant skills.
Freedom of association and the effective recognition of the right to collective bargaining	No ban is imposed on workers with regard to establishment of workers organization or freedom to express labor concerns. However, formal labor union or association has yet not been established.

WORKING HOURS

<p>No work shall be carried out on the Site on locally recognized days of rest, or outside normal working hours, unless:</p> <p>(a) Otherwise stated in the Contract,</p> <p>(b) the Employer gives consent, which shall not be unreasonably withheld, or</p> <p>The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Employer</p>	Work has been carried out on weekends but only with the consent of concerned staff/labor.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

FACILITIES FOR STAFF AND LABOR

(a) Except as otherwise stated in the Project Requirements, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in Project Requirements.	Recommended facilities have been provided
(b) The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.	Nobody has been permitted during reporting period

(vi) Medical facilities provided to Staff and Labor during quarter:

On both sites all time availability of clinical staff and facilities has been insured. During quarter 961 staff and workers visited medical facilities. However, majority of all visitors having normal check up with very few exceptions of minor cuts but rest of other are minor health issues like gastro enteritis, flue and headache etc. Availability of first aid boxes has also been ensured at all sites Implementation of local labor standard.

(vii) Project procedures for: (a) hiring; and (b) acquisition of goods and services:

Procedures for hiring have been adopted as per EPCC's policy and also in compliance with EPC Contract. While, procurement of goods and services by EPC contractor is being carried out under Quality Assurance and Quality Control plan.

(viii) Local Employment Status:

As per the EPC contract, EPCC is bound to employ unskilled labor from local areas/ adjacent villages and for skilled jobs preference has to be given to the qualified locals.

LOCAL EMPLOYMENT STATUS

EMPLOYMENT STATUS

Company	AJ&K							KPK						Others	Total Employees
	Alrah	Thori	Patrind	Tarshila	Shoran	Other AJ&K	Sub-Total	Sarati	Boi	Deedal	Dalola	Others	Sub-Total		
Daewoo	15	62	25	17	17	290	426	9	11	4	19	54	97	62	585
Kyung Dong	18	15	7	2	-	197	239	-	1	3	4	23	31	97	367
Sungbo	-	-	102	35	42	187	366	-	105	-	138	117	360	92	818
CNEEC	9	27	-	-	-	38	74	-	-	-	-	17	17	23	114
Daekwang	-	-	-	-	-	3	3	-	-	-	-	4	4	6	13
Watch Man	-	-	2	1	-	-	3	-	17	-	-	-	17	0	20
Gurad & Guides	-	11	2	-	-	41	54	-	-	-	-	-	-	0	54
Total	42	115	138	55	59	756	1165	9	134	7	161	215	526	280	1971
	3.61%	9.87%	11.85%	4.72%	5.06%	64.89%	59.11%	1.71%	25.48%	1.33%	30.61%	40.87%	26.69%	14.21%	100.00%

Compliance with legal requirement for employment

Project Legal Agreement/Contract	Conditions/Requirements	Compliance Status
EPC Contract Section 6.1 “Engagement of Staff and Labor”	“The Contractor and its subcontractor(s) shall prefer, to the extent practicable and reasonable, to hire unskilled staff and labor, and skilled staff and labor with appropriate qualifications and experience, who are residents of AJ&K or KP especially who are the affected by the Project”	Being complied as most of the workers are from local community. The detail is presented in previous section (viii)
As per Para 5 (n) of Environmental approval issued KPK EPA Approval Condition	“Non-technical jobs should be provided to the local community. Employment record for all positions shall be provided to EPA-Khyber Pakhtunkhwa and priority should also be given to local in technical jobs but not at the cost of merit or requirement of the management of the project”	Unskilled jobs have been provided to local residents whereas preference has been given to locals for technical positions but subject to availability.
As per condition Environmental approval issued by AJK EPA	“As far as possible, employment should be provided to local people for all unskilled jobs. Preference may also be given to local people for all semi- skilled and skilled jobs. Employment record for all positions shall be provided to AJK-EPA positively”	Employment opportunities have been disclosed to the local communities through different avenues such as newspapers advertisement, public notice on prominent locations and through community coordinators and local project staff. Preference has been given to the locals subject to availability of skilled and unskilled human resources.

f. Environmental and Social Capacity

i. Staff capacities in environmental and social management (as relevant)

The Project is being managed/ monitored by EPCC/OE/SHPL having a balanced team of HSE staff comprising safety, environment and health professionals. Organizational chart of EPC is attached as **Annex-3**. An orientation to environmental management, health and safety during construction work is part of induction form of all the staff and workers hired. Furthermore, daily HSE monitoring, toolbox meeting programs and other related activities raise the awareness level among all staff and workers.

ii. HSE Weekly Meetings:

As per monthly HSE Plan of EPC contractor, weekly internal meetings and meetings with site construction teams have regularly been conducted on both sites list of meetings is attached as **Annex-4**.

Issues regarding compliance with HSE standards have always been main agenda items during the meetings.



iii. Environmental laws and regulations

EIA study of the project was completed in light of following laws and regulations. EMP as part of EIA is in implementation under the same laws and regulations;

- Pakistan Environmental Protection Act 1997
- National Environmental Quality Standards (NEQS)
- AJK Environmental Protection Act 2000
- Land Acquisition Act 1894
- Draft National Resettlement Policy 2002
- NWFP Forest Ordinance 2002
- Sarhad National Conservation Strategy 1992
- ADB Safeguard Policy Statement 2009
- IFC Handbook (Resettlement Action Plan)

iv. Safety Training and Campaign

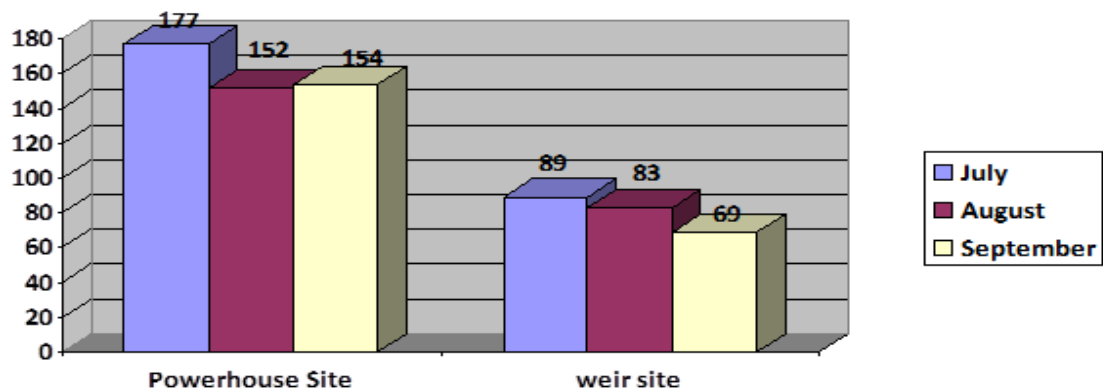
Capacity building activities coupled with effective supervision is always result oriented. Regular HSE trainings are conducted for project employees on different subjects. These trainings are conducted in the light of standards guidelines and procedures developed by Daewoo E&C for its project while working across the globe, however, site specific modifications have been made in manual. List of the trainings and campaigns undertaken during the quarter is attached as (**Annex-5**).



v. Induction Training

As part of EMP all staff and workers before starting their respective jobs have been given induction training as per “Induction Performa” recommended in EMP document. The induction trainings done during the quarter is given below;

Months	Total No of Induction Trainings		Total No. of employees inducted	
	Lower Site	Upper Site	Lower Site	Upper Site
July	18	21	177	89
August	22	25	152	83
Sept	54	29	154	69



Tool Box Meetings

This is a constant activity undertaken daily by EPCC before the start of every construction shift and is part of 3.5 Safety Campaign. Daily HSE related matters are conveyed to all staff and labor during the meeting by HSE staff.

Daily Education/Training on site

During frequent site visit on spot education/training is an ongoing activity that certainly enhance and promote safety culture on sites.

Moreover, during inspection of equipment and color coding activities, workers and relevant staff has also been educated appropriately. Safety Campaign as part of monthly HSE Plan has been conducted during quarter on both sites. Monthly HSE plan is given in **Annex-6**.

Monthly Safety Award

Safety campaigns were arranged to promote and develop safe work behavior among labor and staff. To promote safety culture on sites, as per usual safety awards given during month of reporting period:

Safety Awards

Sr. No	Name	Company	Award	Location
1	Wasif Abbasi	Daewoo E&C	Tunnel Engineer	Power House Site
2	Su Jian Wen	GDYT	Best Supervisor	Power House Site
3	Sajjad Abbasi	Kyungdong	Best Foreman	Power House Site
4	Pang To Fu	GDYT	Best Foreman	Weir Site
5	Sharafat Hussain	Sungbo	Best Engineer	Weir Site
6	Muhammad Babar	Daewoo E&C	Best Labor	Power House Site
7	Muhammad Aslam	Daewoo E&C	Best Mechanic	Power House Site
8	Khawaja Muhammad Sabir	Daewoo E&C	Best Foreman	Power House Site
9	Azmat Hussain Shah	EJ Tech	Best Geo Technical Engineer	Power House Site
10	Ahmed Zaman	Daewoo E&C	Best Geologist	Power House Site
11	Aftab Hussain	Daewoo E&C	Best Water Bowser driver	Power House Site
12	Sikandar Ali	Daewoo E&C	Best Foreman	Power House Site

Needs assessment of environmental and social management capacity

As ongoing activity, continuous capacity building initiatives including more specific trainings on environment and social management are required for staff and labor. Furthermore, daily HSE monitoring, toolbox meeting programs and other related activities have raised the awareness level among all staff and workers.

EPCC's HSE department delivered orientation sessions, awareness raising and capacity building sessions on environment and social management and also identified following training needs of the staff and labor during the next quarter.

- i. Work on Height
- ii. Pollution Prevention
- iii. Corporate Social Responsibility
- iv. Safe behavior

g. Stakeholder Consultation/CSR Activities

To initiate and sustain constructive external relationships with Project stakeholders particularly with adjacent /local communities, consultation is an important tool to enhance the social performance of the Project.

Meetings and discussions were held with local NGOs and government departments (Environment Protection Agency, district administration and development authority Muzaffarabad). As part of the grievance redress mechanism the OE is also involved in the community/stakeholders engagement.

h. Details of community programs involving civil society/NGOs in implementation:

- Some professional services on quarterly basis are being hired by EPCC from locally based individuals and organizations during the quarter .Following organizations have been engaged to undertake activities under EMP and Social uplift Plan.
- HSE sign board preparation and printing activity requirements of the project is being undertaken by local vender (Add City) owned by Mr. Khursheed Qureshi, resident of Patrind village. Add City owner Mr. Khursheed is president of Kunhar Welfare Organization and he himself and rest of his partners are PAPs who are linked with same organization.
- Flora and Fauna Study by local Fisheries and wildlife expert Mr. Yousaf Qureshi who is also retired Director Fisheries Government of AJK.

Table: Organizations/NGOs consulted during the quarter

Organization Name	Location	Purpose/ issues discussed	Actions to address Issues
Kunhar Welfare Organization	Patrind- (Upper Site AJK Part)	EPCC is in constant liaison with the organization regarding preparation of awareness material.	During quarter, HSE sign board preparation and printing activity is being undertaken by local vender (Add City) owned by Mr. Khursheed Qureshi, resident of Patrind village who is president of Kunhar Welfare Organization and he himself and rest of his partners are PAPs who are linked with same organization. Therefore, all printing works are allocated to same organization.
Pakistan Red Crescent Society (PRCS)	Muzaffarabad- (Lower Site AJK)	Placement of First Aid Trained Ambulances Drivers for night shift+ Fitness /service of both ambulances.	First Aid trained drivers placed on night shift and ambulances were sent for service and maintenance by PRCS.
Edinburgh DIRECTAID	Muzaffarabad- (Lower Site AJK)	Environmental monitoring reports submitted by the NGO were discussed to address and incorporate the comments/recommendations made by the owner engineer.	Environmental monitoring activities are being organized by local NGO Edinburg Direct Aid

Rental Vehicle and Heavy Equipment Summary

Rental Vehicle Status (Daewoo)

Lower Site

Sr.	Name	Vehicle No.	Vehicle Type	Providers
1	Ishaq Mir	LEA-2186	Pickup	AJK Others
2	Muhammad Fiaz	D-4026	Pickup	AJK Others
3	Muhammad Iftikhar	B-1060	Pickup	AJK Others
4	Muhammad Iltaf	KN-5259	Shahzore (1-Ton Truck)	AJK Others
5	Arshad	SGP-4986	Shahzore (1-Ton Truck)	AJK Others
6	Abdul Qadeer	MD-122	Pickup	AJK Others
7	Abdul Razzaq	MD-301	Pickup	AJK Others
8	Yameen Awan	NK-161	Prado	AJK Others
9	Muhammad Asif	V-259	Pickup	AJK Others
10	Muhammd Shabbir	B-2202	Prado	AJK Others
11	Syed Israr Gillani	NW-664	Hiace	Others
Total				

Upper Site (Day Shift)

Sr.	Name	Vehicle No.	Vehicle Type	Providers
1	Safeer Ahmed	RLD-8243	Prado	Tarchila
2	Asif Sawati	B-521	Pickup	Tarchila
3	Raheel	BA-8490	Pickup	Dalola
4	Shoukat	B-2781	Pickup	Patrind
5	Aleem Gillani	KD-199	Land Cruiser	AJK Others
6	Fiaz	C-3414	Pickup	Boi
7	Jawad	H-2610	Pickup	Dalola
8	Muhammad Sadiq	LX-049	Pickup	Dalola
Total				

i. Compliance and Implementation of Mitigating Measures in ESMP

Compliance monitoring of environmental and social management plan has been an on-going activity undertaken by OE and EPCC's HSE staff on both sites. Non compliances with recommended standards and regulations were recorded and reported daily, weekly and monthly. EMP Compliance status is attached as **Annex-7**.

a. Environmental monitoring under EMP:

Internal Environmental and Inspection checklist is developed and being filled on daily bases. Environmental Inspection checklist is presented in **Annex-8** of this report. Besides this following activities have been undertaken as part of environmental monitoring:

i. Fish fauna Study Monitoring:

Quarterly Study/monitoring was undertaken in Kunhar River (Up & down stream of Project site) during the month of September 2016. Samplings were carried out at the six study points. Coming studies will give a clear picture of the impact of any construction or change in the water flow on the fish. Some insignificant changes in the fish catch and quality of water observed during the study is only due to the irregular seasonal changes and pattern of water turbidity due intensity of rain or drought. Detailed report is annexed as **Annex-10**.



ii. Flora Study Monitoring:

Quarterly Study/monitoring was undertaken at both (Power house & weir) sites in September 2016. The monitoring report recommends the bio-engineering works for the treatment of unstable slopes and stabilization of landslides to retain the good looks and better environment; detailed report is annexed as **Annex-9**.

Environmental & Social Monitoring Report (Jul-Sept 2016)

Table: Compliance with NEQ's

Envrn. component	Standards (NEQS)	Compliance/Mitigation measure	Remarks
Air Quality	EPA ambient air quality (EPAs standards for each Parameter)	NEQS: To ensure dust suppression due to transportation activity, unpaved roads are being sprinkled with water at least twice a day. The EPC is taking all necessary measures to limit pollution from dust and any wind-blown materials during construction.	Dust control has improved significantly during the quarter.
Water quality	WHO Guidelines (EPAs standards for each Parameter)	Waste water from tunnel is treated through sedimentation tanks. Waste water discharged from HRT is being measured	Biannual quality monitoring of waste and drinking water was undertaken in the last quarter of 2015.
Noise levels /Vibration	EPA ambient noise standards and worldwide vibration standards.	Noise: Noise prone activities are avoided during night time. No open blasting occurs during quiet hours. Excavators and all heavy machines are lubricated in a routine matter to minimize the noise and to increase the life of equipment Vibration: EPC is more concerned regarding factors of human comfort and structural damage and always try to comply with allowable vibration standards. Blasting checklist is used by HSE staff.	Noise level and vibration record is maintained on daily bases after each blast
Soil quality	EPA quality standard (Different standards for each Parameter)	No environmental incident except minor soil contamination has been observed.	Visual observations mitigation was done by removing the contaminated soil cover
Flora	Visual observations by relevant Forest professional during EIA study.	Study /monitoring during previous quarter undertaken	Study undertaken in Sept-16 (Annex-09)
Fish Fauna	Observation by relevant wildlife & Fisheries professional during EIA study.	Study /monitoring for last quarter undertaken	Study undertaken in Sept-16 (Annex-10)

b. Occupational health and safety

Health and safety of workers has been a prime consideration of Project. In accordance with the safety standards all workers working at site are provided with the Personal Protective Equipment (PPE) comprising of hard hats, safety shoes, and jacket and dust masks depending upon the job specification to prevent injuries. Hygienic inspections were conducted by medical staff. Morning physical exercise has also been undertaken regularly. All sub-Contractors have issued necessary PPEs to employees. Also, daily site inspections are undertaken to ensure the implementation. Community Safety Health and Security:

1. Consistent supervision on surge shaft access road and power house protection works was ensured.
2. Waste management training sessions were held for supervisors and relevant personnel. Furthermore, waste segregation methods were practically taught to site workers and staff to adopt appropriate mechanism.
3. Water sprinkling on project access road for workers /community health and safety
4. Water filter plant is installed for drinking water by Daewoo EPCC at camp residence to provide clean & pure water. Filter Plant cartridges are being replaced quarterly to have better quality of water.
5. During quarter, coordination meetings, monitoring and inspections were undertaken jointly by EPCC and OE's HSE staff with regard to site HSE status,. No dumping of excavated material was allowed on unapproved sites.
6. Waste segregation, collection, transportation and disposal mechanism has been improved during the month and full time waste collectors were placed on both sites. Waste management training sessions were held for supervisors and relevant personnel.
7. Sign boards have been made and placed on the site where there is a need to aware people while doing work.
8. It is being ensured that landfill is carried out in such a manner that it does not cause harm to the environment. This can be done by ensuring that landfills are located, designed, constructed, operated and restored so as to ensure that ground and surface waters are not contaminated.

c. CO₂ emissions by the Project

Following project activities are likely to produce CO₂ emissions, which were given due consideration and following mitigating measures were adopted to minimize the CO₂ emissions.

Sources of CO₂	Mitigating/ Preventive Actions
Use of excavation machinery	Regular tuning/servicing of the machinery is made compulsory and regular inspection is done to ensure that. Smoke producing vehicles are banned from working right away until they are repaired.
Tree removal/Land use change	Removal of trees on construction sites will increase the concentration of CO ₂ the Project Site atmosphere as trees acted as CO ₂ sink. Therefore, as corrective approach, Tree Plantation shall be carried out as retrofitting measure as stipulated in the EMP when it will be practically possible.
Solid Waste Disposal	Improper waste management could result accumulation of CO ₂ and CH ₄ in the atmosphere. For temporary storage of waste proper waste collection and storage areas have been designated. During last month of the reporting quarter waste management mechanism was improved.
Use of Construction machinery	Regular inspections of machinery are practiced by HSE staff to check machinery conditions. Warning letters have been issued by OE and EPCC to the smoke producing and vehicles.
Usage of liquid fuel	Liquid fuel used at different project activities amounts the maximum CO ₂ emissions by the project.
Emissions from electricity use	Electrical appliances release some trace amount of gases in order to mitigate that, it is in company's policy to switch off all the electrical appliances when not in use.

d. Environmental and Social Management Plan, including IFC E&HS Action Plan

To manage the environmental and social issue appropriately, following detailed plans developed by EPCC have been in implementation to fulfill the environmental and social compliance requirements of the project;

- a) Plan for Disposal of Excavated Material
- b) Plan for Waste Management
- c) Plan for Traffic Management
- d) Social Uplift Plan

a) Plan for Disposal of Excavated Material

Excavated material is being disposed of in excavated waste disposal area approved as per EIA. At lower site, embankment and gabion walls were washed away due to flash flood on 5th September 2014. Reconstruction of damaged structures has now been completed during the reporting quarter. Whereas, upper site no embankment has yet been developed.

b) Plan for Waste Management

Waste segregation and collection system has considerably been improved on both the sites. EPC and sub-contractors have waste collectors placed on both sites to maintain housekeeping and timely segregation /collection of waste. It is being ensured that landfill is carried out in such a manner that it does not cause harm to the environment. For instance a geo-membrane, concrete and clay lined This can be done by ensuring that landfills are located, designed, constructed, operated and restored so as to ensure that ground and surface waters are not contaminated.

All waste generated in all operation at sites is being managed in accordance with EMP & Waste Management Plan. All the recyclable Waste has been carried and transferred to the scrap dealer.

Paper, Plastics, cardboard and few iron bars have been properly measured by the scrap dealer, the quantity of which has been noted down on the waste consignment note. Daily environmental Performa regarding potential environmental impacts has been made and monitored at site regularly by direct observation and inspection. These impacts include the monitoring of air emissions, water consumption and discharge, waste management, housekeeping, noise impact, hazardous waste management at the project site. Comments have been noted down In case of any improvement or any corrective action regarding any environmental activity if required.



Municipal Corporation Muzaffarabad is being paid to collect the community waste from collection point established near project site where as for project waste a detailed method statement has been prepared and is being implemented on both sites.



First step that has been followed so far in managing our Project Waste was the collection of all waste from all points of the site. Then, all the waste from different points are transported to the disposal area and placed in the trench. Next step of segregation has been attempted, in which cardboard, plastic bottles, paper and plastic sheet has been segregated. Then, waste has been transported to Scrap Yard where signature for evidence from waste collector, waste handler/transporter and scrap dealer has been taken on the "Waste Consignment Note" of Waste Management Plan. Thus, most of the Project Waste has been reused and recycled by selling it to the scrap dealer. Some of the items were of "Reusable" that are used again by a different user or for a different purpose, like a jacket, shoes or a jar used for a cup. They are not reprocessed into raw materials. Whereas some of our Project Waste includes "Recyclables" that are materials like glass, metal and paper that are collected, separated, processed back into raw materials, and made into new products. Final step of Waste Compaction other than segregated waste has been done which is the process of compacting waste, reducing it in size. Wheel loader has been used for compressing waste so that more of it can be stored in the same space. Excavator has also been used to spread the waste evenly in layers over the landfill, and to compact waste to reduce its volume and help stabilize the

landfill.

c) Plan for Traffic Management:

A revised traffic management plan was prepared during last quarter for both sites that partially has been implemented. Parking areas have been designated and speed limit is controlled; safety precautions have been placed to protect workers and the general public. Vehicles are equipped with directional control signage and are being inspected prior to use. Workers have been made aware of mobile equipment operating in the area. Hazard lights have been installed on heavy vehicles and mobile equipment.

d) Social uplift plan:

Revised social uplift plan (SUP) was submitted by EPCC to SHPL in October, 2015. Besides SUP various activities have also been undertaken to facilitate locals such as subletting works, supply of construction material. The status of SUP's implementation is given in **Annex-11** of this report.

j. Resettlement Plan Implementation

i. Scope of Land Acquisition and Resettlement Impacts

The land identified by the EPC Contractor on the basis of basic design of the Project measuring 872.65 Kanal (683.95 Kanal on AJK and 188.7 Kanal on KP side) was acquired by the Company through Land Acquisition Act (LAA), 1894 applicable in both AJ&K and KPK.

During the construction on the weir site, it was noticed that the land area of 3.7 Kanal "Additional Land" is further required on AJ&K side which is to be submerged due to the head pond of the Project. Due to this addition the total land for the Project becomes 876.35 Kanal.

Due to the change in the design and location of weir downstream, it was confirmed through survey that the land area of 10.3 Kanal is further required on AJ&K side the slope stabilization in the stilling basin area downstream of the weir.

Furthermore, lately on the complaint of the local Mr. Khalid who also raised the same issue during the Lenders' E&S mission in November 2015, on the head pond area a survey was conducted to confirm whether his land is affected or otherwise. EPCC conducted the survey and it was confirmed that his land measuring 5.45 Kanal was being affected due to submergence in the head pond. The process of acquisition has been started by contacting the relevant revenue department.

SUMMARY OF THE LAND TO BE ACQUIRED ON AJK AND KPK

PERMANENT LAND						
Sr.	Project Component	Affected Land (Kanal)				
		State owned Land/ Riverbed	Farmland	Wasteland	House land	Total
1	Reservoir Impounding	87.3	282.05	231.9	9.1	610.35
2	Weir Structures	0	1.5	48.7	0	50.2
3	Powerhouse	13.6	30.1	32.85	5.25	81.8
4	Surge Tank	-	-	47.75	-	47.75
5	Additional Land	0.3	3.75	15.4		19.45
Total Permanent Land Acquisition (Kanal)		101.2	317.4	376.6	14.35	809.55
TEMPORARY LAND						
1	Colony of Expatriate construction staff, Switchyard, labor camp, access road, bridge, batching plant at Powerhouse Site	54.75	0	27.8	0	82.55
Total Temporary Land Acquisition (Kanal)		54.75	0	27.8	0	82.55
Total Land Acquisition (Kanal)		155.95	317.4	404.4	14.35	892.1

ii. Status of Land Acquisition, Progress on Compensation Payments and Assistance Delivery

Payment for land acquisition on both sides of the project is in process. The Company has deposited the assessed cost (100%) into Government treasuries for subsequent payment to APs. For the additional land acquired for the head pond about 92% payment has been made which is reflected in the below table. However there is delay in the payment of compensation due to (i) unavailability of entitled land owners who are working or based in other cities or (ii) an existing shareholding dispute among the families. Status of the land acquisition is as follows;

Summary of Land Acquisition Progress and compensation payments

Village	Area	Award Amount	Disbursed	%age	No. of Persons	Persons received payment
1. AJ&K						
A. Land/Property						
Powerhouse (Alda Village AJ&K)	81.8	92,479,824	87,413,086	94.52%	196	559
Head pond (Shoran Village AJ&K)	130.75	75,181,250	73,283,741	97.48%	611	200
Weir + Head pond (Patrind Village AJ&K)	341.1	204,037,798	166,443,189	81.57%		353
Forest land for Surge Tank (Alda village)	47.75					
B. Additional Land/Property						
Weir + Head pond (Patrind Village AJ&K)	3.7	2,127,500	1,955,000	91.89%	3	19
Weir + Head pond (Patrind Village AJ&K)	10.3	6,076,540	5,562,233	91.54%	3	19
B. Trees						
Alda		1,815,089	1,804,318	99.41%		19
Alda		75,546	75,546	100.00%		
Shoran		757,391	685,073	90.45%		58
Shoran		106,053	106,053	100.00%	1	1
Patrind		837,882	620,097	74.01%		30
Sub-Total	615.4	383,494,873	337,948,336	88.12%	814	1258
2. KPK						
Land/Property/Trees						
Weir + Head pond (Sarati Village KPK)	188.7	128,557,081	114,613,320	89.15%	196	Detail Yet to receive
Sub-Total	188.7	128,557,081	114,613,320	89.15%	196	

k. Resettlement and Reconstruction

Living standards have been improved due to better compensation received and economic activities in the project vicinity. PAPs who lost their houses had utilized compensation amount in reconstruction of houses. Others have made investment in alternative lands in urban areas for better facilities.

Furthermore, locals from adjacent villages have established small businesses like shops and canteens.

l. Resettlement Related Consultation and Disclosure Activities and Grievance

Procedures

In order to ensure that grievances and complaints are addressed in a timely and satisfactory manner and that all possible avenues are available to project affected persons (PAPs) to resolve their grievances, a Grievance Redress Committee has been proposed with following composition:

1. District Revenue Officer	Chairman
2. Union Council Nazim	Principal Member
3. SHPL Representative	Member
4. Affected Community Representative	Member

Establishment of a grievance committee requires the consent from District Administrations (AJK & KPK). The proposed GRC has not been established because SHPL could not ensure the availability of District Revenue Officers as and when required. Nevertheless, while the GRC has not yet been formalized, issues related with acquisition and compensation and community complaints are being addressed with the involvement of same authorities. In practice the same forum is functional but officially has not yet been notified.

Furthermore, the lenders' E&S mission during their site visit in August 2015 suggested establishing a three tier GRC including the sub-contractors, EPC and SHPL/OE. The same was established and communicated to all the workers and the community for future matters and contact.

GRC would be a forum for raising objections and holding discussions to resolve conflicts. Moreover, consultation with the local community and concerned public representatives and officials of the relevant line departments is an ongoing process. Relevant information to the stakeholders has been provided in a timely manner and in a form and language that are understandable and accessible to them. A grievance mechanism is available to allow an AP appealing any disagreeable decision, practice or activity arising from land or other assets compensation. The community/ APs complaints

are being addressed very diligently and carefully at all levels, i.e. district and at project level. Even though the GRC has yet not been established but complaints received are being addressed at all levels (project & local administration level) depending on nature of complaints. Issues related to land acquisition and compensation requires involvement of District Revenue Officer who is part of proposed GRC while other matters related with employment or employees are being managed through community liaison officers/coordinators and project management.

Annexures

Annex-1

Inspections

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.#	Inspection	Date			Location	Details
		Day	Month	Year		
1.	Heavy Machine/Equipment's	04	07	2016	Weir Site	Inspection of Heavy Equipment was held at weir site and found Satisfactory.
2.	Camp Inspection	09	07	2016	Weir Site	Camp Inspection was conducted on weir site by HSE department.
3.	Fire Extinguisher	11	07	2016	Weir Site	Inspection of Fire extinguishers at the weir site
4.	Heavy Machine/Equipment's	15	07	2016	Weir Site	Inspection of Heavy Equipment was held at weir site and found Satisfactory
5.	Ladder inspection	17	07	2016	Weir Site	Satisfactory.
6.	Scaffolding Inspection	19	07	2016	Weir Site	Inspection of Scaffolding at the Weir site.
7.	Ladder inspection	21	07	2016	Weir Site	Satisfactory.
8.	Scaffolding inspection	25	07	2016	Weir Site	Satisfactory
9.	Batching Plant Inspection	30	07	2016	Weir Site	Satisfactory
10.	Fire Extinguisher	01	07	2016	Power House Site	Inspection of Fire extinguishers at the
11.	Color Coding Inspection	02	07	2016	Power House Site	Color coding inspection was held at Powerhouse site
12.	Electrical Equipment Inspection	03	07	2016	Power House Site	Inspection of Electrical DBs and other electrical equipment at powerhouse site
13.	Heavy equipment inspection	16	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
14.	Permit to work Inspection	18	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
15.	Work at Height Inspection	19	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with working at height procedure at construction site.

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Sr.#	Inspection	Date			Location	Details
		Day	Month	Year		
16.	Lock out/Tag out Inspection	20	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with lock out tag out procedure at construction site.
17.	Confined Space entry inspection	21	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with confined space entry procedure at construction site.
18.	Heavy equipment inspection	22	07	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
19.	Main basket Inspection	23	07	2016	Power House Site	Inspection carried out jointly by Daewoo E&C and Kyungdong HSE Staff for the main basket working platform on powerhouse site.
20.	Steel structure bucket platform inspection	24	07	2016	Power House Site	Inspection of steel structure bucket platform carried out at powerhouse site, document attached.
21.	Fire Extinguisher	01	08	2016	Weir Site	Inspection of Fire extinguishers at the weir site
22.	Camp Inspection	02	08	2016	Weir Site	Camp Inspection was conducted on weir site by HSE department.
23.	Heavy Machine/Equipment's	03	08	2016	Weir Site	Inspection of Heavy Equipment was held at weir site and found Satisfactory
24.	Heavy Machine/Equipment's	04	08	2016	Weir Site	Inspection of Heavy Equipment was held at weir site and found Satisfactory.
25.	Ladder inspection	05	08	2016	Weir Site	Satisfactory.
26.	Scaffolding Inspection	08	08	2016	Weir Site	Inspection of Scaffolding at the Weir site.

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.#	Inspection	Date			Location	Details
		Day	Month	Year		
27.	Ladder inspection	11	08	2016	Weir Site	Satisfactory.
28.	Scaffolding inspection	17	08	2016	Weir Site	Satisfactory
29.	Lifting Gear Inspection	19	08	2016	Weir Site	Satisfactory
30.	Fire Extinguisher Inspection	02	08	2016	Power House Site	Inspection of Fire Extinguishers at power house site was done
31.	Lifting Equipment Inspection	05	08	2016	Power House Site	Third party inspection of Gantry crane on GIS room at powerhouse
32.	Heavy Equipment Inspection	07	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site
33.	Light Vehicle equipment Inspection	08	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
34.	Light Vehicle equipment Inspection	09	08	2016	Power House Site	Inspection of all light vehicles on lower site carried out by HSE department in collaboration with Mechanical department.
35.	Man basket Inspection	10	08	2016	Power House Site	Inspection carried out jointly by Daewoo E&C and Kyungdong HSE Staff for the man basket working platform on powerhouse site, Detailed document generated is attached.
36.	Mono Rail Inspection	26	08	2016	Power House Site	Third party inspection of Mono Rails carried out at Power house site
37.	Permit to work Inspection	28	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with permit to work procedure at site
38.	Working at height Inspection	28	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with working at height procedure at construction site
39.	Lock out tag out Inspection	28	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with lock out tag out procedure at construction site.

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.#	Inspection	Date			Location	Details
		Day	Month	Year		
40.	Confined Space entry Inspection	28	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with confined space entry procedure at construction site.
41.	Heavy Equipment Inspection	29	08	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
42.	Lifting Gear Inspection	01	09	2016	Weir Site	Satisfactory
43.	Scaffolding inspection	02	09	2016	Weir Site	Satisfactory
44.	Fire Extinguishers Inspection	06	09	2016	Weir Site	Satisfactory.
45.	Hand & Power Tools Inspection	07	08	2016	Weir Site	Satisfactory.
46.	Crane Inspection	11	09	2016	Weir Site	Satisfactory.
47.	Blasting Inspection	12	09	2016	Weir Site	Satisfactory.
48.	Lifting Gear Inspection	15	09	2016	Weir Site	Satisfactory.
49.	Ladder inspection	18	09	2016	Weir Site	Satisfactory.
50.	Gas Cylinder Inspection	22	09	2016	Weir Site	Satisfactory.
51.	Lifting Gear Inspection	15	09	2016	Weir Site	Satisfactory.
52.	Fire Extinguishers Inspection	03	09	2016	Power House Site	Fire Extinguishers inspection was done at Power House Site
53.	Color Coding Inspection	06	09	2016	Power House Site	Color coding inspection was carried out by HSE staff at Power House site

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.#	Inspection	Date			Location	Details
		Day	Month	Year		
54.	Light Vehicle Inspection	21	09	2016	Power House Site	Inspection of all light vehicles on lower site carried out by HSE department.
55.	Heavy Equipment Inspection	22	09	2016	Power House Site	Inspection carried out at powerhouse site to ensure the compliance with driving safety procedure at construction site.
56.	Hygiene inspection of kitchen area and food	29	09	2016	Power House Site	Inspection of kitchen area and food carried out at powerhouse site

Annex-2

Work Permit

PAKISTAN PATRIND HYDRO POWER PROJECT				DAEWOO E&C	
Lifting Work		PERMIT TO WORK NO.			
		COMPANY			
Issue Date	30-7-2016	Time	07:00 AM		
Validity Date	05-8-2016	Time	06:00 PM		
Crane Type	GANTRY CRANE	Type of the Load to be lifted	PIPES + MATERIAL		
LOCATION	PEN STOCK WORKSHOP	Maximum Weight of Load	17 TON		
Operator Name	Guo Yanduo	Rigger Name	PANG fu bin		
Do not proceed with your work until your permit has been authorised by the relevant member of staff.					
HAZARDS AND PRECAUTIONS TO BE TAKEN					
PRIMARY HAZARDS: Tumblers, debris, liquids, sludge, moving parts					
PERFORMING AUTHORITY	PLEASE ANSWER THE FOLLOWING QUESTIONS TRUTHFULLY				
	Crane operator holding the valid licence				YES
	Crane travel routes determined				NO
	Crane sitting on firm foundation out rigger pade				
	Area roped off & signs displayed				
	Over / under ground facilities are be protected				
	sling wire & lifting equipments are be tested				
	Other Precaution Required				
	Other Safety Equipment Required				FULL PPE's
	AUTHORISATION AND ACCEPTANCE				
I confirm that I have verified the above information and ensured that the necessary precautions have been taken. It is safe to carry out the work as defined above and the permit information has been explained to all workers involved. I accept responsibility for this work.					
EXTENSION	Performing Authority (SUBCON)		Issuing Authority DAEWOO E&C (S/I)		Remarks (Daily Check) by DAEWOO E&C (S/I)
	Name / Sign		Name / Sign		Name / Sign
	MUSHTAQ		MSE		1-8-18
	MUSHTAQ		KIM JUNG		2-8-18
	MUSHTAQ		MSE		3-8-18
	MUSHTAQ		KIM JUNG		4-8-18
	MUSHTAQ		KIM JUNG		5-8-18
COMPLETION OR CANCELLATION					
I confirm that the work has been completed / partially completed *, checked by my self and the area left in a safe and tidy condition. (*delete as appropriate)					
CLOSE	Performing Authority (SUBCON)		Issuing Authority DAEWOO E&C (S/I)		Remarks (Daily Check) by DAEWOO E&C (S/I)
	Name: MUSHTAQ SHEIKH		Name: DAEWOO		Name: DAEWOO
	Sign: [Signature]		Sign: [Signature]		Sign: [Signature]
	Date: 5-8-2016		Date: 5-8-2016		Date: 5-8-2016

THIS PERMIT IS ONLY VALID WHEN ALL SECTIONS ARE COMPLETE.

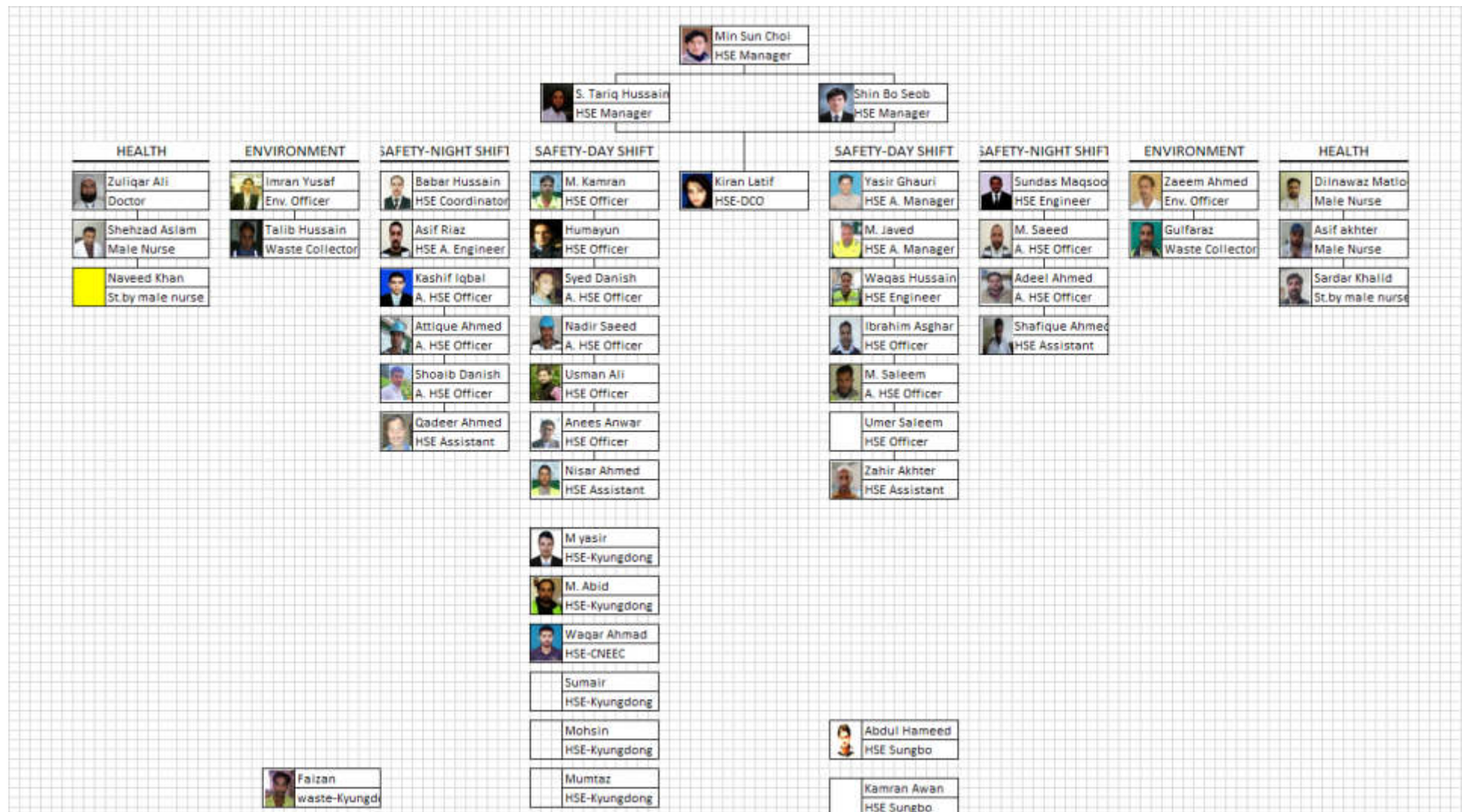
PAKISTAN PATRIND HYDRO POWER PROJECT				DAEWOO E&C
CUTTING / WELDING / HOT WORK PERMIT		PERMIT TO WORK NO.		
WORK DETAIL: PEN STOCK PIPES INSTALLATION				
SPECIAL TOOLS TO BE USED: WELDING MACHINE + ACCESSORIES				
COMPANY: CNEEC		LOCATION: PEN STOCK TUNNEL		
Issue Date: 13-8-2016		Time: 07:00AM		
Validity Date: 19-8-2016		Time: 18:00PM		
Do not proceed with your work until your permit has been authorised by the relevant member of staff.				
HAZARDS AND PRECAUTIONS TO BE TAKEN				
PRIMARY HAZARDS - fumes, electrics, liquids, sludge, moving parts				
PLEASE ANSWER THE FOLLOWING QUESTIONS TRUTHFULLY				
Building ventilation or other fire suppression systems.				YES NO
Cutting welding, flame or spark producing equipment is in good.				✓
Isolation of Plant.				✓
Operator having good visibility.				✓
All flammable and combustible material have been removed.				✓
Warning signs attached.				✓
All sources of flammable vapors or combustible dusts have been eliminated.				✓
Lighting checks of all the units.				✓
Opening have been covered.				✓
All equipment has been cleaned.				✓
Check fire extinguisher condition and location.				✓
Other Precaution Required				
Other Safety Equipment Required: FULL PPE'S				
AUTHORISATION AND ACCEPTANCE				
I confirm that I have verified the above information and ensured that the necessary precautions have been taken. It is safe to carry out the work as defined above and the permit information has been explained to all workers involved. I accept responsibility for this work.				
Performing Authority (SUI-CON)		Issuing Authority DAEWOO E&C (S/I)		Remarks (Daily Check) L/ DAEWOO E&C HSE
Name / Sign		Name / Sign		Name / Sign
MUSHTAQ		MSE		Ames 13-8-16
MUSHTAQ		KIM		Ames 14-8-16
MUSHTAQ		MSE		Ames 15-8-16
MUSHTAQ		KIM		Ames 16-8-16
MUSHTAQ		MSE		Ames 17-8-16
MUSHTAQ		KIM		Ames 18-8-16
MUSHTAQ		MSE		Ames 19-8-16
COMPLETION OR CANCELLATION				
I confirm that the work has been completed / partially completed *, checked by my self and the area left in a safe and tidy condition. (*delete as appropriate)				
Performing Authority (SUI-CON)		Issuing Authority DAEWOO E&C (S/I)		Remarks (Daily Check) by DAEWOO E&C HSE
Name: MUSHTAQ		Name: MSE		Name: Behar
Sign:		Sign:		Sign:
Date: 14-8-2016		Date: 20-8-2016		Date: 20-8-2016

PAKISTAN PATRIND HYDRO POWER PROJECT		DAEWOO E&C	
CONFINED SPACE		PERMIT TO WORK NO.	
JOB DETAILS	STRATOR ACCESORIES INSTALLATION		
SPECIAL TOOLS TO BE USED	HAND TOOLS + POWER TOOLS		
COMPANY	CNEEC GYT	Location	PIH
Issue Date	16/7/2016	Time	07:00
Validity Date		Time	17:00
IS ANY OTHER WORK CURRENTLY BEING UNDERTAKEN THAT MAY INTERACT OR AFFECT THIS PERMIT? (QUOTE PERMIT NUMBERS WHERE APPLICABLE)			
Do not proceed with your work until your permit has been authorised by the relevant member of staff.			
HAZARDS AND PRECAUTIONS TO BE TAKEN			
PRIMARY HAZARDS - fumes, electrics, gases, liquids, sludge, radiation, moving parts			
PLEASE ANSWER THE FOLLOWING QUESTIONS TRUTHFULLY			
PERFORMING AUTHORITY	Are you qualified / trained to undertake this work?	YES	NO
	Has the confined space been isolated from all connected pipework?	✓	
	Has the confined space been purged with steam / water / air?	✓	✓
	Has the confined space been electrically isolated and locked out?	✓	
	Is the confined space below 30 Degree C on full cooling?	✓	
	Has the reactor been steamed through to recovery for at least 15 mins?	✓	✓
	Is a supply of respirable air assured / ventilation required?	✓	
	Is there an acceptable means of access to and escape from the confined space?	✓	
	Is breathing apparatus at hand and in good working order?	✓	✓
	Is a safety line / tripod / harness and any other back-up equipment to hand?	✓	
Are there adequate emergency arrangements in place?	✓		
Are you likely to come into contact with asbestos? If yes, please refer to asbestos Present Permit to Work	N/A		
Other Precaution Required			
Other Safety Equipment Required		FILL PPE'S	
AUTHORISATION AND ACCEPTANCE			
I confirm that I have verified the above information and ensured that the necessary precautions have been taken. It is safe to carry out the work as defined above and the permit information has been explained to all workers involved. I accept responsibility for this work.			
Performing Authority (SUBCON)		Issuing Authority (DAEWOO E&C)	
Name / Sign	Name / Sign	Name / Sign	
M. Abbas	MSE MANAGER	KAMRAN	16/07/16
M. Abbas	KEM JUNG MAN	KAMRAN	17/07/16
M. Abbas	MSE MANAGER	KAMRAN	18/07/16
M. Abbas	KEM JUNG MAN	KAMRAN	19/07/16
M. Abbas	MSE MANAGER	KAMRAN	20/07/16
M. Abbas	KEM JUNG MAN	KAMRAN	21/07/16
M. Abbas	MSE MANAGER	KAMRAN	22/07/16
M. Abbas	KEM JUNG MAN	KAMRAN	23/07/16
COMPLETION OR CANCELLATION			
I confirm that the work has been completed / partially completed *, checked by my self and the area left in a safe and tidy condition. (*delete as appropriate)			
Performing Authority (SUBCON)		Issuing Authority (DAEWOO E&C)	
Name	Name	Name	Remarks (Daily Check) by DAEWOO E&C
M. Abbas	MSE MANAGER	Babbar	
Sign	Sign	Sign	
Date	Date	Date	
23/7/2016		24/7/2016	
THIS PERMIT IS ONLY VALID WHEN ALL SECTIONS ARE COMPLETE.			

Annex-3

HSE Organization

Environmental & Social Monitoring Report (Jul-Sept 2016)



Annex-4

WEEKLY MEETINGS

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.	Meeting with	Location	Date			Start Time	Main agenda
			Day	Month	Year		
01	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	15	07	2016	14:00	Discussed all Site HSE issues with construction team.
02	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	23	07	2016	14:30	Discussed all Site HSE issues with construction team.
03	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	30	07	2016	14:30	Discussed all Site HSE issues with construction team.
04	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	13	08	2016	14:00	Discussed all Site HSE issues with construction team.
05	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	21	08	2016	14:30	Discussed all Site HSE issues with construction team.

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr.	Meeting with	Location	Date			Start Time	Main agenda
			Day	Month	Year		
06	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	28	08	2016	14:30	Discussed all Site HSE issues with construction team.
07	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	11	09	2016	14:00	Discussed all Site HSE issues with construction team.
08	Weekly HSE Meeting with Subcontractors and Construction Team Upper Site	HSE Training Hall Camp Office Weir Site	24	09	2016	14:30	Discussed all Site HSE issues with construction team.

Annex-5

HSE TRAININGS

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr. No	Title of the training	Date			Trainer	Times	Site	Location	No. of attendees	Contractor
		Day	Month	Year						
01	Scaffolding Safety	03	07	2016	M. Javed	05:15	Weir site	Weir Site	28	Sungbo E&C and HESPAK
02	Work at height training	14	07	2016	M. Javed	07:00	Weir site	Weir Site	120	Sungbo E&C
03	Work at height training	15	07	2016	M. Javed	18:00	Weir site	Weir Site	34	Sungbo E&C
04	Scaffolding & Working at Height	20	07	2016	M. Javed	09:00	Weir site	Weir site	20	Sungbo E&C
05	Access & Scaffolding Training	22	7	2016	Zaeem	10:00	Weir site	Weir site	16	Sungbo E&C
06	Work at height	30	7	2016	M. Javed	05:00	Weir Site	Weir Site	13	HES Pak
07	Use of PPE,s Training	31	7	2016	Zaeem	11:00	Weir Site	Weir Site	17	Sungbo E&C
08	General Safety Training	04	7	2016	S. Tariq Hussain	06:00	Power House Site	Training Hall	05	Daewoo E & C
09	work at height training	11	7	2016	S. Tariq Hussain	19:00	Power House Site	Training Hall	50	Daewoo E & C
10	work at height training	13	7	2016	S. Tariq Hussain	19:00	Power House Site	Training Hall	50	Kyungdong E & C
11	scaffold training	18	7	2016	S. Tariq Hussain	07:00	Power House Site	Training Hall	11	Daewoo E & C
12	Signalman/ Banksman Training	19	7	2016	S. Tariq Hussain	09:00	Power House Site	Training Hall	07	Daewoo E & C

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr. No	Title of the training	Date			Trainer	Times	Site	Location	No. of attendees	Contractor
		Day	Month	Year						
13	Competency Training	01	08	2016	M. Javed	09:00	Weir site	Weir Site	7	Sungbo E & C
14	Work at height training	05	08	2016	Zaem	08:00	Weir site	Weir Site	17	Sungbo E&C
15	Scaffolding Safety	12	08	2016	M. Javed	07:00	Weir site	Muster Point	155	Sungbo E&C
16	Working at Height & Use of PPEs	18	08	2016	M. Javed	11:00	Weir site	Weir site	33	Sungbo E&C
17	Scaffolding Safety Training	19	08	2016	Ibrahim	10:00	Weir site	Weir site	13	Sungbo E&C
18	Fire Fighting Training	25	08	2016	M. Javed	07:00	Weir Site	Weir Site	42	Sungbo E & C & HES Pak
19	Defensive Driving	5	08	2016	S. Tariq Hussain	8:00	Powerhouse Site	HSE Training Hall Camp Office	03	HESPAK
20	Hand & Power tools safety	13	08	2016	S. Tariq Hussain	8:00	Powerhouse site	HSE Training Hall Camp Office	100	Daewoo E&C and all subcontractors
21	Independence Day Training	14	08	2016	S. Tariq Hussain	7:00	Powerhouse site	Site Muster Point	200	Daewoo E&C and all subcontractors
22	Electrical Safety Training	23	08	2016	S. Tariq Hussain	7:00	Powerhouse site	Site Muster Point	100	Daewoo E&C and all subcontractors
23	General Safety Training	29	08	2016	S. Tariq Hussain	7:00	Powerhouse site	Site Muster Point	60	Daewoo E&C and all subcontractors
24	Driving Safety Training	02	09	2016	Zaem Shah	16:00	Weir site	Weir Site	03	HES PAK

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr. No	Title of the training	Date			Trainer	Times	Site	Location	No. of attendees	Contractor
		Day	Month	Year						
25	Confined Space Entry	03	09	2016	M Javed	08:00	Weir site	Weir Site Exercise Area	12	Sungbo E&C
26	Personal Protective Equipment Training	11	09	2016	M. Javed	07:00	Weir site	Muster Point	65	Daewoo E&C and all subcontractors
27	Emergency Response Training	25	09	2016	M. Javed	07:00	Weir site	Muster Point	115	Daewoo E&C and all subcontractors
28	Manual Handling Training	29	09	2016	M. Javed	07:00	Weir site	Muster Point	155	HESPAK
29	MSDS Training	03	09	2016	S. Tariq Hussain	14:00	Powerhouse Site	HSE Training Hall Camp Office	23	Daewoo E&C
30	Pressure Test Training	07	09	2016	S. Tariq Hussain	8:00	Powerhouse Site	HSE Training Hall Camp Office	25	Daewoo M&E Team
31	Work at Height	25	09	2016	S. Tariq Hussain	7:00	Powerhouse site	HSE Training Hall Camp Office	100	Daewoo E&C and all subcontractors
32	Lock out Tag out (LOTO) Training	29	09	2016	S. Tariq Hussain	8:00	Powerhouse Site	Muster Point P/H	60	Daewoo E&C and all subcontractors

Annex-6

Monthly HSE Plan

Environmental & Social Monitoring Report (Jul-Sept 2016)



MONTHLY HSE PLAN

(PATRIND HYDRO POWER PROJECT)

SEPTEMBER 2016						
MON	TUE	WED	THU	FRI	SAT	SUN
			1	2	3	4
<ul style="list-style-type: none"> As ongoing activity daily Tool Box Meetings will be held on both sites. Site inspection and monitoring of HSE status will be carried out repeatedly on daily basis. Daily & weekly HSE progress reports will be consistent activities. 			Monthly HSE Report to Head Office + Electrical Equipment Inspection (Lower Site)+ Color Coding Inspection (Upper Site)	Site Inspection with construction team lower site		
5	6	7	8	9	10	11
Weekly Progress meeting (All departments) + Weekly HSE Report to Head Office + Internal HSE Meeting+ Heavy Equipment Inspection (Upper Site)	Weekly HSE Meeting with Site construction team (Lower Site) + Heavy Equipment Inspection (Lower Site) + Work at height Training (Both Sites)	Weekly HSE Meeting with Site construction team (Upper Site)+ Monthly Safety Campaign (Both Sites)	Batching Plant Inspection (Upper Site) + Electrical Equipment Inspection (Upper Site) Permit to work inspection (Lower Site)	Batching Plant Inspection (Lower Site) + Ambulance Inspection by Medical Attendants (Upper Site)		
12	13	14	15	16	17	18
Weekly Progress meeting (All departments) + Weekly HSE Report to Head Office + Inspection of waste management (upper site)	Weekly HSE Meeting with Site construction team (Lower Site) + Pressure / Hydro testing Training (Both Sites)	Weekly HSE Meeting with Site construction team (Upper Site) + Ambulance Inspection by Medical Attendants (Lower Site)	Permit to work inspection (Upper Site) + Fire Extinguishers Inspection (Lower site)	Management HSE Walkthrough (Both sites) Fire Extinguishers Inspection (Upper site)		
19	20	21	22	23	24	25
Weekly Progress meeting (All departments) + Weekly HSE Report to Head Office	Weekly HSE Meeting with Site construction team (Lower Site)+ Subcontractor's PPE Bills submission+ Electrical Safety Training (Both Sites)	Weekly HSE Meeting with Site construction team (Upper Site) + Color Coding Inspection (Lower Site)	Site Visit by HSE Management for monitoring the labor conditions and site housekeeping (Lower Site)	PPEs Inspection (Upper Site) + Site Visit by HSE Management for monitoring the labor conditions and site housekeeping (Upper Site)		
26	27	28	29	30		
Weekly Progress meeting (All departments) + Weekly HSE Report to Head Office	Weekly HSE Meeting with Site construction team (Lower Site) + Welding & Cutting Training (Both Sites)	Weekly HSE Meeting with Site construction team (Upper Site) + Site Inspection with construction team Upper Site	PPEs Inspection (Lower Site)			

Prepared by: For B.S. Shin
HSE Manager:

Approved by
Project Manager:

Annex-7

EMP COMPLIANCE STATUS

Environmental & Social Monitoring Report (Jul-Sept 2016)

Sr. No	Environmental Management Plan (Compliance Status)		
	Feature/Issue	Parameters/monitoring	Compliance Status/Action taken by EPCC
1.	Statutory Requirements	Compliance with approval conditions	<ul style="list-style-type: none"> With few exceptions, implementation in compliance with EPA's NOC & ADB's Environmental and Social Safeguards, IFC's Performance Standards
2.	Landslides	Catchment stability	<ul style="list-style-type: none"> Annual Monitoring undertaken after monsoon during September 2015 and report received from experts and has already been shared with SHPL & OE. Slope stability on powerhouse and surge shaft slopes is under process and stone pitching is also under process on the right bank slopes on weir site.
3.	Erosion and Sediment	i. Extent of erosion and sedimentation ii. Topsoil stripped and covered or seeded if stockpiled for longer than one month or during the monsoon	<ul style="list-style-type: none"> Erosion & Sediments on project sites has yet not been quantified, however, to prevent this protection works have been undertaken on slopes at both sites. Wind erosion of dust and sand has been controlled by frequent water sprinkling and covering stockpiles with polythene sheets To prevent HRT waste water sediments flow to the river settling tanks and chambers have already been constructed and are cleaned on regular basis.
4.	Muck Disposal	i. Reuse of spoil/muck within project areas where possible ii. Correct disposal of surplus spoil/muck in designated areas	<ul style="list-style-type: none"> Excavated material being used in civil works and dumping is done on approved area at both sites. Muck material has also been used in repairing of project access road during the month
5.	Water Quality	Wastewater treated prior to river discharge (Temperature, dissolved oxygen, pH, conductivity, turbidity, total phosphorous, inorganic phosphorous, total nitrogen, ammonia nitrogen, nitrogen oxides, biochemical oxygen demand and fecal coli forms)	<ul style="list-style-type: none"> Biannual water quality monitoring is undertaken in the month of June, 2016 and reports and reports are shared with OE.

Environmental & Social Monitoring Report (Jul-Sept 2016)

6.	Waste Management	i. Waste materials reused or recycled on-site where possible ii. Non-recyclable wastes disposed of appropriately	<ul style="list-style-type: none"> • Papers, mineral water bottles are being sent to market for recycling • On both sites garbage/Waste is disposed in designated trenches • Segregation on source has been improved • Waste consignment note has been maintained by keeping the recyclable waste record properly and remaining food waste has been composted into the designated trench in the disposal area
7.	Hazards/Risk	i. Workers provided with appropriate safety equipment and regular safety training ii. Storage of hazardous goods in bounded areas or in secure sheds iii. Explosives stored in guarded bunkers iv. Use of hazardous goods according to manufacturers' specifications	<ul style="list-style-type: none"> • Induction trainings • Providing PPEs • Tool Box Meetings, Job craft & on site trainings • Explosive store established under NOC (Lower Site) • MSDS and SOPs partially followed
8.	Aquatic Ecology	i. Fish and Aquatic populations	<ul style="list-style-type: none"> • Fish study was undertaken during this quarter in September, 2016. • Fishing& hunting prohibited on project sites. No endanger species found. • No considerable disturbance to aquatic life
9.	Flora	i. Direct observation of surrounding vegetation	<ul style="list-style-type: none"> • Study/monitoring undertaken during quarter in September, 2016 • Removal undertaken as indicated in EIA. Mitigation measures will be undertaken after construction phase. • Plantation activity undertaken above surge shaft slopes.
10.	Noise and Vibration	i. Maintenance of equipment in accordance with manufactures' specifications ii. Controlled blasting	<ul style="list-style-type: none"> • Regular inspections and service of heavy equipment • Regular monitoring, blast permit issuance and SOPs adopted
11.	Air Quality	Exhaust emissions from machinery – visual inspection	<ul style="list-style-type: none"> • Regular inspections and service of heavy equipment
12.	Traffic/Access	i. Enforcement of speed limits on Project roads ii. Noise Traffic Signs	<ul style="list-style-type: none"> • Heavy equipment/vehicle driver's education sessions • Speed limit and directional sign board installed

Annex-8

ENVIRONMENTAL INSPECTION

CHECKLIST

Patrind Hydropower Project

2016

WEEKLY ENVIRONMENTAL COMPLIANCE CHECKLIST

Date Start	Date Finish	Month	Location	Inspected By	Reviewed By	Noted By
12-09-2016	19-09-16	September	Project Site	Imran Yousaf	Tariq Hussain	Min Sun Choi

EXPLAIN THOSE ITEMS IDENTIFIED ABOVE THAT WERE CHECKED, AND DESCRIBE THE CORRESPONDING

ENVIRONMENTAL ASPECT/IMPACT	Yes	ENVIRONMENTAL ASPECT/IMPACT	Yes
1. Air emissions: Does the project monitor emissions from dust, or chemical gases?	✓	2. Chemical Use, Storage, and Inventory: Does the project manage lab chemicals, fuel, oils, cleaners, or solvents?	✓
3. Waste Generation, Management, Storage, Transportation and Disposal: Do any Hazardous/Non-Hazardous waste be generated and managed by the project?	✓	4. Interaction with Wildlife/Habitat: Do the project disturb soil in habitat areas or disrupt bird nests, aquatic life or other wildlife areas?	✓
5. Use, Reuse, and Recycling: Are any project activities designed to minimize generation of waste through reuse, recycling, and environmentally preferable purchasing, such as purchasing recycled-content materials?	✓	6. Soil Pollution: Does the project manage chemical spills for preventing soil contamination?	✓
7. Noise: Does the project generate and monitor noise that would impact personnel or wildlife nearby?	✓	8. Housekeeping: Do the project conducting good housekeeping practices for the entire site daily?	✓
9. Soil and Groundwater Contamination: Do project activities prevent soil and groundwater contamination in any way?	✓	10. Vegetation clearance: Does the project accomplish and supervise any alteration or removal of vegetation in or near surface water?	✓

CONTROLS TO BE IMPLEMENTED TO REDUCE POTENTIAL ENVIRONMENTAL IMPACTS:

Dust pollution has observed due to vehicular movement at the bridge that can cause cancer and various skin allergies as it's a silent killer so for this water sprinkling has conducted. Dust pollution prevention measures have taken by using TM to sprinkle water and minimize the dust.

HRT road has observed to be dusty that pollutes the whole area through where people walk daily; hence it disturbs the whole ecosystem. Therefore, schedule of water bowser log sheet has given to Batching Plant manager to be followed on daily basis in this regard. Dust pollution has prevented after sprinkling water by following the schedule.

Signature of Site Officer	Imran Yousaf	Date	19-9-2016
Reviewed by HSE Manager	Tariq Hussain	Date	19-9-2016
Noted By Team Leader	Min Sun Choi	Date	19-9-2016

Register of Environmental Aspects and Impacts

Project Title: Patrind Hydropower Project Completed by: Imran Yousaf			Dated: Reviewed by:	12-9-2016 to 19-9-2016 Min Sun Choi	
Location	Environmental Aspects	Environmental Impacts	Significance Rating	Operational Control/ Procedures	Environmental Objectives and Targets
HRT	Sedimentation Tank cleaning	Sedimentation tank of first corner got filled with HRT waste water/sludge that contaminates the surrounding river	Medium	Excavator and dump truck have arranged for the cleaning of sludge	The sludge then sent to disposal area finally and disposed of properly into the concrete waste trench
Daewoo Workshop	Oil Spillage	Oil spillage found in the workshop due to the poor maintenance of the machinery standing in workshop	Medium	spill has got cleaned by the labors	Supervisor and Labors have given on-site training on oil spillage prevention as this can lead towards soil contamination that convert the fertile land into barren land which is non-compliance according to NEQs
Bridge	Bridge cleaning	bridge found to be muddy that pollutes the surrounding area and river source	Medium	Kyongdong supervisor asked to conduct the cleaning of bridge	Bridge has got cleaned and the mud has thrown into the trench rather than throwing into the river, so to prevent water pollution

DAEWOO E&C



Date (yyyy.mm.dd)	Time (00:00)	Waste Description	Non- Hazardous /Hazardous	Unit of measure	Quantity	Origin of waste	Waste Transport company	Waste transporter Name and signature	Disposal Location
2016.9.26	9:30	General waste	non hazardous	KG /L	150K	Stone-wair	Sungbo	Rau	Disposal Area Final
2016.9.29	13:00	General Waste	non hazardous	KG /L	380	Stone-wair-puffa	Sungbo	Hei	Disposal Area Final
2016.10.1	10:00	General waste	non hazardous	KG /L	100	Stone-wair	Sun	Aa	Disposal Area Final
				KG /L					
				KG /L					
				KG /L					
				KG /L					

H.S.E-M:

Env Officer:

HSE Officer (Sungbo)

Annex-9

VEGETATION STUDY- KUNHAR

RIVER

147 MW Patrind Hydro Power Project



Quarterly Report

Study the impact of the project on the vegetative cover

July-September 2016 (September 28, 2016)

By: M. Yousaf Qureshi

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VEGETATION STUDY OF PATRIND HYDRO POWER PROJECT

1. Abstract

Dams and reservoirs are built for many reasons like, flood control, energy production, and improvement of navigation, irrigation, provision of water for domestic and industrial use. Construction of a dam and creation of reservoirs have very significant effects in that a land and river environment actually transformed into a new environment with lacustrine conditions. In these new conditions, some important impacts such as socio-economic impact, geological impact, ecological impact and water quality and climate are very significant. The degree of these impacts depends on the local conditions. Sometimes socio-economic impact dominates the environmental and geological impact and vice versa.

The project of Patrind Hydro Power Generation has started with socio-economic issues and still they are in place. Geological and environmental issues are coming up with the progress of the work on the other hand Project management is trying to keep balance between development and environment.

2. Introduction

The study area is about 10 km up and downstream of river Kunhar from the weir point at Patrind ($34^{\circ} 20' 36''$ N and $73^{\circ} 25' 10''$ E) at an elevation of 2516-3123 ft. a.m.s.l) and around the outlet at Alda ($34^{\circ} 20' 06.05''$ N, $73^{\circ} 27' 18.6''$ E) in AJK. It covers both the eastern aspects on the left bank of river Kunhar and right bank of river Jhelum in AJK. Total Area is about 100 Acres.

The environmental impacts by dams and reservoirs have been recognized widely in the first stage modern dam construction period that was after the Second World War. In this period, large scale dams had been constructed especially in the North and the South America, Canada and Europe zone. At the same age, the dam developing activities were promoted in Africa and Asia zones due to financial supports.

The United Nation Organization (UNO), the World Bank, International Commission on Large Dams (ICOLD) and other donor organizations have raised their concern on the impacts of damming on the natural flowing waters. All these wanted to relate such development activities to the upcoming issues and impacts and properly address these issues to a level of maximum satisfaction.

During this study several issues and impacts have been observed. The locals are complaining that the employment opportunities are not provided to them instead people from Punjab and KPK area recruited even on the non-technical jobs. An excuse of non-availability of technical people is also not acceptable to the local people and they seem to be complaining and raising their protest off and on, later on this issue was resolved and almost maximum of the employment has been given to the locals. Special attention has to be paid on local employment opportunities, resettlement, local economic impacts, social acceptance, environment, cultural land marks and heritage.

3. Study Areas

This study covers the intake and outlet areas of the project covering the surrounding area that can be affected due to the implementation of this project.

4. Forest Types (Ecological Zonation):

The Patrind project area lies in the Sub-tropical ecological zone of the country. This zone is again classified in:

- a) Subtropical Scrub forest with broad leave tree species in the foot hills and
- b) Subtropical Chirr pine Forest with a major tree species of Chirr Pine.

5. Vegetation Cover

Project site vegetation does not contain any species listed as endangered or threatened by the Government of Pakistan or IUCN. Only two species *Celtis austarlus* (Batculd) and *Ficus carica* (Enjeer) were found rare in Pakistan but they are listed as common for the rest of the world. The presence of these two species will not be disturbed as they were found above the submerged area and away from the area where trees needed to be felled down. The rest of the vegetation species were found protected and common in Pakistan and for the rest of the world. So it is concluded that there will be no negative impacts of Patrind Hydropower Project on conservation status of the plant species composition of the area.

Following Tree species were documented in the project area both in Patrind and in Alda:

<u>Common Name</u>	<u>Botanical Name</u>	<u>Type of Tree</u>	<u>Status</u>
Akhrot (Wallnut)	<i>Juglans regia</i>	Fruit	common
Anjeer	<i>Ficus carica</i>	Fruit	rare
Batang	<i>Pyrus patia</i>	fruit	common
Batculd	<i>Celtis australis</i>	soil binder	rare
Beence	<i>salix spp</i>	Firewood	common
Ber	<i>Zizyphus mauritiana</i>	fruit	common
Chir	<i>Pinus roxburglii</i>	Timber	common
Dhaman	<i>Grewia oppositifolia</i>	Fodder	common
Drawa	<i>Ailanthus anus</i>	firewood	common
Drek	<i>Melia azadrach</i>	firewood	common
Kangarr	<i>Pistacia khunjak</i>	soil binder	rare
Kau	<i>Olea cuspidate</i>	Agri tools,	common
Kiker	<i>Acacia nilotica</i>	Firewood	common
Nim	<i>Azadirachata indica</i>	Firewood	common
Phagwarr	<i>Ficus Palmata</i>	soil binder	common
phulai	<i>Acacia modesta</i>	firewood	common
Pipal	<i>Ficus religiosa</i>	Firewood	common
Robinia	<i>Robinia pseudoacacia</i>	firewood	common
Shahtoot	<i>Morus alba</i>	Fruit	common
Sherol	<i>Alnus nitida</i>	Firewood	common
Snatha	<i>Dodonaea viscosa</i>	soil binder	common
Talli (shisham)	<i>Dalbergia sisso</i>	furniture wood	common

The main contributor grass species were *Heteropogon contortus* (Sariala), *Cenchrus ciliaris* (Dhaman), *Desmostachya bipinnata* (Dab ghaas), and *Cynodon dactylon* (Khabbal).

Comparatively low vegetation cover was recorded in the flat area and highest from steep slope areas (74.29%) followed by gentle slope and gully bed areas.

6. Status of the Area

Here the impact of the tunneling has been discussed due to which the erosion process has accelerated and measures to control this landslide have been suggested in almost all study

reports and some of the control measures had been done by the project management soon after the stoppage of the blasting in the tunnel. Almost 3000 trees were planted by EPCC on the slope area. Affected area on the outlet has been treated with concrete work reinforced with horizontally inserted iron bars as shown in the picture below. Comparison study will be conducted in the last quarter Oct-Dec 2016. The sliding area adjacent to the project is out of project boundary & no negative impact was observed due to the project activities because every activity and blasting was monitored with the help of blast mates which helped in the controlled blasting. Adjacent area is much affected & triggered by the natural disasters i.e Asymmetrical rain pattern & earth quakes which happened in the last year.



Concrete work and slide area

7. OUTCOME OF THIS STUDY

There are still some Chirr pine (*Pinus roxburgii*) trees leaning just behind the powerhouse, outside the project area. They may topple down due to any strong wind but on discussion with EPCC representative he told that the plant that are near to fall, community cut down that tree and take that for domestic use. This area should also be planted with the new saplings of the Chirr pine to fill up the gaps and barren soil. EPCC is in progress of procuring some species which are good soil binder and deep rooted that will help in controlling the soil erosion at the power house site and comparative study will be done in the final report of December 2016.



Latest Picture showing leaning Chir pine trees.



Picture showing gaps to be planted

Some more trees have been harvested on the inlet and outlet of the tunnel where land has also been affected to some extent which needs a careful treatment.

Project site vegetation does not contain any species listed as endangered or threatened by the Government of Pakistan or IUCN. Only two species *Celtis austarlus* (Butculd) and *Ficus carica* (Enjeer) were found rare in Pakistan but they are listed as common for the rest of the world. The presence of these two species will not be disturbed as they were found above the submerged area and away from the area where trees needed to be felled down. The rest of the vegetation species were found protected and common in Pakistan and for the rest of the world. So it is concluded that there will be no negative impacts of Patrind Hydropower Project on conservation status of the vegetation of the area except to a limited extent for which suggestions have been given below.

No blasting activity is being carried out, only customary construction work is being carried out on powerhouse site, which has no negative impact on the community & near areas. Some plantation and bio-engineering work has been done by the project management to control the landslide around that area. Apart the government of AJK is also in process of controlling lohargali.

The present status of vegetation on Patrind side does not depend upon the water of river Kunhar but it depends on natural precipitation or water channels taken out of the side nallahs. So reduction in water regime downstream will not affect the vegetation of the area. The average biomass for forage that will be submerged under water after the construction of weir was calculated as 3,468 Kg/ha. The total biomass to be inundated is estimated to about 200 tons. (*Farmer Study Report for Patrind project*)

The area affected on the weir site due to inundation is 57.2 ha and on the powerhouse site is 5.5 ha which will come under construction.

8. Possible Impact of the Project

The result indicates that landscape, the nature of the rock and the redistribution of rainfall water by run-off are the main sources of spatial variation in the study area. The construction of the dams will positively affect the groundwater at the upstream and negatively at the downstream of Patrind. Downstream the vegetation composition along the banks will make a huge difference as some area which is under river water will have no more water and some

invasive species may appear on the tract. Water retention capacity of the soil above the tunnel will reduce as the percolation rate will increase and drain out from the tunnel. This will definitely have a negative impact on the water loving plant species and species of low water requirement will dominate changing the ecology of small area. This will also have a negative impact on the spring waters on and around the tunnel, affecting the vegetation fed by these spring waters. Ground water will be affected downstream of the Patrind, but the dependence on that water is not existing;

The report is based on the site observation and it was seen that about 20 meters of the slide has expanded towards the top of the hill. If the area is once started treating with engineering, bioengineering and biological works intensively with multiple activities then it may get controlled. Some plantation has been done previously to overcome the erosion, EPCC is in progress to obtain some local species with well-developed root system, deep rooted plants and plants of high moisture consumption near the moist areas. Forest department visited the site along with admin and construction department and suggested specie (Robinia Pseudoacacia) to be implanted in the area to avoid erosion in future So by the end of this year EPCC will be planting round about 3 – 4 thousands tress on both sides.

So no social impact is expected. Landslides acceleration is the major issue which has been observed during the implementation of the project and needs special attention. Geological and environmental impact is very high.



9. Recommendations

The slides inside and adjacent to the project site have spread definitely due to the blasting effect of the project. The intense level of vibration has accelerated the erosion rate in the area which needs special attention.

Since the area close to the tunnel and inlet and outlet of the tunnel where working concentration is high, the impact on the vegetation and water courses will have negative impact. The lake will submerge some of the vegetation due to rise in water level. Similarly downstream the water area will reduce so new species may appear along the banks of the river course. Some of the remedial measures taken by EPCC are:

Certain steps taken by EPCC to tackle the issue of Soil erosion and Land slide are:

- 1) Construction of small drains around the affected area some diversion drains are also prepared to control the flow of water.
- 2) Constructed retain walls in the project area to stop the sliding area. Some walls are under construction and this activity is continuous from the start of the project.
- 3) EPCC in coordination with EPA & Forest department has already planted more than 3-4 thousands trees and have plan to plant more trees in the affected area by the end of this year, Species *Robinia Pseudoacacia* will be planted having characteristics of soil binding which will help in decreasing erosion.
- 4) Soft Gabion walls on affected side to stop erosion and landslide.
- 5) Stone pitching to avoid landslide and Grass pitching was also done around the surge shaft area to avoid soil erosion & Land slide. Some of the remedial measures which are taken by EPCC on site are :-



Step walls constructed by EPCC on site to stop Landslide & Erosion



Soft Gabion walls on site



Stone pitching on site



Grass Pitching and drainage on site

Annex-10

FISH STUDY - PATRIND HPP

147 MW Patrind Hydro power Project Pakistan



July-September 2016

By: M. Yousaf Qureshi

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1. Objectives of the Study:

- To find out the impact of Patrind Hydro Power Project on the fish fauna of River Kunhar in, above and below the Patrind Project area during the construction and the operational phase.
- Suggest technical measures to have minimum impact on the aquatic life of River Kunhar by the Patrind Hydro Power Project.

2. ABSTRACT

Patrind Hydro Power Project is now entering into the operational phase as the construction of the weir is in its final stages. The Kunhar River water will be diverted through a tunnel to give it a fall at Alda in Muzaffarabad AJK to produce 147 MW of electricity. The construction of weir will affect the flow of river Kunhar downstream and it will also create an impoundment above the weir point. The existing diversion tunnel has been closed and another flushing tunnel has been constructed which is operational now. These tunnels will have a great impact on the aquatic life of the river at the construction site area. This study deals with exploring the possible impact on the fish fauna of river Kunhar at and around Patrind Hydro Power Project area and to suggest such measure which can reduce the this impact. The study gives us the information of seasonal changes and changes in the same months in different years.

The partial river blockage has been done on the river Kunhar. As a result of this partial blockage a lake started appearing behind the Coffor Dam and speed of water behind the dam is very slow. The course of river has been changed from the diversion tunnel to the flushing tunnel. The diversion tunnel was constructed at first stage of the project to get space for the construction of weir. The reported fish fauna of Kunhar River shows the wide diversity of fish species in it but the study carried out for the course of time shows that only two fish species are present in the study area. Study in almost all the seasons have been carried out and no any other fish species could be caught or seen except the Schizothoracinae but according to the evidence of locals, the presence of Glyptothorax and Cyprinus species in Nallah Boi is witnessed.

3. INTRODUCTION

The Patrind Hydro Power project site is situated in the rugged mountains where speed of River Kunhar is very fast making some cascades. River flow is very high during the summer and low during the winter. Similarly the turbidity percentage is high during the summer and low during the winter. The study periods are set with the seasonal changes of the river Kunhar so that a clear picture could be obtained for the impact assessment. The study will

continue during and after the construction phase. Six sampling points were selected for the study with a stretch of about 100 meter, covering about 10 km up and down the Weir at Patrind. The province of Khyber Pakhtunkhwa is located in the north-west of Pakistan and is largely located on the Iranian plateau and Eurasian land plate, while peripheral eastern regions are located near the Indian subcontinent and this has led to seismic activity in the past.

The province covers an area of 74,521 km² (28,773 sq mi). According to the 1998 census, the total population of Khyber Pakhtunkhwa was approximately 17 million out of whom 52% are males and 48% females. The density of population is 187 per km².

The northern part of the province is receive maximum snow in winters, and also experiences heavy rain falls. Its valleys Swat, Kaghan, Chitral and Kohistan are surrounded by rugged mountains and have temperate climate, including cold winters. Upper reaches of rivers in these valleys carry clean cold water and are suitable for trout and schizothoracines (snow trout). Several lakes and reservoirs also provide suitable conditions for cold water fish. As one moves to south, transitional or semi-cold waters are present, with snow trout and mahseer fish species presence. Further south and at lower altitude warm water fish species prevail.

Recreational/sport fishery has been steadily increasing in the upper reaches with cold water. In 1990s cold-water fish catches were estimated at about 200 t/yr (Akhtar, 1992), with the bulk formed by snow trout and indigenous small fish. In the same year Madyan fish farm produced 7.5 ton and the private sector about 5 ton of trout. With the completion of two more fish farms of trout fish in Swat and Kaghan, the private sector is expected to produce 50 ton annually.

Brown trout introduction and subsequent stocking in Kaghan and Chitral at the beginning of the 20th century were very successful. Starting in 1962 at least three schemes initiated the development of trout in five districts, i.e. Mansehra, Swat, Dir, Chitral and Kohistan, resulting in five trout hatcheries. It is estimated that about 40 percent of the total fry produced from these hatcheries are released in various natural water bodies. Sport fishery has promoted tourism and its economic role is well established (Akhtar, 1992). It is recognized that at present the trout industry in Khyber Pakhtunkhwa is more advanced than elsewhere in Pakistan. There are now three trout hatcheries in Chitral Valley. The largest trout hatchery-cum-farm is in Madyan in Swat Valley. There is a hatchery at Kalkot in Dir, and the Shinu hatchery in Kaghan, the oldest one in the Province. A new hatchery has been completed at Dobar in Kohistan.

No attention has been paid to develop hatcheries for the native cold water fish species anywhere in Pakistan. Province of Punjab has developed one Mahsheer hatchery and AJK Fisheries department is also planning to develop one Mahsheer hatchery to restock it in Poonch River and its tributaries. Poonch River has been declared as National Park very recently to improve the conservation status of the river with special emphasis on Mahsheer. Nepal has worked on producing juvenile of Shizothorax species in Pokhra region but there is no plan of developing such hatcheries in Pakistan, AJK and Gilgit Baltistan

The river Kunhar flows in district Mansehra with a stretch of about 250 km. The river carries clear water with little silt during the winter (September-March), but it causes heavy floods during the monsoon season and summer snowmelt.

4. FISH MIGRATION PAST MANGLA DAM

It is acknowledged that the results of the study are not necessarily representative of long term waterway conditions. The lack of long term data on water quality, plankton concentrations and fish populations limits the conclusions that can be made about the aquatic ecology in the Project area. The scope of present study does not require covering of fish fauna present in Jhelum River along with its migration status. There is almost no possibility of upstream migration of fish fauna above Mangla Dam to the Project area as authenticated by the study results and supported by the local information recorded through the interviews. Even then, if some migration occurs that will be compensated by the Jhelum River. Thus, it can be safely concluded that the proposed Project will have an impact of river ecology in the stretch of 13 kilometers below the weir point due to shortage of water and 8 kilometers above due to increase in water level. There will be no impact on the available fish fauna as well as the migration of fish species above Mangla dam.

5. The Fish

The reported diversity of fish shows that the river Kunhar is very rich but the studies conducted recently show that only little number of fish species is hardly found here. Though the conditions are very conducive for the survival of various species, but in actual they are very limited. The main cause which can be visualized for the absence of many other species is most probably over fishing and ruthless killing of the fish by using explosives and poisoning the water bodies during the near past. Interviews with the locals are the main proof of it. The department of Fisheries of Khyber Pakhtunkhwa has not been able to protect the river Kunhar down the town of Garhi Habibullah most probably due to the shortage of conservation staff with them. Similar position prevails with the Fisheries Department of AJK. The left bank of River Kunhar comes under the responsibility of Government of AJK below Brarkot.

The main factors which influence fish life in the Himalayan streams are: (i) current velocity; (ii) fluctuation in water discharge; (iii) water temperature and dissolved oxygen level; (iv) substratum; (v) shelter from the current; and (vi) food availability represented mostly by organisms clinging to and growing on rock and stone surfaces in fast current.

Snow trout, a cold water riverine and medium migratory fish is locally known as Malli or Sawti. It belongs to the family Cyprinidae and sub-family Schizothoracinae which are widely distributed in the Himalayan and sub-Himalayan region and much of the rest of Asia. Altogether 28 species of snow trout are reported in Himalayn river waters but only two of genus *Schizothorax* are recorded in the study area of river Kunhar i.e., *Schizothorax curvifrons* and *Schizothorax plagiostomus* and they are common in river Kunhar. Both the species are phytophagous fish and have developed a special mouth to scrape the algae attached on stones. They spawn twice a year during September/October and March/April, but September/October is the best season for spawning. Clear water, stony bottom of creeks composed of fine pebbles and gravel, and water flow of 2.8-4 m/sec, pH 6-7 and dissolved oxygen concentrations of 8-15 mg/L form good spawning conditions in the natural environment.

To cope with the steep fall in temperature in winter months, schizothoracines migrate from headwaters to lower altitudes where they represent a sizeable part in fish catches in large rivers and their tributaries. The rise in temperature in Kashmir and Kunhar streams from

near-freezing level to 10-18°C during May-June induces *S. plagiosomus*, *S. longipinnis* and *S. curvifrons* to spawn. During the upstream migration the fish still finds itself in waters of low temperature of 8.0-9.5°C, owing to the steady influx of snow-melt water. This induces the species to migrate to and spawn in side streams or point of warm and coldwater confluence, which receive warmer ground water of 17.5-21.5°C. In the same drainage, *S. plagiosomus* and *S. curvifrons* migrate downstream to the lowermost reaches where it spawns from September to December at 15.0 to 21°C. These observations indicate that in some schizothoracines multiple spawning is determined by temperatures and flow rates optimal for egg laying. The eggs are large-sized (3.0-4.0 mm diameter) and sticky in nature. They are laid in shallow pools (50-70 cm depth) and remain adhered to the substratum until the hatching of fry.

The fluctuating discharge of water and drying out of streams, leaving only isolated pools or no water at all, is another important matter. A general observation during the last studies on seasonal fluctuation in river discharge in Kunhar river system indicate that the range of mean flow from October to March (winter months) represents only 8-10% of the total annual flow. There are also variations from year to year depending on the winter and monsoon precipitation. Reduction of torrential streams to stagnant pools exposes the fish to terrestrial predators and to depletion in dissolved oxygen concentrations, especially when autumn leaf fall takes place. However, due to low temperature, the level of dissolved oxygen may not fall below the optimum requirement of coldwater fish (7.0-8.0 mg l). As soon as the flow is restored with spring rains and snow-melt water, a rapid re-colonization of the stream takes place.

Schizothorax and *Schizothoraichthys* spp are dominant among the cold water fish in river Kunhar in terms of catch and abundance in all seasons. The substratum consists of boulders, stones, gravel and patches of aquatic vegetation in the pools.

As a result of this study in river Kunhar it came out that a gradual increase in water temperature and pH corresponds to a decrease in dissolved oxygen, decline in the density of nymphs of mayflies and stoneflies, but in an increase in larval and adult aquatic beetles. The information collected during expeditions is based on spot measurements and it does not represent average values. The following parameter ranges for the Kunhar river were recorded

at six sampling points during the study. Following table shows the result; transparency; pH; water temperature (°C); dissolved oxygen;

Table-1 showing water parameters

S No	Point	Dissolved Oxygen (ppm)	pH	Temperature °C	Transparency
1	Boi	8.1	6.5	18	0.8
2	Nallah Boi	7.25	7	18.5	0.7
3	Parri	8.12	6	18	0.9
4	Tunnel exit	8.14	6	18.5	0.9
5	Tunnel Inlet	8.13	6	17.8	1
6	Dumping Site	8.12	6.	17.8	1

6. Fish catch and fishery potential

The fishing activities take place for 8 months of the year during spring, summer, autumn and the early winter months (interview with locals and fishermen). There is usually no fishing during floods and part of the winter season. The full-time fishermen fish for 6 months and catch 0.2-1.2 kg per day. The individual catch is around 126 kg per person per year. The 6 professional part-time fishermen generally fished 2-5 months per year and were labourers, mechanics, a few businessmen and a few job holders. However, the electro fishing fishermen catch fish in the range of 2-4 kg, with an average of 315 kg per fisherman per year, and they do fishing in groups of 3-5 people. Basically, occasional fishermen were non-fisher groups and do fishing for recreation. Such groups do fishing 2-10 times per year and caught 0.2-0.5 kg per day, with an average of 2.1 kg per person per year for consumption.

The fishermen do fishing in the main Kunhar river system and its tributaries. The estimated total length of the river with its tributaries is 214 km other than the trout area with an average water depth of 2.2 m.

Fisheries in the Himalayan Rivers can be divided into (a) subsistence fishery; and (b) sport/recreational fishery. Fish production in mountain streams is low and therefore any commercial fishery is on a very limited scale. The low biological productivity results in the

prevalence of small-sized fish, except in pools where fish have some shelter and resting place. According to the statement of the fisherman, Mr. Muhammad Haneef, the recently appeared pool harbors large size of fish but no fish could be caught by the cast net.

The fishing methods using nets, traps, electro fishing gear, use of explosives and water poisoning are simple but well-suited to the turbulent nature of the streams. Cast nets of 1.0-2.0 m diameter, with mesh sizes 1.2 to 3.0 cm bar to bar and sinkers of a total weight of 5 kg are the most common gear used. The sinkers allow rapid settling of the net at the bottom, thus preventing it from being carried downstream by the rapid current. The fisherman upturns the stones on the stream bed covered by the net, which makes the fish come out of their hideouts below the stones and get trapped in the peripheral pockets of the net. The other types of nets used are: drag nets operated in conjunction with stake net (*kadh*), seines, stake nets, bag nets (*kochbi*), and some other types.

The various poisons used are lime, sap of *Euphorbia rogleana*, powdered seed of *Xanthoxylum alatum* and *Cascaria tormentosa*, boiled tea leaves, etc. In addition, spears, horse hair nooses, harpoons with 4-5 barbed points and grain fishing are also used in different waters of the local rivers.

Use of explosives and electro fishing gear in river Kunhar is usually done by the non-professional fishermen who visit the areas in groups. They damage the point very badly and stay at the site for one to two hours, catch the easy accessible fish and leave the other dead fish to flow away with fast current of water.

7. Fish catches and species composition

Two professional fishermen were engaged for fishing in the river Kunhar at fixed sampling points. Fishing in the Kunhar River using cast nets of 1 m to 1.5 m diameter recorded a catch of only one fish species during this sampling. The catch comprised mainly of *Schizothorax curvifrons* (100%) and no catch of *Schizothorax plagiostomus* was found from any point. The reason could be the coming breeding season of the fish species when these migrate to suitable places. The water is sandy grayish. Another reason for the low catch below the weir could be the recent changes in the flow trend of the river due to shifting water from diversion tunnel to flushing tunnel and partial blockage of the water behind the coffer dam.



1. Fisherman Mr. Mohammad Haneef

7.1: Reported Fish species of River Kunhar in the past:

Family: Salmonidae

Oncorhynchus mykiss {*Salmo gairdneri*} (Rainbow Trout)

Salmo trutta (Brown Trout)

Family: Cyprinidae

Schizothorax esomus

Schizothorax plagiostomus

Schizothorax micropogon

Schizothorax curvifrons (Snow Trout)

Tor putitora

Tor tor

Labeo spp

Cyprinus carpio

Family: Sisoridae

Glyptothorax kashmirensis

8. Sport and recreational fishery

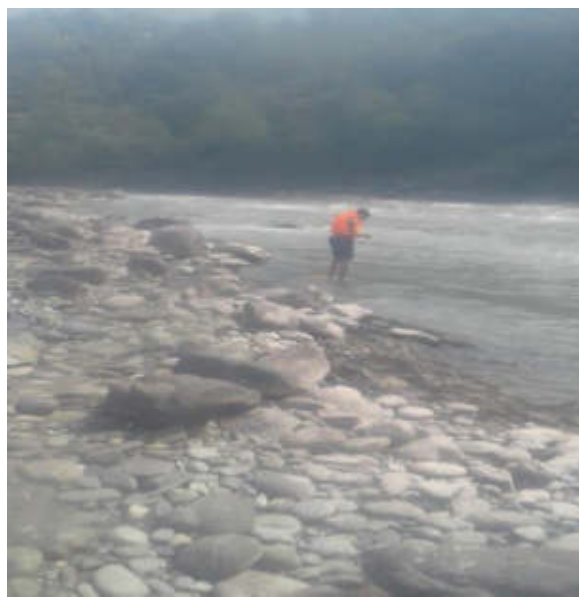
Trout

The trout, which is now acclimatized in the upper reaches of River Kunhar (upstream of Jared in Kaghan), is permitted to be caught on rod and line using both artificial and live baits. Special bylaws have been formulated under the Fisheries Act in the Khyber Pakhtunkhwa province. They regulate the fishing season, bag limit and prescribed baits.

Organized trout fishing is confined mainly to the upper reaches of river Kunhar. As per fishing regulations, 'dry and wet' fly spinning, artificial and natural worms, etc. are the allowed baits for trout fishing. The number of anglers to be permitted in each beat is fixed on a daily, weekly or seasonal basis. The fishing season extends from March to October every year. The minimum legal size of trout to be caught ranges from 25-30 cm. The bag limit ranges from 5-7 fish of 25 cm and above in length. The number of undersized fish caught by each angler has to be returned in the river. However, there are very few anglers who follow such instructions.

9. Fisheries Status of River Kunhar in view of locals

During the study few locals were interviewed randomly. Among them were Mr. Khaqan Hussain Shah, Mr. Husnain Gilani and Mr. Mohammad Sadiq. According to them a gradual decline in the fish catches have been observed during the last two decades. Use of explosives and poisoning are the major two reasons and electro fishing has also been observed for the last two years in River Kunhar and Nallah Boi. The people responsible for doing so are mostly non-resident visitors not the locals. Most of the small size fish so killed flows down in river Kunhar. Another reason of decline in the fish population, according to them, is the predation of local fish by exotic trout fish in the upper reaches of the Kunhar. The trend of over fishing by the destructive means of fishing has reduced after the start of the Patrind Hydro project. This is a very positive sign of impact on the fish by the project. The decline in fish catch has been reported by the professional few fishermen in the areas below the weir for the last three months as the construction phase of the weir near to completion.



3. Interview with locals

10. Field Results:

10.1 Point-I (Boi)

First sampling point of the study is situated at $34^{\circ} 18' 19''$ N, $73^{\circ} 26' 44''$ E at 2422 ft. of elevation above sea level. The water level is moderate and it is grayish in color. Sudden decrease in river water level has been observed by marshy side beds due to partial blockage of river at the weir. No fish was caught at this point. The fisherman's left finger was entangled in spool fixed with a line.

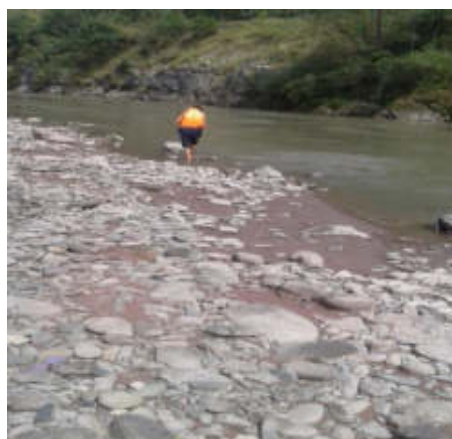


FiG: Marshy bed of retreated water at Point-I

10.2 Point-II (Domel Boi)

This sampling point is situated at $34^{\circ} 18' 36''$ N, $73^{\circ} 26' 43''$ E at 2398 ft. of elevation above sea level. This is the point where fish can migrate upstream in the Boi Nallah during the spawning period and can have little impact of low river flow when tunneling of the water starts. The nallah water was very clear as compared to the water of river Kunhar.



FiG: Confluence of Boi Nallah with River Kunhar Fig: View of confluence point in September 2015

According to the locals, evidences of existence of *Glyptothoraxspp* and common carp (*Cyprinus carpio*) were found in the Boi nallah.

10.3 Point-III: (Parri)

This sampling point is situated at $34^{\circ} 19' 47''$ N, $73^{\circ} 25' 35''$ E at 2475 ft. of elevation above sea level. The color of the river is sandy grayish. A small creek joins the river here and possibility of suitable breeding ground of the fish could be expected here. No fish could be caught here.



Sampling at point-III, Parri

10.4 Point IV: (Outlet of river diversion)

The point is situated at $34^{\circ} 18' 19''$ N, $73^{\circ} 26' 44''$ E at 766 meters of elevation above sea level. The work around the area is in progress so the shape of the water body keeps on changing for each study time. This diversion tunnel has been closed and water is coming out of the new flushing tunnel. This has a great impact on fish as down and upstream migration is not possible and there is no chance of the survival of the fish in this tunnel and at the outlet. The speed of the flowing water is tremendous and survival of the fish is not possible. This tunnel has a definite impact on the fish production but to maximum of 800 meters downstream. The sampling of fish has become near to impossible here due changes occurred. New point would be selected below this point from sampling.



Fig: Sampling Point at outlet with old diversion in new flushing tunnel

10.5 Point-V: Flushing Tunnel Inlet

This is the point situated at $34^{\circ} 20'36''$ N, $73^{\circ} 25'08''$ E at 2615 ft. of elevation above sea level. This is the inlet of the diversion tunnel. The natural river water flow has been partially blocked by lowering the gates of the flushing tunnel due to which a deep pool has appeared at this point. The fisherman, Mr. Muhammad Haneef told that he was able to see the large fish jumping in this pool early in the morning. This is very much according to the speculations as the larger water body will provide the opportunities to the fish to grow in weight and size provided it finds sufficient food contents. Stagnant water will, of course, produce more phyto and zoo-planktons to be fed by the fish. This pool can produce a large quantity of trout fish and managed properly under the technical guidance of an expert in cold water Aqua culturist. The fish migration paths have not been provided for the migration of the fish in spite of regular recommendations in the previous reports, so this will have a big negative impact on the natural fish population in the river behind the pool. No fish could be caught here.

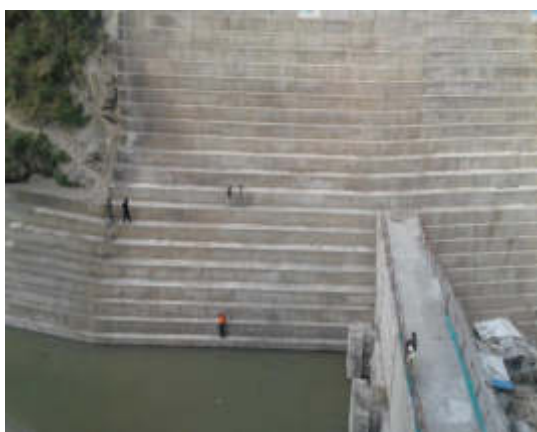


Fig: Sampling at Inlet
Coffer dam



Fig: Appearance of pool due to partial blockage behind

10.6 Point-VI Dumping Point

This is the point situated at $34^{\circ} 18' 19''$ N, $73^{\circ} 26' 44''$ E at 776 meters of elevation above sea level. This is the dumping site of the disposal from the tunnel. This a potential site of the lake emerging due to damming on the river at Patrind. The river flow has changed and rise in the level and low speed of river water can be observed here due to blockage of water at Cofferdam. The only fish, *Schizothorax curvifron* was caught here.



Fig: The fish



Fig: Collection of water and air temperature

The consolidation of embankment is still in progress. Stone pitching and wire gabions are being placed at the site to control the dumped loose soil to be eroded by the river water.



Fig.: Gabion work at dumping site

Table-2 Showing Data collection at each sampling point

Point-I							
S No.	Air temp. °C	Water temp. °C	pH	DO mg/l	Fish Species	Weight (gms)	Length (cm)
1	33.9	18	6	8.12	No fish		
Point-II							
2	34	18	6.5	7.25	No fish		
Point-III							
3	33.9	17.8	6	8.13	No fish		
Point-IV							
7	34.	18.5	6	8.14	No fish		
Point-V							
8	34	18.8	6	8.12	No fish		
Point-VI							
9	33.9	17.8	6	8.12	<i>S. curvifrons</i>	74	19
Total Fish collected							
<i>Schizothorax plagiostomus</i>						0	
<i>Schizothorax curvifrons</i>						01	

Species composition

Schizothorax curvifrons = 1

Schizothorax plagiostomus = 0

11. Comparison

There is large difference in the results of this and the last studies. There is a significant impact appeared due to changes occurred at the weir point. Partial blockage has most probably affected the existence/population of the fish downstream. The picture will become clearer during the study of December 2016. The aquatic environment of the River Kunhar is

significantly changing as the project progresses and water release in the river is decreasing. Similarly, appearance of the water pool behind the weir has also shown different results. The size and weight of fish in the pool will be higher and change in species composition is also expected as some other species may get better survival environment here. Migration of fish will stop due to nonexistence of safe paths. The major change in ecology is expected after the complete weir construction and obstruction on the river flow. This will affect the migration of the fish even upstream and all breeding grounds will highly be affected downstream.

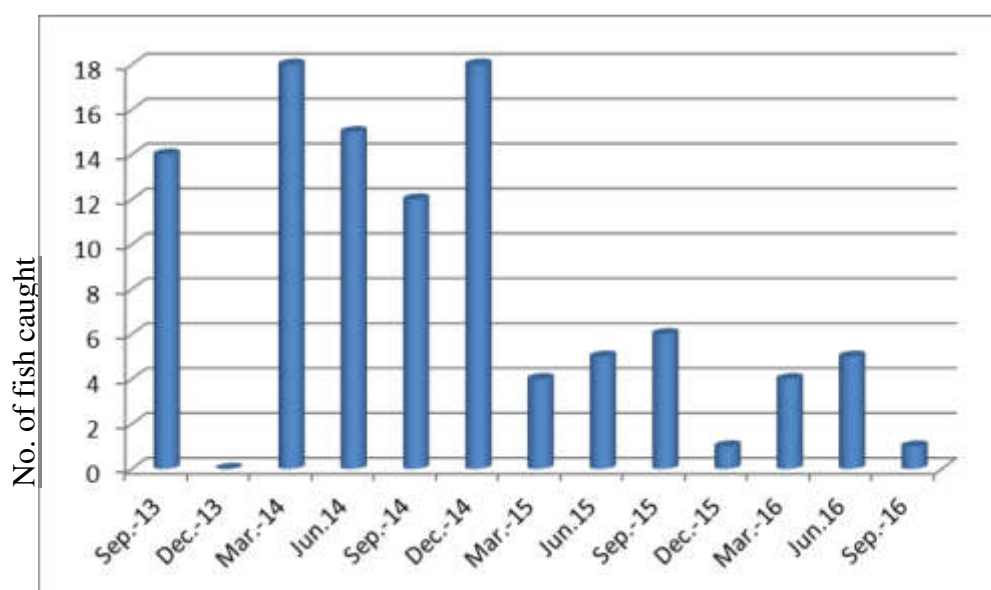


Table-3 Comparative number of fish Caught at sampling points

Period	Point	No. of fish	Period	Point	No. of fish	Period	Point	No. of fish	Period	Point	No. of fish
July-Sept 2013	1	3	July-Sept 2014	1	0	July-Sept 2015	1	4	July-Sept 2016	1	0
	2	6		2	4		2	1		2	0
	3	4		3	1		3	1		3	0
	4	0		4	2		4	0		4	0
	5	1		5	3		5	0		5	0
	6	0		6	2		6	0		6	1
Total:		14			12			6			
Oct-Dec 2013			Oct-Dec 2014	1	6	Oct-Dec 2015	1		Oct-Dec 2016		
				2	5		2				
				3	0		3				
				4	4		4				
				5	0		5				
				6	3		6				
Total:					18						
Jan-Mar 2014	1		Jan-Mar 2015	1	2	Jan-Mar 2016	1				
	2			2	0		2				
	3			3	0		3	3			
	4			4	0		4				
	5			5	0		5	1			
	6			6	2		6				
Total:					4			4			
	1	5		1	3		1	4			
	2	7		2	1		2				

Period	Point	No. of fish	Period	Point	No. of fish	Period	Point	No. of fish	Period	Point	No. of fish
Apr-June 2014	3	4	Apr-June 2014	3	1	Apr-June 2016	3				
	4	0		4	0		4				
	5	No access		5	0		5				
	6	2		6	2		6	1			
Total:		18			7			5			

The graph given below shows the comparative picture of the fish catches during each study



Quarters of the Years

Fig: Showing comparative graph of fish catches during each study

12. Result

There is a very clear reduction in the number of fish catch from the last studies which shows the trend of increasing impact on the fish fauna of River Kunhar in the project area of the Patrind Hydro power project. This shows that the impact has appeared because of the tunneling of the diversion and stoppage of the up and down stream migration of the fish. This has also changed the course of flow of water downstream

due to which breeding grounds have been disturbed. If the breeding of the fish will not take place then its population will definitely drop down.

13. Recommendations

Fish catches in the Kunhar River have been declining because of the changes in river flow, fluctuation in the current of water and flow of water through the diversion and flushing tunnels. This impact will further increase during the operational phase of the project.

During the Dam Operation Phase, the needs for fisheries management of three impact areas must be addressed: 1) the reservoir and its affluent streams, 2) the fauna passage facilities, 3) and the downstream river channel and floodplain(s),

1. Reservoir fisheries management concerns focus on protecting spawning grounds in affluent inflow areas, stocking with indigenous and non-indigenous fish species to increase production, development of a small pelagic fishery, and management of the water level to prevent erratic behavior deleterious to fish stocks.
2. Management of the fauna passage facility includes monitoring of fish traffic in terms of species, numbers, and length/weight range. An assessment should be carried out of the efficiency of the fish pass in providing an access route for individual species, and appropriate adjustments made to the structure to improve its efficiency. The overall impact of the fish pass on reservoir fisheries and downstream river fisheries should be determined.
3. Downstream river fisheries management concerns focus on aeration of anoxic discharge water from the dam, provision of effective fish passes to allow brood stock and juveniles to migrate across the dam, reduction of turbulence in the stilling pool, and mitigation of fish losses on the floodplain. The release of artificial mini-floods and the provision of adequate dry season flow are crucial to maintaining a suitable environment for migratory fish species, especially endangered species.
4. Fish catches in the Kunhar River have been declining because of the use of illegal fishing methods such as poisoning and use of electro-fishing gears. To

preserve the fish stocks, controls should be imposed on illegal fishing practices and a fish sanctuary be established. The deep water pools of the Kunhar and its feeder streams should be declared fish sanctuaries for the protection of brood stock.

5. The Kunhar River catchment has been subject to deforestation, resulting in erosion and silting of streams and rivers. There is a need for land rehabilitation measures to be urgently implemented in the watershed. The incidence of water pollution is increasing in the lower reaches of the river due to the discharges of sewage waste, and the illegal use of insecticides and pesticides. Control over such activities must be strictly enforced.
6. Habitat improvement is an essential factor for fishery improvement. To avoid seasonal changes of water level, suitable pools should be created under the management of the local development authority. Such a practice will improve the fish habitat quality and avoid the winter desiccation.
7. Protection of fish stocks and fishery regulation should be based on periodic assessments of fish stocks. It is high time to enforce the existing fishery law and to restrict the use of nets with less than 2 cm mesh size.
8. Early planning and consultation with expert should be initiated to have aquaculture development in the cold water pool appearing as a result of damming on river Kunhar at Patrind.
9. Proper Fish ladders should be provided for the easy up and downward migration of the fish on the lake behind the weir. This is the time to take action in this regard otherwise it will not be possible when the water level will rise due to the start of operational phase of the project.

14. Potential Impacts and Mitigation Measures

Aquatic ecology is affected by water quality, quantity, availability of breeding habitat (such as spawning and rearing grounds), foot access to the river, fishing methods and terrestrial activities along the river banks and in the watershed (Helland-Hansen et. al., 1995). The existing aquatic habitat of the Kunhar River in the Project area is continuous, fast flowing where water quality and quantity are seasonally affected, primarily by monsoon runoff and snowmelt. The Patrind Hydropower Project will divide the existing aquatic environment into three distinct habitat areas with different flow conditions:

1) Upstream of the weir

2) Within the weir pond

3) Downstream of the weir

a) Upstream of the Weir and in the Pond

Flow rates, water quality and fish habitat in the Kunhar River and its tributaries, above the reservoir will not be affected by the Project, except for the distribution of some aquatic organisms. The presence of the reservoir will isolate these upstream, fast-flowing habitats from the riverine habitat below the reservoir, preventing migratory species from reaching these areas. The populations of sedentary, resident fish species above the reservoir will not be directly affected by the Project, but will become genetically isolated from populations downstream.

b) Within the weir pond

The weir upstream/at the weir will create a deep, still water aquatic habitat, replacing about 7km of existing riverine habitat. Water quality in the reservoir was found suitable for the protection of aquatic ecosystems. The most productive parts of the reservoir will be the shallower sections where light is able to penetrate to the bottom and allow the growth of attached aquatic macrophytes.

The creation of the lake will provide a large open water fish habitat that could be used for promotion of fish culture especially for cold water fish. The harvesting of fish culture, if it proves viable will be an offset to the lost production. This will also increase the fish fauna and their density to be exploited locally for the socio-economic uplift of local communities.

c) Downstream of the Weir

The Project will alter the Kunhar River flow regime in the stretch starting from the weir to the confluence with Jhelum River (13 Km length). Changes in the flow regime will affect the composition and abundance of planktonic and benthic communities, thus affecting the food supply of fish. These changes will have the potential to influence on the species composition of the fish population in the Project area, but due to the low availability of fish fauna in the Project area as shown by the study results, the impact shall not be significant.

Furthermore, it should be noted that the topography of Kunhar River valley downstream of the weir is characterized by high river banks with relatively deeper bed levels that prevent the use of the Kunhar River for agricultural irrigation and drinking water supply. The operation of the Project for hydropower generation will reduce flows downstream of the weir. A minimum of 2 m³/s of water will be released from the head pond as ecological flow throughout the year. This flow will increase further downstream as numerous medium and small streams enter the Kunhar River, thus providing mitigation measures for aquatic flora and fauna in the downstream reach of the weir. These additional side streams will, on average, contribute an estimated 1.8 m³/s to the Kunhar River flow downstream of the weir

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Annex-13

Fatality Incident Report

Contact Affairs

Office Chief Resident Engineer,
(OE) Pakistan Engineering Services,
Ward No.2 Old ISI Building, Thori Park,
Lower Chatter, Muzaffarabad-AJK-Pakistan
Tel. no. +92 5822 432486

Date : 8th Aug. 2016
Our Ref : Patrind-16-740

Attention: Mr. Ali Hassan
Acting Chief Resident Engineer

Subject: Non Occupational Case Report
- 150MW Patrind Hydro Power Project in Pakistan

Dear Sir,


With reference No. LET/PES.ST-EPCC/1733 to above subject, we would like to submit the Non Occupational Case Report happened on 21st.July.2016 at Weir Site.

- i. According to Pakistan Labor Law 4-A, 4-B, 5, this case was defined it is Non Occupational Act
- ii. Two different trades (Carpenter and steel fixer) of Mr. Tofique have been mentioned in your submittal, please clarify
 - His position was changed as carpenter to steel fixer. Because carpenter job has no critical activity than steel fixer job. And it was verified by comment on witness statements (See Attachment-9)
- iii. As per submitted report of para 5, Mr. Tofique was denying his senior orders without reasonable reasons. Please annex with the report the warning letters issued to him regarding disobedience.
 - For Mr. Tofique, he got each warning letter from Daewoo & Sung Bo due to disobedience. The warning letter which issued by both company has attached (See Attachment-10)
- iv. As per legal opinion of Legal Advisor Daewoo E&C, Mr. Tofique was mentally disturbed. Please Clarify why mentally disturbed person was involved on the project. Furthermore, EPCC is requested to make sure that all personnel on this project are physically and mentally fit.
 - As on question regarding why he was able to join this project, we've answered that Mr. Tofique when he joined on this project, he didn't have mental problem and he has been done well his job. However, during 1 month before the accident happen, he was observed to refuse senior order. During this period, he remained under observation. It was proved that he denied to sign when both company tried to issue the warning letter.
 - Attorney who has investigate this clarified that mental disturbing means not mental disease. It is mental problem such as disobedient of senior order and decision on own his mind

- DAEWOO EPCC have been performing induction training to identify the worker either he capable to work on this project or not. Furthermore, site supervisor who control the worker group and HSE staff, both of way properly have been controlling and advise all those who joined on this project. And regularly, the training regarding site disciplinary rules to be targeted for worker has been conducted.
- v. Medical Report, Doctor Opinion and Death Certificate of Mr. Tofique is missing in the submittal.
- It was attached (**See Attachment 11, 12, 13**)

If you have any comment or recommendation, I would be highly appreciated.

Yours faithfully,

For

Chan-Yong Park
Project Manager
Patrind Hydropower Project in Pakistan

CC: Mr. Waqar Ahmad Khan / Chief Executive Officer / Star Hydro Power Limited

Non Occupational REPORT

2016.07.22

PAKISTAN PATRIND HYDRO POWER PROJECT

FINAL REPORT

Name of Immediate Site Construction Manager: Kim Sung Hun		
1. Date : 2016.JULY.22	2. Time : 09:30 am	3. Location : By-pass Outlet chute near stilling basin
4. Type : Non-Occupational Act (Human Error)		5. Nationality : Pakistani
6. Injured Person: Tofique (carpenter)		ID: 13501-4329147-9
<p>7. Incident Detailed Description :</p> <p>On the basis of gathered information, an injured person was coming down on the right bank of the outlet chute, and climbed down the scaffolding as crossing the hard barricade which being prohibited to pass with notice. At that time when fall happened, the group which Injured person involved has worked at only ground area regardless of upper site where fall happened. And then he was slipped from the scaffolding and fell down. As a result of ahead reason, he got the injury (See Attachment-4). The patient was immediately shifted to the First Aid room and then transported to military hospital at Muzaffarabad for further medical treatment. According to an interview with a foreman who was in charge of an injured person, an injured person, despite that no one has ordered him to work on outlet chute, he has worked on own his mind. An injured person has neither got order from Korean nor local foreman. (See Attachment-4)</p> <p>According to the section 4-A, 4-B and 5 regarding the employees special allowances payment Act, 1988 Pakistan, it was certified by non-occupational Act (See Attachment-1). The reason are belows;</p> <ol style="list-style-type: none"> 1. Daewoo to both of side, social & HSE, has been doing training to notice that any improper & non-designated access way are not allowed to use and enter at Patind project area. If anybody pass the barricade, that is recognized trespass and violation of the company limitation. Furthermore, It was verified by MOM attached performed between representatives of Police and Community. Even CCTV and Hedgehog fence have installed in the vicinity of the project area to detect and prevent to use short cut. It means that Daewoo have sufficiently concentrated and it was caused by Human Error. (See Attachment-5) 2. It was announced to community including all who engaging this project by Sign Board (See Attachment-6) 3. An injured person has crossed the hard barricade which been installed to object falling illegally despite that hard barricade were installed with notice. (See Attachment-3) 4. An injured person when he got the falling, the group has got order from their management to work at only ground area regardless of the area where accident happened and then engaged all participants at ground except an injured person though no one have order him to work at height. (See Attachment-4) 5. An injured person has history that has been denying senior order without reasonable reason and then worked by own his decision. (See Attachment-4). That's why his position was changed as carpenter to steel fixer. Because carpenter job has no critical activity than steel fixer job. (See Attachment-9). And he has got each warning letter from Daewoo and Sung Bo. (See Attachment – 10) 6. An injured person was expired on 27th July.2016 after legal certificate was issued (See Attachment-11) <p>Finally, Pakistan Labor Council declared that this accident is non-occupational Act & Human Error and DAEWOO E&C has free against any responsibility for further from this accident. (See Attachment-1)</p>		

8. Witness of the Incident : Waheed Ahmed (Crane Operator), Local Foreman, Labors(Fellows)

9. Immediate Action Taken:

1. Daewoo HSE & Sung Bo Construction Team immediately rescued the patient for first aid, then immediately shifted to the hospital for further check and treatment.
2. Toolbox talk was delivered among the workers and was strictly guided on use of body harness and use of proper access instead of shortcuts.

10. Corrective Action to be taken :

- There is a need for awareness among workers about the proper use of body harness and use of proper access and shortcuts should not be adopted as access.
- All the Improper access should be identified and properly barricaded. (See Attachment-3)
- Warning Letter was issued to Daewoo CM who is being in charge of Weir Site (See Attachment-7)
- Strongly, the site recognized that have to concern to improve supervision.
- Morally, an expired person would be getting compensation to get treatment.
- SUNG BO has got penalty as attachment (See Attachment-8)
- Critical Activities such as WAH, HOT WORK would be focusing on day time. Furthermore, to improve the supervision of site, engineer including Korean engage the job on day time from night shift. Only cold work such as mason, concrete pouring activities will be going at night time.
- DAEWOO E&C of Weir Site are schedule to do training to all construction employees to awareness that HSE Concerning is not only HSE team have to do but also all construction people who are in charge of each section also have the duty.
- Warning System will be improved

11. Attachments

1. Legal Certification issued by Pakistan Labor Council
2. Induction Record
3. Pictures regarding where accident happened
4. Witness Statements
5. MOM for training and notice
6. Pictures regarding notice by Sign Board
7. Warning Letter for DAEWOO CM
8. LETER to SUNGBO regard to Penalty
9. The Reason why deceased person has changed his position as carpenter to steel fixer
10. Warning Letters to Deceased Person due to disorder
11. Death Certificate of Deceased Person
12. Compensation for Death
13. Medical Treatment Report

REPORTED BY:

M. Javed Awan WEIR SITE HSE

CONFIRMED BY:

Choi Min Sun HSE TEAM LEADER

1. Legal Certification issued by Pakistan Labor Council



Aurangzeb Abbasi Advocate

M.A, LL.B

Punjab University Lahore

High Court & Shariat Court of Azad Kashmir

Chamber No.16 Basement Central Bar Old Secretariat Muzaffarabad

Ref: 135/16

Dated: 27/7/16

LEGAL OPINION

I as a legal advisor / official standing council of Daewoo EC inquired and investigate the circumstance and inspect the spot where the incident took place. The Daewoo E&C have been sufficiently or officially noticed, informed and instructed to all community as well as the labours engaged in the Patrind Hydro Power Project Muzaffarabad, that no improper way of access, or way of approach the project area will not be allowed to use for entering into the project area by any shortcut, no any worker or employee will be allowed to use the shortcuts during the working hours, no worker or employee will not follow this instruction or this rule, it will be treated or recognized by trespass or illegal trespass, if any incident take place with any non occupational act or with any human error the company will not be responsible for that act.

During the investigation of spot I personally visited the area of project the company has fixed / installed boards for not entering into the working area of the project by improper way (Means awareness sign boards has been installed at the project area). The company has installed also the CCTV cameras and fences for protection of workers as well as the community. The company strictly abide by this restriction for the safety of workers as well as the community.

Mr. Tofique who was not permanent employee of Company Daewoo E&C but was working with the company temporarily who was a habitual violator of companies instructions due to which an incident took place today before and Mr. Tofique injured in the premises of project area by using of shortcut way the incident take place due to his own negligence and disobedience of instruction given by the company.

The evidence from the spot, the workers evidence has been recorded and the witness statement of concerned SHO Police Station Garhi Habibullah are annexed with this opinion which reveals that the incident take place by the negligence of Mr. Tofique. Now the Medical history of the injured person also reveals that the injured person Mr. Tofique was mentally disturbed.

So, regarding all the facts above mentioned I am of the opinion that company Daewoo E&C is not responsible for the incident of Mr. Tofique because of the non occupational act or the human error of any worker. All the relevant and necessary evidence are attached with this Legal Opinion for the record of company.

According to the section 4-A, 4-B and 5 regarding the employees special allowances payment Act, 1988 Pakistan. The required special allowances as Medical treatment allowances etc. will be paid by the company as the circumstances prevails, if any employee or worker suffers from an injury during the work in the premises of working area the company can help in the medical treatment on the basis of sympathy.

27/7/16
Aurangzeb Abbasi

Advocate Standing Counsel / Legal
Advisor Daewoo E&C

2. Induction Record

مستند

M. Tofiq

29/1/16

1354-4329147-9

0310 9253 715

مستند

S, W

0312 909179390

8/1

→ Toufeeq Toufeeq

SAFETY ISSUE ITEM REQUEST

SUNGBO C&E CO., LTD

KATING HYDRO POWER PROJECT S&A

Sl. No.	Lead No.	Date	Name	N.I.S. No.	Designation	Remarks
1		29-01-2016	Ali Shan	13501-5987753-7	✓ Steel Fixer	Sungbo
2		29-01-2016	M Arshad	13501-2496068-3	✓ Steel Fixer	Sungbo
3		29-01-2016	M Mehsen	13501-1451964-5	✓ Steel Fixer	Sungbo
4		29-01-2016	Abdul Basit	82209-1452880-3	✓ Steel Fixer	Sungbo
5		29-01-2016	M Ali	82209-8528802-7	✓ Steel Fixer	Sungbo
6		29-01-2016	Imdadulhman	13101-1757723-5	✓ Steel Fixer	Sungbo
7		29-01-2016	Shabaz Khan	13101-1757723-5	✓ Steel Fixer	Sungbo
8		29-01-2016	Raman Abbasi	35202-1808826-7	✓ Steel Fixer	Sungbo
9		29-01-2016	M Assad	13501-9581142-9	✓ Steel Fixer	Sungbo
10		29-01-2016	M Mushaq	13501-4949543-9	✓ Steel Fixer	Sungbo
11		29-01-2016	Haseeb Aslam	13501-4949543-9	✓ Steel Fixer	Sungbo
12		29-01-2016	M Imran	13101-4847995-9	✓ Steel Fixer	Sungbo
13		29-01-2016	M Tariq	82201-8624885-1	✓ Steel Fixer	Sungbo
14		29-01-2016	M Aslam	82209-9463052-1	✓ Steel Fixer	Sungbo
15		29-01-2016	Ammer Khan	42401-5657585-7	✓ Steel Fixer	Sungbo
16		29-01-2016	M Arshad	13501-5987753-7	✓ Steel Fixer	Sungbo
17		29-01-2016	Ammer Khan	42401-5657585-7	✓ Steel Fixer	Sungbo
18		29-01-2016	Mear Khum Nazam	82209-2113641-8	✓ Steel Fixer	Sungbo
19		29-01-2016	Yasir Ahmad	13501-4945254-7	✓ Steel Fixer	Sungbo
20		29-01-2016	M Arshad	13101-85679624-9	✓ Steel Fixer	Sungbo
21		29-01-2016	Navid	13501-7025615-5	✓ Steel Fixer	Sungbo
22		29-01-2016	M Anwar	82209-3702423-5	✓ Steel Fixer	Sungbo
23		29-01-2016	M Raza	13501-4645285-5	✓ Steel Fixer	Sungbo
24		29-01-2016	Zulfiar Ali	13101-7381968-7	✓ Steel Fixer	Sungbo
25		29-01-2016	Shazad Arshad	82209-7616889-5	✓ Steel Fixer	Sungbo
26		29-01-2016	M Raza	82209-3623223-7	✓ Steel Fixer	Sungbo
27		29-01-2016	Fari	13501-7426057-9	✓ Steel Fixer	Sungbo

Note: Kindly Process the Safety Induction training and provide them PPE'S (Personal Protective Equipments) of the above mentioned individuals

6/26/20

Yours Sincerely
Planning manger
choi yeon shok



حکومت پاکستان

قومی شناختی کارڈ

13501-4329147-9

محمد رفیق

پتو

محمد رفیق

03/05/1994

03/05/1994

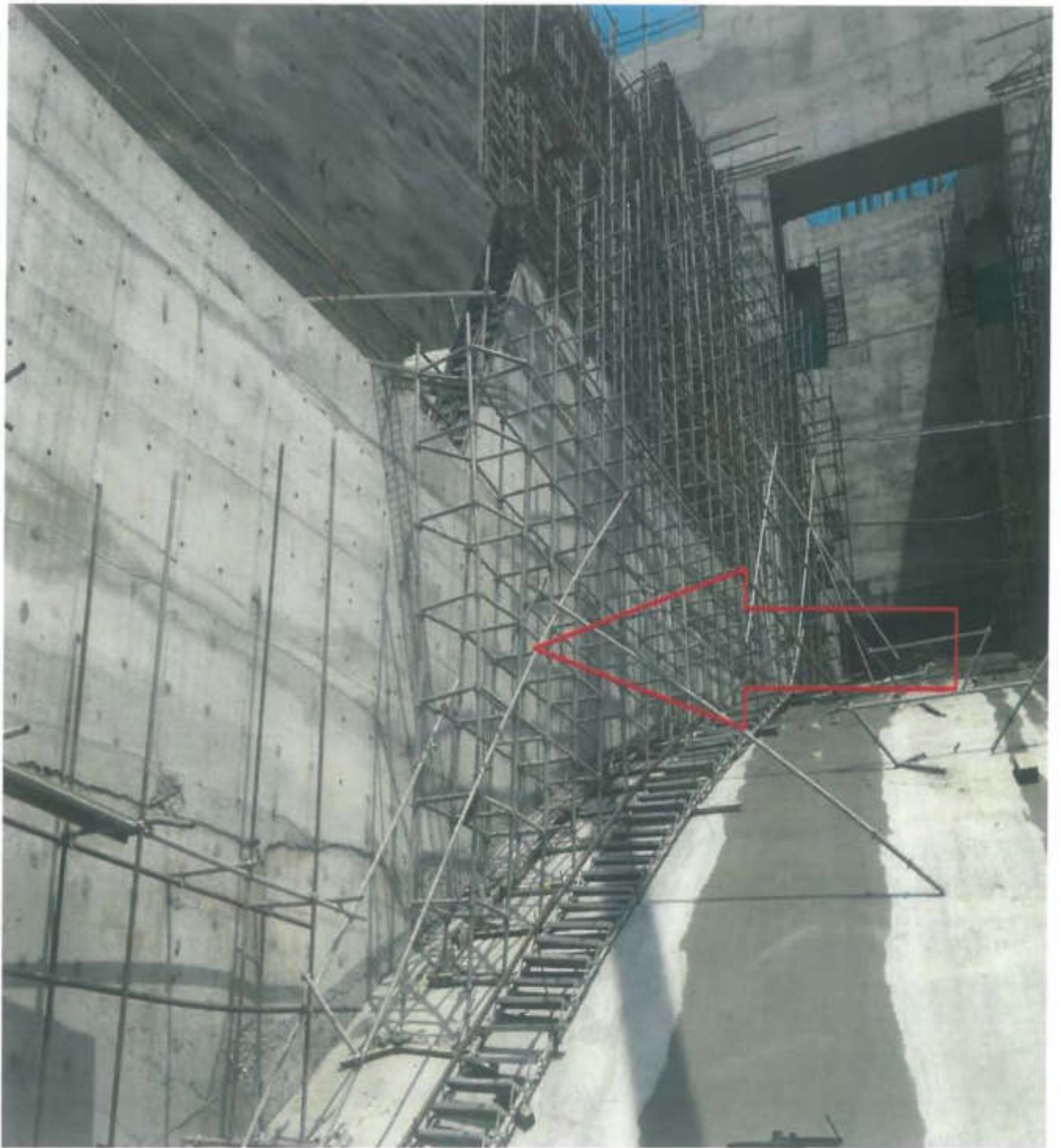


محمد رفیق

محمد رفیق

محمد رفیق

3. Pictures regarding where the accident happened



Location: where the Injured Person fell down



Toolbox talk was delivered among the workers immediately



Proper access way was already there but the affected person was using shortcut



Concrete with proper hard barricade on the right bank outlet



Proper ladder with guard rails on the right bank outlet



Safety Signage were also installed for awareness.

4. Pictures regarding where the accident happened

1. Crane Operator(Waheed Ahmed)

WITNESS STATEMENT					
NAME	Waheed Ahmed	TRADE	Crane Operator	ID NO	13507-76954505
SUPERVISOR	Carpenter/Eng/Foreman/Shop	SECTION	Construction	DATE OF BIRTH	
DATE/TIME					
BRIEF DESCRIPTION	According to 5W1H principle(when, where, who, what, why, how)				
<p>میں نے crane کے outlet پر plate لٹ کر دیا تھا۔ تو اسی دوران ایئر وائر وائیل طرف سے پیچھے اترتا ہوا گر گیا۔ یہ وائر وائر سے اتر دیا تھا جہاں راستہ نہیں تھا اور یہ سب بوز گر گیا۔</p>					
<p><u>Translation:</u></p> <p>I was operating crane near outlet, lifting a plate with crane. In a while one worker fell down from the right side while getting down from the scaffold. The worker was coming down from the side where there was no access.</p>					

2. Labor Foreman(M.Naseem)

WITNESS STATEMENT

NAME	Mr. Naseem	TRADE	Forming	ID NO.	13161-9255986-5
SUPERVISOR	Mr. Lee	SECTION	Const	DATE OF BIRTH	2-5-1977
DATE/TIME	23/7/2016. 10:00 AM.				

BRIEF DESCRIPTION : According to 5W1H principle(when,where,who,what,why,how)

میں خود کبھی کسی دلدل کو اپنے عیب سے خود میں ادا کرتا تھا۔ اور یہاں
دنیا جوں۔ کہ انہیں طریقہ و فائدہ سے بہرہ مند نہ کرنا تھا۔
میں انہیں کدو پر شعور رکھنے (مارنے) تھا۔ اس لئے میں اسے
آسمان کا گراؤں پر (پانی لونا + پتھر لونا) لکھتا تھا
رکھتا تھا۔ اسے میں یہ بھی لکھتا تھا۔ معلوم نہیں کہ یہ
بچوں اور بڑوں کا یہ طریقہ کبھی (الطاف علی) کہ یہ
سفید رنگ سے جہاں راستہ نہیں تھا۔ شائد کبھی یہ آئے ہوں
گئے ہوں۔ میں نے اسے اٹھا اور لکھنا یہ تھا۔

Translated: I Muhammad Naseem Abbassi
S/o Abdul Ayub Abbassi Foreman outlet
area state to describe that "Toufay" was

Working with me since last two months and he was mentally a bit different from other workers. That's why I used to give him easy jobs on ground like Fetching water or material. Yesterday (July 12) He was supposed to be on the ground area, Don't know why he went upside. Suddenly I heard that he fell down from Scaffold where there was no access and he adopted Shortcut and fell down, I picked him and took him to the clinic.

3. Crane Operator(Waheed Ahmed)

WITNESS STATEMENT				
NAME	Waheed Ahmed	TRADE	Crane Operator	IC NO 13507-76954505
SUPERVISOR	Comptroller Engr. / Supervisor / Shoaib	SECTION	Construction / Civil	DATE OF BIRTH
DATE/TIME				
BRIEF DESCRIPTION	According to SWTH principles when where who what why how			
<p>میں نے crane سے ایک پلٹ لٹ کر دیا جا۔ تو اسی دوران ایئر فور ڈائن طرف سے پیچھے اترتا ہوا گر گیا۔ وہ دوکر دیار سے اتر رہا تھا جہاں راستہ نہیں تھا اور یہ سب ہوا گر گیا۔</p> <p><u>Translation:</u></p> <p>I was operating crane near outlet. Lifting a plate with crane in a while one worker fell down from the right side while getting down from the scaffold. The worker was coming down from the side where there was no access.</p> <p>دیکھو</p>				

4. SUNG BO SAFETY OFFICER (IBRAHIM)

22.09.2016

فوق الذکر کے ساتھ ساتھ
اکثر اہل کار سے گفتگو کی گئی ہے۔
لیکن انہوں نے کوئی بھی شکایت نہیں کی۔
مگر یہ کہ وہ اس کے بارے میں
مستعد ہیں اور اس کے بارے میں
کوئی شکایت نہیں کی۔
اس کے علاوہ اس کے بارے میں
کوئی شکایت نہیں کی۔
اس کے علاوہ اس کے بارے میں
کوئی شکایت نہیں کی۔
اس کے علاوہ اس کے بارے میں
کوئی شکایت نہیں کی۔

Helmet No 35911. Mr Tofigue has not followed Request
his Senior order to proper work and even he
Refused Sung Bo Safety Instruction.
At that time he didn't wear the proper PPE
Despite that he has reason to be issued warning Letter
for 2 reason, He denied to sign on warning Letter
like similar Reason of his behavior during 2016 2012
to 2016 01 22, Sung Bo has issued the warning
Letter 2 time to him.

5. MOM for training and Notice

1. Social Part

Minutes of Meeting.

(Meeting Held at Daewoo Office with SHO Ghari Habibullah)

Date: 18th September, 2015, at 4:00 P.M.

Duration of Meeting: 45 Minutes.

Location: At Daewoo Office – Weir Site.

Held by: SHO Garri Habibullah Police Station,

Participant: SHO Gharri Habibullah Police Station (Mr. Saddaqaat)

Security In charge Mr. Nazar Hussain, & M. Ashraf along with Sungbo & Kyungdong representative (Mr. Sultan & Mr. Murad)

Participant from Daewoo: Muhammad Bashir (Admin Officer) & Jarar ul Hassan Khan (Coordinator).

This meeting was called by (Mr. Saddaqaat) SHO Garri Police Station, on short notice by the request of DPO, Mansehra regarding security issues.

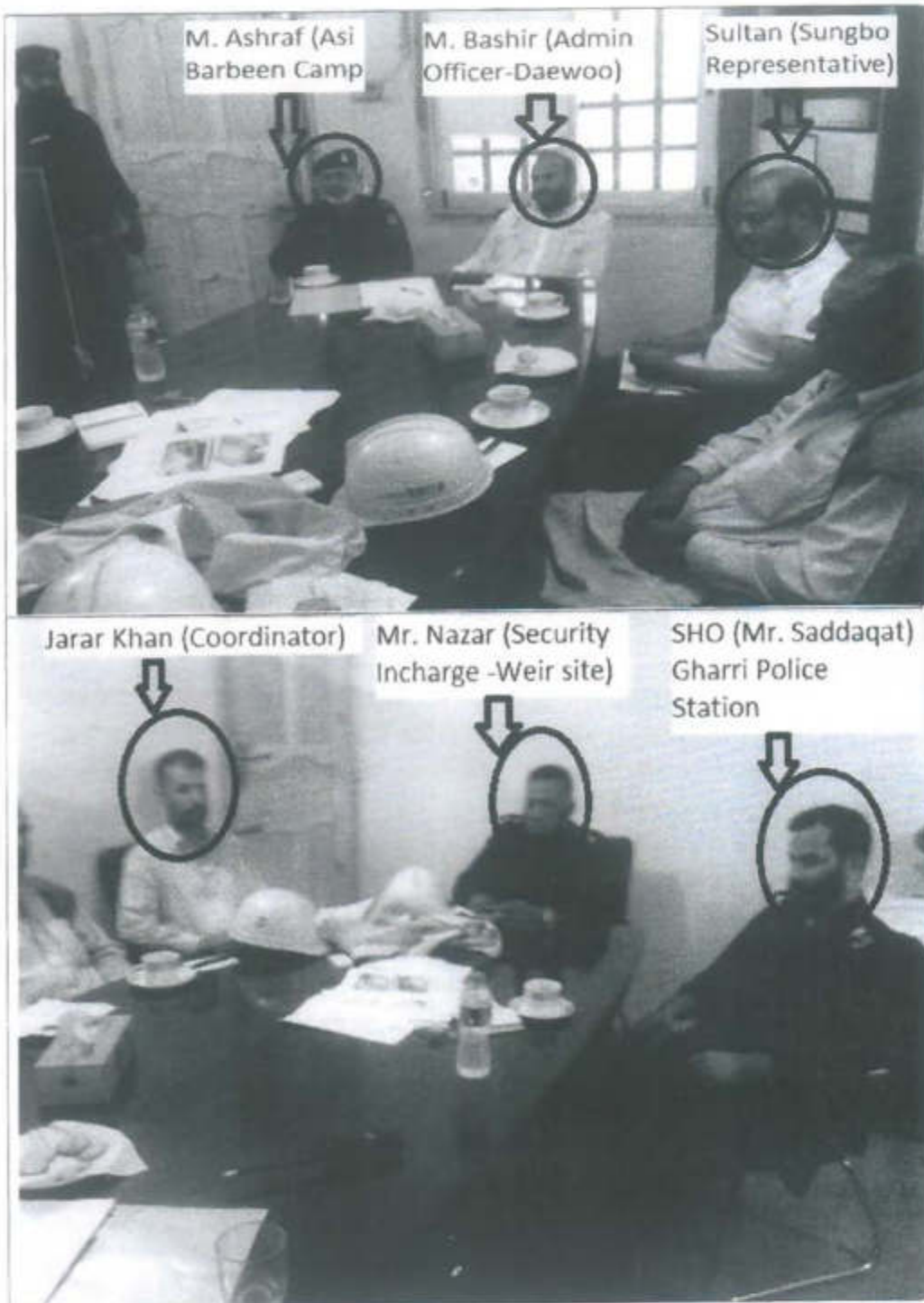
Following points were discussed & requested to make sure on site by the SHO Garri Police Station.

1. Installation of barrier/gate at weir Dam Access way.
2. Installation of CCTV Cameras at Daewoo Residential Camp & Site as well.

After this meeting SHO ordered to fulfill above requirement as soon otherwise strongly action will be taken against company's authority. And he also taken written statement from M. Bashir (Admin Officer).

The meeting was adjourned at about 4:45 P.M.

(Pictures of participants attached)



MEMORANDUM

To: All concerned

Dated: October 1, 2014

Subject: - RESTRICTION FOR USE OF SHORTCUT ROAD THROUGH GOTA BRIDGE BOI BY ALL COMPANY AS WELL AS RENTAL VEHICLES

Through this memorandum, all company's employees (including staff, drivers and others) as well as rental drivers and other relevant are strictly noticed that the use of GOTA BRIDGE lead to Muzaffarabad (Lower Site) is strictly restricted and advise to use always only the Garhi Habbillah Route to Muzaffarabad (Lower Site).

In case of violation of this memo, strict disciplinary/legal actions will be initiated against those who violate; either they are company's employees or subcontractor and services providers.

It is highly anticipated that these instructions will be observed strictly by all concerned.

Admin / Procurement Officer
For Daewoo E & C

Received
20/10/2014 (S. Begina)

SALAH UD DIN
Pulver

Received
wajid ali
HSE Inspector

Received
Jamil
(Amir)

TANZEEM DRIVER
TANZEEM

M. Fiaz
Tig

Safdar

2. HSE Part

Minutes of Meeting

(Meeting held at Daewoo HSE office)

Date: September, 20, 2015. At 10:00 Pm.

Duration of meeting: 1.hrs.

Held by : Daewoo HSE Manager Shin BO Seob

With : Local community.

Participant : Daewoo HSE Assistant Manager M. Javed.

1. Mubarak Abbasi. (chairman local council)
2. Arsalan Mir
3. Mir. M. Hussain
4. Rizawan Qureshi.
5. Naveed Aabasi (Member local council)
6. Irshaid Ahmed (SiP, project police)
7. Gul Naheem (Head police man)

This Meeting was called by HSE Manager Mr. Shin Bo Seob. In this meeting point were raised by HSE Manager. And recommend to community groups make clear this is for secure be on site.

1. All owners of cars, shall be control his driver/ operator's, no one can change the operator & equipment without permission of Daewoo & Sung bo. And day shift is day & night is only night, no one allow to operate the car for 24 hours.
2. For Induction training first get the clearness from project police & no one allow to enter the site, through short cuts.
3. No one can get the induction training without TPI.
4. Motor bike starkly prohibited in working site, even local person cannot use the bike at site ,only they can pass the construction site through push the bike slowly.

Note: Attendance record are attach.

Prepared By: M. JAVED A/Manager HSE

Approved By: Mr. Shin Bo Seob Manager HSE

Shin An Tool (Group) HSE Manager

N. Mubarek Ali

Sub. 1122 or 1123

$$F_{\alpha} = \sum_{i=1}^n \alpha_i \phi_i(A)$$

Abstract

1915 - 1916 - 1917

Ms. B. 1. 1. 1. 1. 1. 1.

6. Pictures regarding notice by sign board

Don't enter the project area (awareness sign board)



Don't enter the project area (awareness sign board)



Workers & community awareness sign boards at different place.



Don't use short cuts & keep away sign at site.



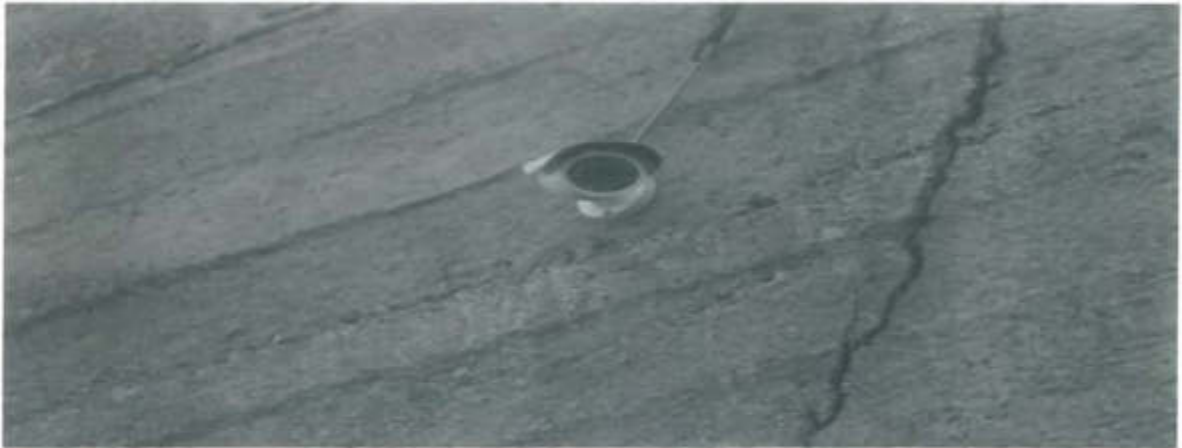
Edge protection & closed unwanted access, short cuts.



Proper access for workers.



CCTV camera & fence to protect short cuts as per instruction of SHO & DPO.




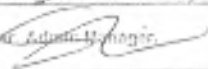
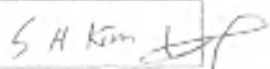


Fence installation to protect short cuts.



7. Warning Letter

DAEWOO

Safety Violator Warning Letter				
NAME : Kim SunA Hoon		SIGNATURE 		
SECTION :		JOB TITLE : Construction Manager		
ID NO :		COMPANY : Daewoo E&C (Weirste)		
DATE : 2016. 01. 23		TIME : 11 : 00 am		Status :
Warning Reason (s)				Tick Here
1. Fall Protection Violation.				
2. PPE Violation (Eye Goggle, Safety Shoes, Hard Hat).				
3. Crossing Barriers.				
4. Unsafe Behavior.				
5. Using Faulty Tools / Equipments.				
6. Failure To Supervise.				<input checked="" type="checkbox"/>
7. Operating Without Authorization.				
8. Refusal To Show I. D. Card.				
9. Others.				
Observation				
Issued By				
HSE Engineer	Signature	HSE Manager	Signature	Date
Bo Seob Shin		Bo Seob Shin		2016. 01. 23
Distribution: HSES Manager 			Copy to Violator S H Kim 	

8. Letter to Sung Bo regarding Penalty



Daewoo Camp, Lower Chatter Opposite Thon Park, Muzaffarabad, AJK, Pakistan Tel: (92) 058-2243-9498 Fax: (92) 058-2243-2657

Sung Bo E&C
Seoul Sucho-Gu, Sucho Street 40, 49 4F

Date : 28 July 2016
Our Ref. : Patrind-16-*710*

To : SUNG BO Delegation

CC : SUNG BO PATRIND HYDRO POWER PROJECT PROJECT MANAGER

TITLE : Demand for Special SAFETY

1. Regard to that continually happened accident within 2 month
2. We have declared any loss happened due to this accident and then if it effect to delay the Patrind Hydro Project, Sung Bo shall take responsibility
3. **SUNG BO E&C was required that belows if any accident happen again at weir site**
 - 1) SUNG BO Project Manager shall take responsibility of fail management and then be dismissed on this Project
 - 2) SUNG BO will be prohibited all bidding for next project based on DAEWOO E&C Regulation, DTMS-PO-001

주식회사대우건설
Patrind Hydropower PJ, Pakistan
현장소장 박찬용

For
Jaseul Kim

9. The Reason why deceased person has changed his position as carpenter to steel fixer (See the High Light)

WITNESS STATEMENT					
NAME	Sajjad Ahmed	TRADE	Steel fixer	ID NO.	13301-2628470-7
SUPERVISOR	Mr Kim Kwang H.	SECTION	Construction	DATE OF BIRTH	1-10-1968
DATE/TIME	July 22, 2016				
BRIEF DESCRIPTION	According to 5W1H principle (when, where, who, what, why, how)				
<p>میں سجاد احمد شیل فیکس فور میں یہ بیان دیتا ہوں کہ Taufiq نے میرے ساتھ تین ماہ کام کرتا رہا ہے، لیکن یہ اپنی مرضی سے کام کرتا تھا، میں جو کام اسکو بولتا تھا یہ اسکو نہیں سنتا تھا، بلکہ اپنی مرضی کرتا تھا۔ اسلئے اسکو میں نے اپنے وٹیر (wire) والے گروپ سے شیل میں چینج کیا۔ اسکو چینج کرنے میں MR. Kim Kwang H. نے میری معاونت کی۔ کیونکہ یہ میری بات نہیں مانتے تھے۔ یہ دعائی طور پر کم ہوتا ہے۔</p> <p>Translation:</p> <p>I, Sajjad Ahmed (Steel fixer Foreman) in my statement want to tell that Taufiq has worked with me for three months, but he used to work with his own choice, and do not follow my instructions, and work by his own mind, That's why I removed him from my wire group to Tunnel group with the consent of my Korean Supervisor Mr Kim Kwang Han, Because this guy used to not follow my instructions and was mentally not developed.</p>					

10.Warning Letters to Deceased Person due to disorder

WARNING NOTICE

DATE: 13-06-2016

NAME: Mohammad Tofique

S/O: Mohammad Shafique

NIC No 13501-4329147-9

DUTY AT: Patrind Hydro Power Project

APPOINTMENT / JOB: Carpenter

Helmet No :3591

PLACE: Site

SECTION: Construction

DATE OF OFFENCE: 13-06-2016

PARTICULARS / DETAILS OF OFFENCE / OMISSION: It is being observed that you have shown careless attitude towards the duty and you are found working with out helmet at site , that's why you are served Warning letter , if same happens in future strict action would be taken against you.

INCHARGE	ACORN MANAGER	PLANNING MANAGER	SITE MANAGER	PM
				

RECEIPT

I, undersigned, duly received the Warning notice on the day 13 June, 2016

Refuse To Sign

NAME: Mohammad Tofique

S O Mohammad Shafique

NIC No: 13501-4329147-9

SUNGBO C&E CO., LTD.

SAFETY VIOLATOR WARNING LETTER

Name: <i>Mr. Tafigue</i>	Signature: <i>[Signature]</i>
Section: <i>Const</i>	Job Title: <i>Steel Fixer</i>
ID No: <i>13101-9753436-9</i>	Company: <i>Song Bo</i>
Date: <i>13/07/2016</i>	Time: <i>9:00 am</i>
Warning Reason(s)	Tick here
1. Fall Protection Violation	<input checked="" type="checkbox"/>
2. PPE Violation (Eye Goggle, Safety Shoes, Hard Hat)	<input checked="" type="checkbox"/>
3. Crossing Barriers	<input checked="" type="checkbox"/>
4. Unsafe behavior	<input checked="" type="checkbox"/>
5. Using Faulty Tools/ Equipment	<input type="checkbox"/>
6. Failure to Supervise	<input type="checkbox"/>
7. Operating without Authorization	<input type="checkbox"/>
8. Refusal to Show I.D. Card	<input type="checkbox"/>
9. Others	<input type="checkbox"/>

Observation Detail: *you was found unsafe condition standing on edge with out fall protection & without any work & not follow instruction.*

Name	Signature	Date	Recommendations
<i>Mr. Janid</i>	<i>[Signature]</i>	<i>13/07/2016</i>	<i>[Signature]</i>

11. Death Certificate

In Lieu of
PAFA-393 Pt-1

DEATH CERTIFICATE

Certified that number (service) _____ Rank/Rating Civ
Name TOUFEED Unit/Ship _____
(In full)
died/was killed/was killed in action on Wednesday the 27th day of July
2016 at 1350 HRS

CAUSE OF DEATH

Approximate
Interval between
onset and death

1. Disease or condition directly leading to death.
2. Antecedent causes Morbid conditions, if any, giving rise to the above cause stating the underlying condition last
3. Other significant conditions contributing to the death, but no related to the disease or condition causing it*.

Brain death
due to (or consequent of)
Severe head injury
a. _____
due to (or consequent of)
b. _____
c. _____
d. _____
e. _____
f. _____

* The does not mean the mode of dying eg, heart failure, asthenia, etc. It means the Disease, injury, or complication which caused death

CMH MZO
Station

27-07-16
Date

Office Commanding
CMH

Medical Unit

12. Compensation for Death

Patrind Hydro Power Project

MUZAFFARABAD AJ&K

Date: 30- July - 2016




DEATH COMPENSATION CERTIFICATE OF MR. Mohmmad Tofique ID NO : 13501-4329147-9

Mr. Mohmmad Tofique S/O Mohmmad Shafique Id No: 13501-4329147-9 had worked for Sungbo C & E. Unfortunately, he died during the work at Site. According to the Sungbo C&E Policy and Procedure and in compliance with Workmen's Compensation Act 1923 (enforced In AJ&K KPK), and the agreement between Sungbo C&E and the family of Mr. Mohmmad Tofique S/O Mohmmad Shafique, We, Sungbo C&E, hereby pay of the death compensation with an amount of say One million Pak Rupees. (1,000,000) to Family of Mr. Mohmmad Tofique S/O Mohmmad Shafique vide Cheque No.03966815 (Abi Chatter Branch MZD) Dated.30-July-2016 and his medical treatment and funeral expenses paid by company

Now, as agreed by the deceased's family, there is no further liability, dispute / litigation on death compensation of Mr. Mohmmad Tofique S/O Mohmmad Shafique Id No: 13501-4329147-9 between Sungbo C&E, Daewoo E&C and family of Mr. Mohmmad Tofique S/O Mohmmad Shafique, if there is any dispute or problem arises from the family of or any other member of village of Mr. Mohmmad Tofique S/O Mohmmad Shafique Id No: 13501-4329147-9 company is not liable to pay any more amount in that case. And it is the right of the company to contact any legal department or impose penalty on the said person who try to arise any problem for the company in that regards.

This is for record


Name & Signature
(On Behalf of Sungbo C&E)

This is to acknowledge that we, the legal heirs of deceased, have received the Cheque No. 03966815 (Abi Chatter Branch MZD) Dated 30-July-2016 from Sungbo C&E amounting One Million Pak Rs (1,000,000) for the death compensation of Mr. Mohmmad Tofique S/O Mohmmad Shafique Id No 13501-4329147-9, there is no further liability, dispute / litigation on Death compensation of Mr. Mohmmad Tofique S/O Mohmmad Shafique Id No: 13501-4329147-9 as agreement of Sungbo C&E, Daewoo E&C, family of Mr. Mohmmad Tofique S/O Mohmmad Shafique All his medical treatment and funeral expenses already paid by company

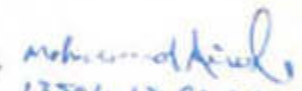
Receivers:

Father:

Name: Mohmmad Shafique S/O
ID NO: 13501-1292353-9

Signature : 


Uncle


Name : 
CNIC: 13501-12 92368-7

Signature : 

MUHAMMAD ARIF AYUB
Kisan Councilor
City Council Garhi Habibullah
Tahsil Balakot District Mardan

Witnessed by:

Name: 
S/O:
Id No. 13501-1332054-9


S/O: RS GHB.



ABL-BANK SQUARE CHATTAR- MUZAFFARABAD

01966815

DATE 30-07-2016

Muhammad Shafique

Rupees One million rupees only

PKR 1,000,000/-

PK72ABPA0010013949930025
SUNGBO C & E CO LTD

Please do not write below this line.



Signature

*03966815*0140829:00:00:00:13949930025*000*

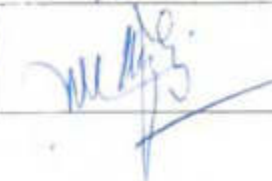
Received
30-07-2016



Muhammad. Shafique



13. Medical Treatment Report

From Clinic to site	Medical Information		
Date & Time	22 - 07 - 2016		
Name	M. Toufexy	Badge No	
Trade	Carpenter / S.F.	Time attend to	09:30 AM
Section	Sungbu	Supervisor's Name	Mr. Brown HSE Officer
Medical Report & Recommendation (This patient must be sent to the patient's sectional head irrespective of doctor's findings. If patient require sick of duty, a copy must be sent to Admin Dept for necessary information and action)			
R. Minor Head Injury due to fall from height			
2) Inj. Diclofenac			
2) 4. Silhouette 200			
2) Refr to CMH M20			
Doctor's signatures		Supervisor signature	