

Environmental Monitoring Report

Project Number: 48402
January–June 2016

PAK: National Motorway M-4 Gojra–Shorkot Section Project

Prepared by Renardet S.A. for National Highway Authority and the Asian Development Bank.

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Bi-annual Environmental Monitoring Report

Project Number: (48402-001)

(January ~ June 2016)

Islamic Republic of Pakistan

Construction of Four Lane Motorway Faisalabad to Khanewal Project (M-4) 184 Km




Package-2: Gojra – Shorkot (61 KM)

Financed by: Asian Development Bank

Prepared by: Renardet S.A.
Geneva, Switzerland

For: National Highway Authority

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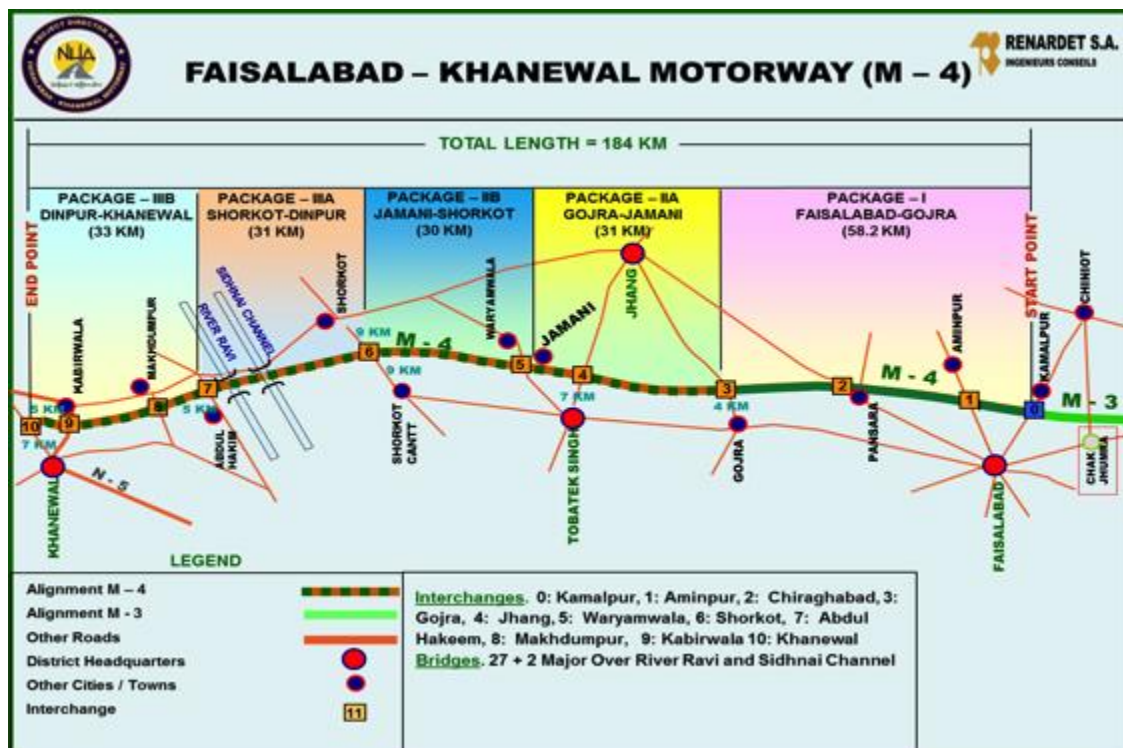
Contractor	Client	Consultant
		

M4 Faisalabad to Khanewal

Section 2B Jamani to Shorkot

China Railway First Group Co. Ltd

Renardet S.A Consulting Engineers Geneva Switzerland



List of abbreviations

ADB	Asian Development Bank
BMP	Best Management Practices
BBS	Behaviour Based Safety
CAPA	Corrective and Preventive actions
CBOs	Community Based Organizations
CO	Carbon monoxide
dB	deci Bell
DCO	District Coordination Officer
DCP	Dry Chemical Powder
DPO	District Police Officer
DTR	Daily Time Register
EC	European Community
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
HSE	Health, Safety and Environment
Leq	Loudness equivalent
ND	Not detectable
NEQS	National Environmental Quality Standards
NGVS	No guideline values
NHA	National Highway Authority
NO2	Nitrogen dioxide
PAPs	Project Affected Persons
RoW	Right of Way
SC	Supervision Consultants
SIMOP	Simultaneous Operation
SO2	Sulfur dioxide
SSEMP	Site Specific Environmental Management Plan
TDS	Total Dissolved Solids
PM	Particulate Matter
PPE	Personal Protective Equipment
RD	Running distance
TRA	Task Risk Assessment
WHO	World Health Organization

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Summary of Findings Section 2B

The Environmental monitoring for the Construction of motorway M-4 Package-2A (Jamani to Shorkot 30 Km) started in the month of January 2016. The proponent of this Project is National Highway Authority (NHA), Ministry of Communication, and Government of Pakistan. NHA has awarded the Contract for the Construction of the section IIB to the **China Railway First Group Co. Ltd.** hereinafter called as "The Contractor", the supervisory Consultant is Renardet SA hereinafter called as "The Consultant or The Engineer". The construction works are in progress. The overall financial progress of the contractor during the reporting period was achieved 1.359 % against the planned 3.902% lagging by 2.543%.

The contractor has prepared the Site Specific Environmental Management Plan (SSEMP) which was reviewed by NHA and ADB; the revised version has been forwarded to NHA for their review and further submission and approval to Asian Development Bank.

The contractor has prepared the Site Specific Environmental Management Plan (SSEMP) for the temporary camps and plants; which was reviewed and approved by National Highway Authority (NHA) and Asian Development Bank (ADB) in the month of June.

The mobilizations of the Affected Person Committees (APCs) for the Grievance Redress Committee have been done in the first week of June. In section IIA total 17 APCs have been mobilized. The Contractor has provided complaints registers at camp 1. So far one complaint has been received, and that has been redressed accordingly.

The Contractor has hired Health, Safety and Environment (HSE) Engineer assisted by two HSE Officers, to look after the health & Safety and Environmental issues and implement the SSEMP on site. The Consultant Environment Specialist along with the contractor HSE Engineer are regularly visiting the Contractor's camps, construction sites and borrow pits; and discusses the observations and progress/ improvements on the implementation of the SSEMP.

The contractor has established their main Camp referred as Camp 1 that include residence for the Chinese and local staff, workers, batching plant, stores, workshops and material testing laboratories; at Waryam Wala Road, at KM 93+700 approved by the Consultant.

At camp 1 the construction of offices, residential rooms, laboratory, stores, workshops, fuelling station, waste water management, and boundary wall are complete. The installation and calibration of Batching Plant is complete. The subject camp is more than 1000 meters away from permanent settlement, as per the Environmental Impact Assessment (EIA). The Contractor had identified a location for Asphalt and Batching Plant, laboratory, workshops, stores, at KM 112+450, adjacent to the Row (L/S), which has been approved and the construction and installation of Concrete and Asphalt Batching Plants are in progress.

The Contractor has arranged potable drinking water at all camps. Fire extinguishers are installed at all camps. The contractor has established a first aid facility with a certified paramedic at Camp 1; moreover a fully equipped Ambulance vehicle has also been arranged. The

contractor has provided Personal Protective Equipments to workers working at Plants and construction sites; including safety helmet and high visibility vest; the rest of equipments i.e. safety shoes, dust mask, goggles, cotton, leather and rubber gloves need to be provided and used by workers as per their need. Constructions of septic tanks and soakage pits are complete. Solid and liquid waste is managed as per the SSEMP at both the camps.

Installation of safety and sign boards at camps, plants, service road and road crossings on RoW are in progress, the Contractor has installed necessary safety and other signboards across the alignment. Leveling of the service road is in progress. The contractor has already been advised to minimize dust by water sprinkling where there service road is leveled and in use.

The contractor has been advised to manage the borrow pits as per the SSEMP, 67 borrow pits has been approved by the Consultant so far.

The monthly noise and PM₁₀ analysis have been conducted on 23rd June for the month of June. The results are within the NEQs.

The Contractor HSE Engineer and officers visits the camps, plants and borrows pits regularly, and deliver tool box talks to the staff and workers regarding occupational health & safety and environmental protection.

The mobilizations of the Affected Person Committees (APCs) for the Grievance Redress Committee have been done in the first week of June. In section IIA total 17 APCs have been mobilized. So far one complaint has been received in the month of June, and have been redressed accordingly. The Contractor has provided complaint register in the main camp. The complete details of the grievances are provided in Annexure I of this report.

The implementation of the SSEMP is progressing and improving day by day.

Chapter 1

Introduction

1.1 Construction Activities/ Work Progress:

The financial progress of the project at the end of June 2016 is given as under.

Planned	3.902%
Achieved	1.359%
Lag	2.543%

1.2 Project Organization:

Mr. Wei Lei has been appointed as Project Manager by the Contractor, Mr. Sajjad Ahmad Goraya working as General Manager (M-4) NHA, Mr. Muhammad Anees Chaudhry working as Project Director Section 2A, and Dr. Majed Assad as Team Leader of the Supervision Consultant/ Engineer

1.3 Environmental, Health and Safety Management Team:

The contractor has hired a full time Environment/ HSE Engineer in the month of April. Supervision Consultant's Environmental Specialist is also on board since March.

1.4 Relationships with Contractors, Owners, Lenders:

The overall relationships of contractor, Employer, Supervision Consultant, and Funding Agency remained harmonious during the reporting period.

Chapter 2

Environmental Monitoring

The qualitative environmental monitoring is being carried out during construction activities and verifies that they are undertaken in compliance with the requirements set forth in EIA/EMP and Site Specific Environmental Management Plan (SSEMP). The PM₁₀ and noise analysis has been conducted in the month of May and June. For the Quantitative Environmental Monitoring, Contractor has made an agreement with Air Quality Laboratory SEAL Environment Consultants Lahore, for periodic Environmental Monitoring.

2.1 Noise and Vibrations:

Noise level results show that most of the activities are being done in its permissible limits. Workers have minimum risk from these noise levels. In case a machine producing noise beyond threshold levels; are isolated e.g. generators to reduce the noise level.

To minimize the noise vehicles are periodically checked for their noise level and notified for repairing and maintenance.

The noise level at active construction sites are given as Annexure IV.

2.2 Drinking Water Quality:

At the Contractor main camp 1 bottled drinking water is provided, while at the construction sites drinking water are taken from any nearby source. The drinking water quality analysis shall be done in the second half as per the SSEMP, where there water is taken from outer sources.

2.3 Waste Water Analysis:

Waste water from washrooms and kitchens are collected and treated through septic tank and soakage pit at the camp 1. Currently no waste water is released into fields or irrigation water channels from any camp; however they shall be analyzed in the second half of the year as per the SSEMP.

2.4 Air Quality:

Ambient Air quality monitoring and stack gas analysis shall be carried out in the 2nd half of the year 2016.

2.5 Particulate Matter (PM₁₀)

The particulate matter monitoring started in the month of May 2016. The particulate matter (PM₁₀) monitoring has been done at two locations. Results of PM₁₀ monitoring are given as Annexure IV.

Chapter 3

Environmental Management

Site Specific Environmental Management Plan (SSEMP) was submitted to the NHA and ADB the approval is awaited. A separate SSEMP was prepared for the temporary camps and plants and submitted to NHA and ADB which was reviewed and approved in the month of June.

The ambient air, stack gas analysis, drinking and waste water quality analysis shall be done in the second half of the current year. The PM₁₀ and noise level analysis have been done in the month of May and June.

3.1 Camps, Plants and Borrow Pits

Camp I (KM 93 + 700)

The Camp is located at KM 93+700 the area for this is about 7 acre and is about 100 meters away from RoW (Right side). This site has been approved by the Supervision Consultant. The installation of Batching plant has been completed. Its Calibration has been carried out successfully in March 2016. It has started production in April 2016.

Following are the compliances:

- Batching plant is operational since April 3, 2016.
- The construction of boundary wall and razor wire installation o top of the boundary wall around the whole camp has been completed, with six security watch towers.
- Constructions of Septic Tank and Soakage pit for Wastewater treatment/ Management have been completed, and waste water is managed as per SSEMP.
- Solid waste is managed as per the SSEMP.
- First aid post with a certified paramedic and ambulance vehicle have been arranged.
- Firefighting equipments have been installed.
- Complaint register is provided by the Contractor; and complaints received are noted and redressed.

Following are the recommendations:

- Inspection of firefighting equipments required every month.
- Training of employees on occupational and environmental hazards and their safety.

Batching Plant 1 (KM 112+450)

The camp site for batching plant is located at KM 112+450, adjacent to the RoW (right side). This site has been approved by the Supervision Consultant. The installation of concrete and asphalt batching plants are in progress. The construction of boundary wall and other utilities are in progress.

Borrow pits:

The area from where soil is being taken for the construction of embankment is called Borrow area. The ditch that is dug to take soil is called borrow pit. The location and summary of all borrow areas is attached as Annexure-II. The environmental impacts of borrow areas were under observation during soil excavation, transportation and restoration. The designated routes were being used during soil transportation. Service road and adjacent road used for the transportation of soil are no longer in use as all traffic diverted through motorway. The borrow areas' rehabilitation have been done. Rehabilitation Plan of Borrow Areas has been submitted in SC office.

3.2 Soil Erosion

This environmental impact is due to the road sites construction activities. It occurs due to the clearing and excavation activities at the project site, as these activities are leading to the soil erosion, or alteration of soil quality resulting from removal of top soil at the site to some extent. The Contractor complies to distance limit of 500 meter from RoW. Mitigation measures adopted to minimize soil erosion include;

- In borrow pits; the depth of the pits is being maintained so that the sides of the excavation site have a slope not steeper than 1: 4.
- Soil erosion along the borrow pits is being monitored to prevent/ mitigate impacts on adjacent lands.
- Preventive measures are being taken to control the creation of mosquito-breeding sites in case the borrow pits were filled with water.
- Borrow pits are being used for construction, but during the excavation, top 20 cm soil cover was being preserved for vegetation after the excavation of the pits.

3.3 Dust /Air Emissions Monitoring

The construction activities generate dust due to excavation. Diesel and other petroleum products used for the operation of construction machinery and transportation equipment also cause air pollution. The impacts generated from such activities are of certain significance and proper mitigation measures are being practiced. Work force wear personal protective equipment including dust masks to minimize health impacts. Vehicle maintenance is regularly done to minimize the impacts of air pollution on the environment.

3.4 Waste Management

3.4.1 Waste Water Management

The wastewater is managed as per the SSEMP; at camp 1 construction of septic tanks and soakage pit were completed in the month of April, therefore waste water is managed inside the septic tank and soakage pit.

3.4.2 Solid Waste Management

All the solid waste generated in the camp 1 is being collected in waste bins. Solid waste after collection is being segregated and then disposed of properly as per the SSEMP.

3.5 Occupational Health and Safety Management

The construction activities have certain impacts on the occupational and public health. At the work site hazards are eliminated/minimized through engineering controls and administrative controls, if the controls do not eliminate the hazards appropriate PPEs (PPE is a last level of control) are being provided to the workers. Workers are being trained and equipped with the appropriate Personnel Protective Equipments (PPEs).

3.5.1 Emergency Preparedness and Response

Emergency Response preparedness and response plan has been designed; details given in the SSEMP and shall be implemented accordingly. Following are the contact numbers of focal/responsible personnel of the project.

Designation	Name	Contact number
Project Manager	Wei Lei	0340-8668966
Chief Engineer	Wang hongjie	0340-8669799
Head of HSE Department	Liu Bin	0340-8668978
Admin Manager	Wang Shalu	0340-8668807
Planning Engineer	Rameez Ahmad	0301-6448684
HSE Engineer	Suleman Shehzad	0300-7457405
Safety Inspector	Usman Ali	0302-4251868
Security Officer	Fahim Gondal	0344-1534307
Sub-Inspector	Zafar Iqbal	0302-7083927

CRFG Ambulance	Haider Ali	0345-1144620
Fire departments	Shorkot,Toba Tak Singh	16
Rescue 1122	Shorkot,Toba Tak Singh	1122
Police	Shorkot,Toba Tak Singh	15

3.5.2 Training of workers

Workers have been trained in order to minimize risks and impacts of the occupational and environmental hazards. Tool box talks are arranged and will be arranged in future too; to aware the employees regarding the occupational hazards, their risks and safety measures.

Sr. No.	Date	Topics	Location	Participants
June 2016				
1	11-06-2016	Work at Height	RD-89+700	15
2	14-06-2016	Importance of PPE's	RD-104+200	15
3	17-06-2016	Heavy Lifting	RD-108+500	12
4	20-06-2016	Importance of PPE's	RD-89+700	22
May 2016				
1	28-05-2016	Environment and Health Protection Plant and Crops Protections, Dust Precautions	RD-93+200 RD-89+700	15 20
2	26-05-2016	Traffic Management	Meeting Hall	35
3	21-05-2016	Importance of PPE's	RD-93+200 RD-89+700 RD-103+200	15 20 12
4	17-05-2016	Sign Boards Awareness	RD-93+200 RD-89+700 RD-103+200	13 22 11

5	12-05-2016	Heat Stroke precautionary Awareness	Meeting Hall	30
6	10-05-2016	General Safety, Orientation	Meeting Hall	20
7	06-05-2016	Housekeeping	107+600 111+200	15 18
April 2016				
1	06-04-2016	First Aid By Rescue 1122 Officials	Meeting Hall	20
2	17-04-2016	Fire Fighting, First Aid & Housekeeping	Meeting Hall	20

3.5.3 Personal Protective Equipments

The workers are being forced to wear PPEs for their safety at work. They have been told to wear safety helmets, safety shoes, hand gloves, dust mask etc. and other necessary protective equipments while working at site, plant, workshops.

3.5.4 Site Visits/ Inspections

The Consultant Environment Specialist is visiting the active construction sites, camps, plants, workshops, and borrows pits along with the Contractor Environment Engineer. Issues and non-compliances observed are conveyed to the Contractor in writing and verbally and are also discussed in the fortnightly meeting. The Contractor Environment Engineer is also visiting construction sites, camps, plants and borrows pits; inspects work sites, welfare facilities, PPEs etc. and also deliver tool box talks. Workers have been trained to report near misses and take preventive and corrective actions as envisaged by HSE Engineer.

3.5 Corrective Action Plan:

Action Plan Status as of June 2016

Sr. No	Non-Compliance	Mitigation Measures/	Status
01	Provision of PPEs	PPEs have been provided to all the staff and workers and must be used and maintained.	Done

02	Display of safety sign boards	Safety sign boards have been displayed at plant and camp site.	Done
04	First aid facility	First aid facility has been established by contractor.	Done
05	Safe Drinking water	Water cooler has been provided at construction site to ensure safe drinking water to labor.	Done
06	Fire safety issues	Fire prevention facilities and firefighting equipments have been installed at camp site.	Done
07	Labor accommodation	Accommodation with electricity, beds facilities have been provided to labor	Done
08	Provision of Ambulance	An Ambulance to cope the emergencies has been provided by the Contractor.	Done
09	Provision of complaint register	Complain register has been provided at all camps for complaints of affected people around the motorway.	Done

3.7 Security Measures

For the security of Chinese employees armed police constables are deputed. Currently 72 guards are on duty including police, Special Protection Unit, Elite Force, and private security guards. The police personnel and private security guards are deputed on the Contractor's main camp 1 at Waryamwala road. The police personnel also escort Chinese employees whenever they travel to the construction sites and other necessary locations. Moreover at the main gate of camp 1 barrier are placed to prevent unauthorized trespassing, and slow down public vehicles passing by. Entry and exit record of all vehicles and visitors/ employees are also maintained. Barbed and razor wires fence has been fixed around the camp boundary wall, along with six security watch towers. 10 feet wide a track has been made around the main camp for by walk patrolling of the security personals during day and night time. Following is list of the security personnel deployed.

Location	Force	Quantity
Camp 1 & Site	District Police	22
Camp 1 & Site	SPU (special protection unit)	16
Camp 1 & Site	Elite (commando)	06

Camp 1 & Site	Private security guards	28
Total		72

3.8 Protected Areas

There are no protected areas such as wildlife sanctuaries, game reserves or national parks, or any archaeological, historical or cultural heritage in its neighborhood therefore, no impact is envisaged.

3.9 Social and Cultural issues/ Grievance Redress Mechanism (GRM)

Grievance Redress Mechanism (GRM) is institutions, instruments, methods, and processes by which a resolution to a grievance is sought and provided. People adversely affected (or about to be affected) by a development project will raise their grievances and dissatisfactions about actual or perceived impacts in order to find a satisfactory solution.

Currently 17 Affected Persons Committees have been mobilized in section 2B. The focal persons of these 17 committees shall be combined and one Grievance Redress Committee (GRC) be made. The GRC will be headed by the Project Directors of section 2B, with NHA's DD/AD (land) or DD/AD (environment. Besides, the GRC will include the environment staff of the Supervision Consultants, environment staff of the concerned contractor and representative of the local community (preferably the relevant GFP).

3.10 Record of labor deployed

Local employment is being encouraged to improve the socioeconomic conditions of the local people. It is always recommended to maintain employment record with admin department for reference. Record of all the labor deployed during the period is being maintained.

Sr.No	Position	Number	Sr.No	Position	Number
1	Driver	20	31	Carpenter	25
2	DT Driver	35	32	Carpenter Helper	30
3	Tractor Driver	80	33	Scaffolder	14
4	Vib Roller Operator	22	34	Scaffolder Helper	17
5	Ex Operator	15	35	Welder	8
6	WT Operator	25	36	Screw Man	1
7	LD Operator	6	37	Spray Man	12

8	BD Operator	2	38	Pump Checker	3
9	GD Operator	20	39	Tire Man	2
10	Transit Mixer Operator	10	40	Fuel Man	3
11	Generator Operator	5	41	Material Checker	10
12	Crane Operator	4	42	Store Keeper	3
13	Foreman	15	43	Electrician	5
14	Surveyor	15	44	Cad Operator	7
15	Surveyor Helper	30	45	Office Clerk	5
16	Material Engineer	3	46	Office Cleaner	4
17	Assistant ME	4	47	Office Boy	3
18	Lab Technician	8	48	Cook	4
19	Lab Helper	16	49	Cook Helper	8
20	Mechanic Engineer	2	50	Safety Man	12
21	Mechanic	2	51	Flag Man	10
22	Repair Man	5	52	Labor	150
23	Concrete Plant Operator	3			
24	Asphalt Paver Machine	0			
25	Asphalt Paver Operator	0			
26	Site Supervisor	10			
27	Mason	29			
28	Form Fixer	80			
29	Steel Man	30			
30	Steel Helper	35			

3.11 Vehicles and Machinery Maintenance

Vehicles are periodically checked for their maintenance. For this purpose, noise and visual observation of vehicle exhaust emission is being done. Moreover record for the change of Mobile Oil for vehicles is also being maintained. These all the things will help to assess vehicle efficiency and need for its repair. Record is being maintained at workshops.

3.12 Consultation and Complaints/ Grievances Redressed:

Consultation sessions are being arranged from time to time to improve the environmental conditions of the project area. The complaints/ grievances received will be are noted/ recorded in the complaint registers at all camps and shall be redressed accordingly. Record of the grievances received and redressed is below.

Sr. No.	Date	Complainant Name Address/Contacts	Complain	Action Taken	Remarks
1	26 Jun 2016	Mahfooz Ahmad Tarar Chak No 499 JB Tehsil Shorkot District Jhang Ph: 0342- 8103261	The Complainant water channel was blocked temporarily	The site engineer was contacted Immediately and issue was resolved by making a temporary water channel, to fulfill his needs	

Annexure 1: Photographic Record from January to June 2016



Conducting the tool box talk on site and camp meeting hall



Workers are performing their jobs wearing Personal protective Equipments at site



Conducting the tool box talk on site and Camp Steel Yard



Workers are performing their jobs wearing Personal protective Equipments at site



Ambulance at camp 1



Signboards indicating availability of Complaints register at camp 1



Water is being sprinkled on the service Road to suppress dust



PM10 analysis at KM 98+500 (June 2016)



PM10 analysis at KM 102+500 (June 2016)



Noise Level test at KM 102+500 (June 2016)



Noise Level test at KM 98+500 (June 2016)



Conducting the tool box talk on site



Workers are performing their jobs wearing Personal Protective Equipments



Dust bins placed at Camp 1



Diesel Station at Camp 1



Generator at Camp 1



Chinese Accommodation at Camp 1



Weekly Safety meeting



Warning signs installed at active construction sites on site



**CCTV Cameras and razor wire at camp 1 Boundary wall
Camp 1**



Security Watch Tower at

Annexure II: Summary of Borrow Pits

Borrow Areas

Borrow material are being taken from recommended and approved borrow areas. The recommended pits for borrowing shall be rehabilitated as soon as excavation of material is finished. The rehabilitation activity and process will take into consideration the aesthetics of the area and safety of people, animals and community. The agricultural fields which exist near to the project area are used as borrow pits by the approval of the Engineer & the permission of the field owner at a minimum distance of 500 meters from RoW.

Restoration of Borrow Pits

Before extraction commences, licenses and permits shall be checked and limits of disturbance and/or clearing will be clearly marked out on the site before any ground disturbing activity takes place. This usually requires the sides of the pit to be reshaped with gentle safe grades. All disturbed areas associated with borrow pits are part of the restoration plan.

List of Approved Borrow Areas

S. No. #	Location	Area (Kanals)	Distance from ROW	Depth Excavated (m)	L/S or R/S
01	117+250	12	1400	1	R/S
02	117+250	32	530	1	L/S
03	117+250	112	700	1	R/S
04	117+250	32	600	1	R/S
05	115+700	12	1500	1	R/S
06	114+100	80	900	1	R/S
07	114+100	80	900	1	R/S
08	114+100	16	800	1.2	R/S

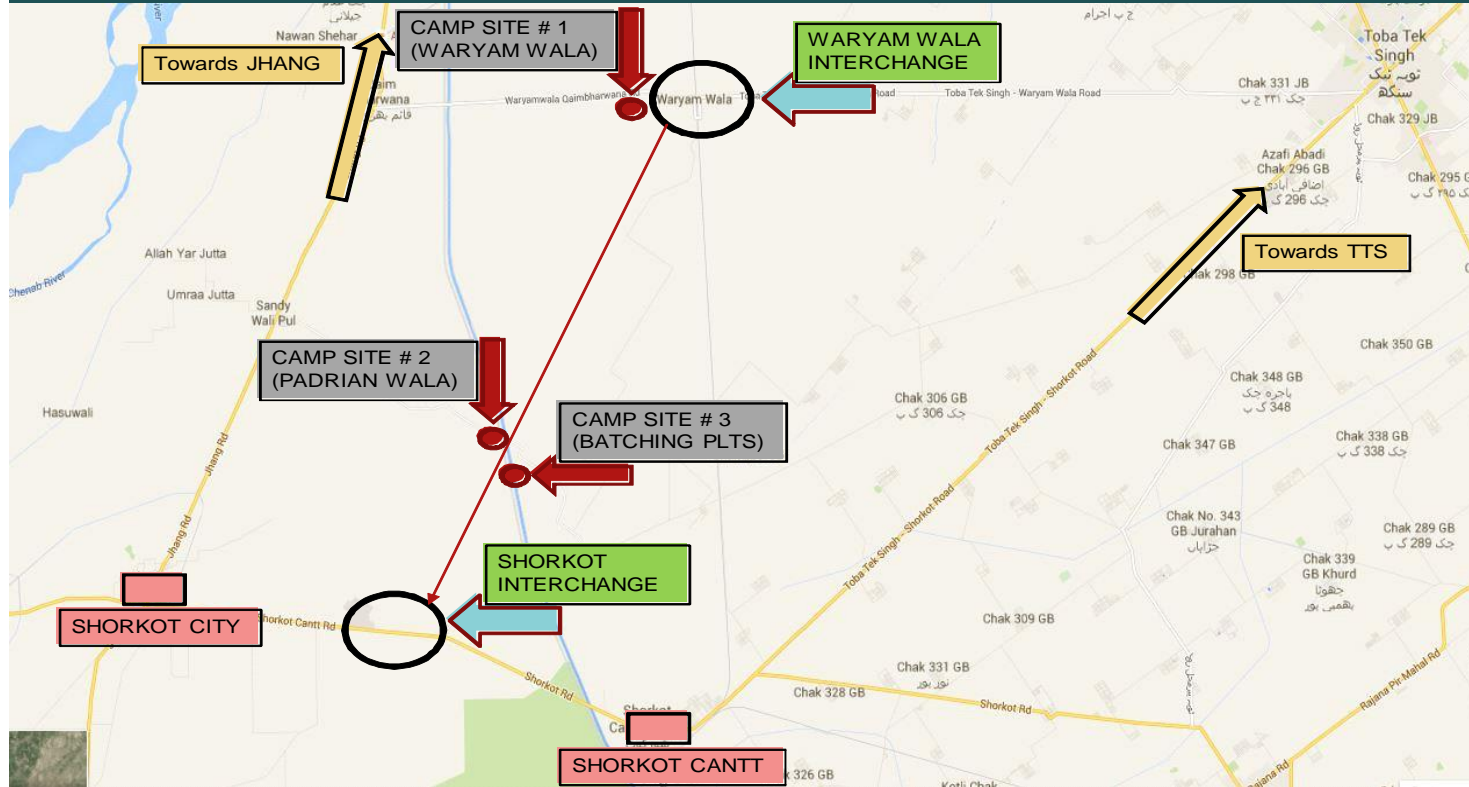
09	114+100	48	1200	1.2	R/S
10	92+400	298.8	1000	1.5	L/S
11	93+600	29.6	900	02	R/S
12	96+800	219.2	800	01	R/S
13	115+700	12	1800	1.2	R/S
14	96+750	58.56	900	01	R/S
15	96+760	39.6	753	01	R/S
16	97+400	50	900	01	R/S
17	97+400	50	900	01	R/S
18	99+200	9.92	730	01	R/S
19	99+200	9.92	730	01	R/S
20	99+200	208	900	2.5	L/S
21	99+200	208	900	2.5	L/S
22	89+270	81.41	1000	01	L/S
23	89+250	90.92	900	01	L/S
24	89+250	90.92	900	01	L/S
25	100+100	184	1400	2.5	L/S
26	98+100	58.71	540	01	L/S
27	104+100	184	630	3.04	L/S
28	95+900	28	510	01	R/S
30	96+850	89	1200	01	L/S

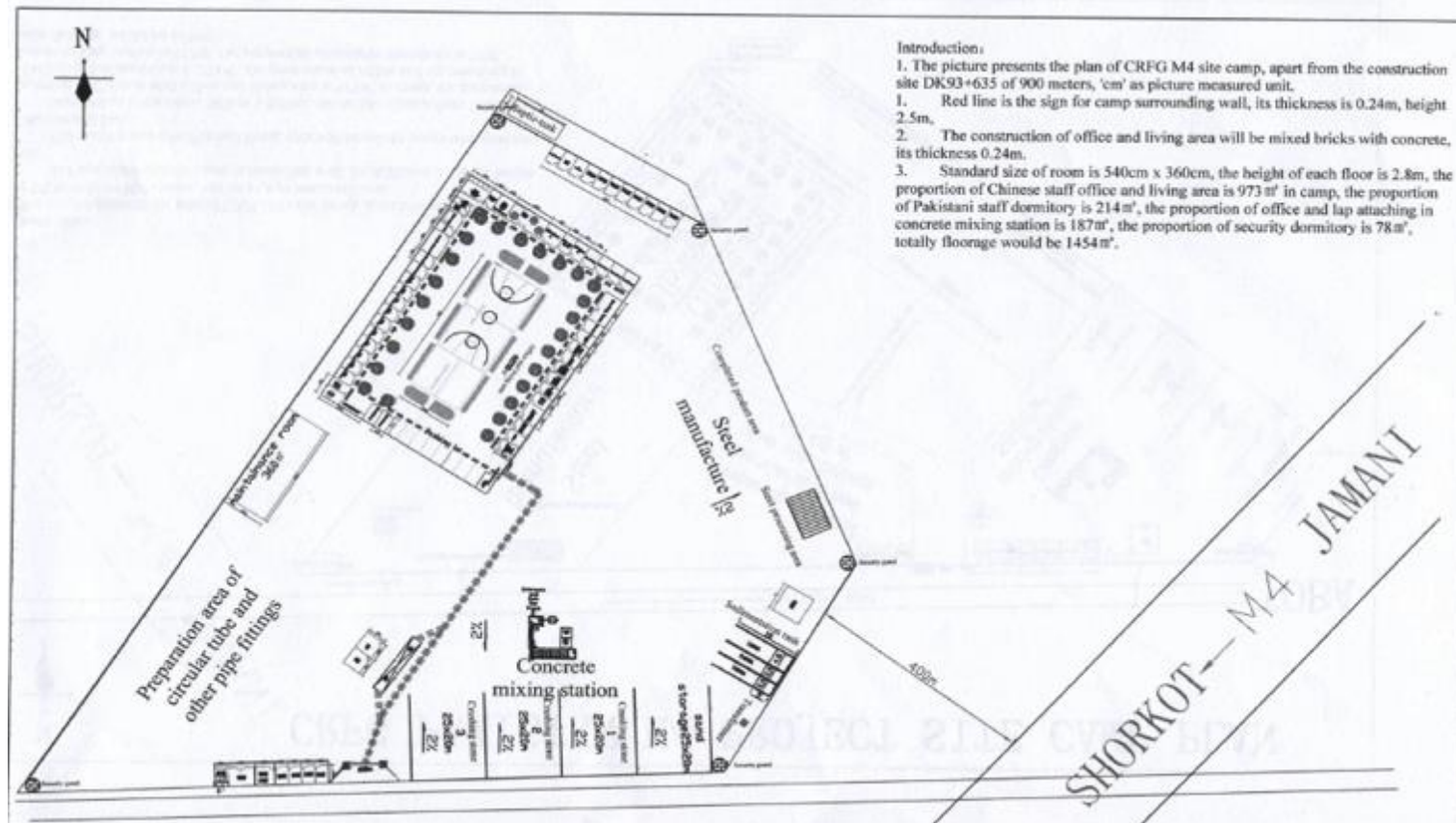
31	94+400	25	700	0.3	L/S
32	94+100	40	1000	0.3	L/S
33	98+300	48	530	1	L/S
34	97+900	96	600	1	L/S
35	97+800	96	550	1	L/S
36	97+700	96	580	1	L/S
37	98+900	96	700	1	R/S
38	98+800	96	700	1	R/S
40	97+900	200	750	1	L/S
41	96+700	120	600	2	L/S
42	98+000	120	785	1	L/S
44	98+800	299	540	1	L/S
45	99+000	200	800	1	L/S
46	99+050	100	850	1	L/S
47	99+100	100	750	1	L/S
48	99+600	200	1000	1	L/S
49	99+700	200	950	1	L/S
52	101+100	200	1000	1	L/S
53	101+000	110	1000	1	L/S
54	102+200	200	650	1	L/S
55	103+300	100	1000	1	L/S

56	103+600	100	1000	1	L/S
57	102+900	100	1000	1	L/S
58	102+600	80	1000	1	L/S
59	101+300	70	550	1	L/S
60	102+400	60	850	1	L/S
61	104+500	220	510	1	L/S
62	102+500	200	510	1	R/S
63	104+400	400	510	1	R/S
64	104+300	40	800	1	L/S
65	104+800	64	530	1	R/S
66	105+400	50	510	1	R/S
67	105+600	70	650	1	L/S

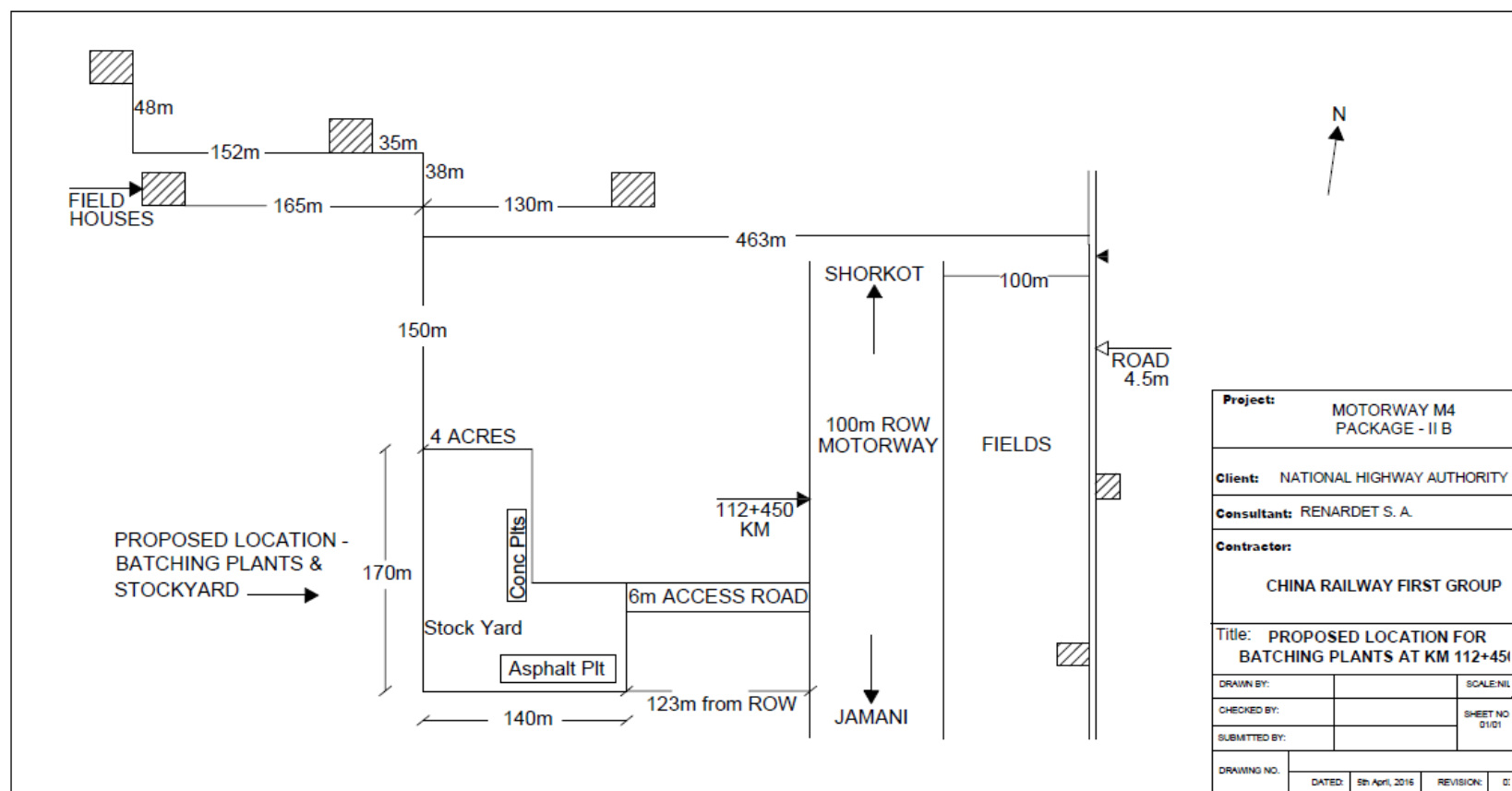
Annexure III: Layout Plan of Camp Sites

GOOGLE IMAGE – MAP





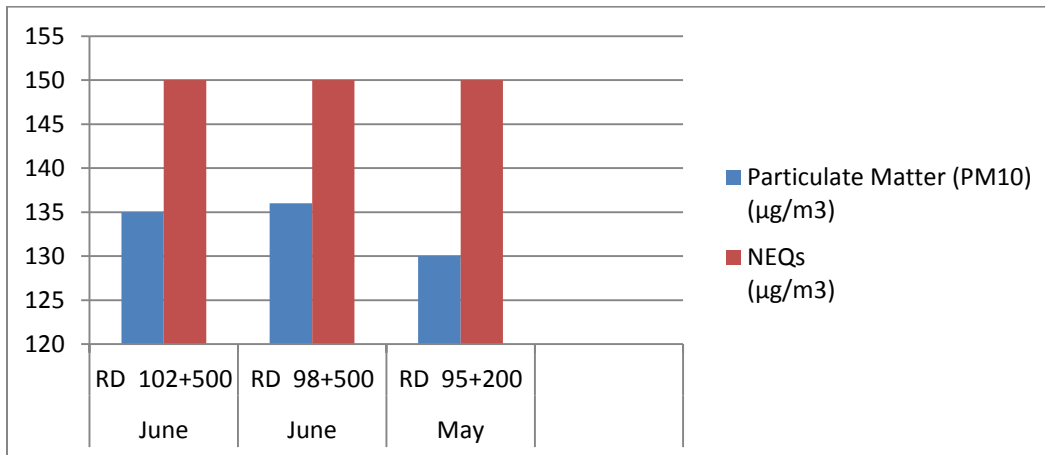
Layout Plan of Camp Site-1
(Jamani to Shorkot Section-2B, M-4) at KM 93 + 700



**Layout Plan of Concrete Mixing Plant & Asphalt Plant
(Jamani to Shorkot Section-2B, M-4) at KM 112 +450**

Annexure IV: Environmental Monitoring

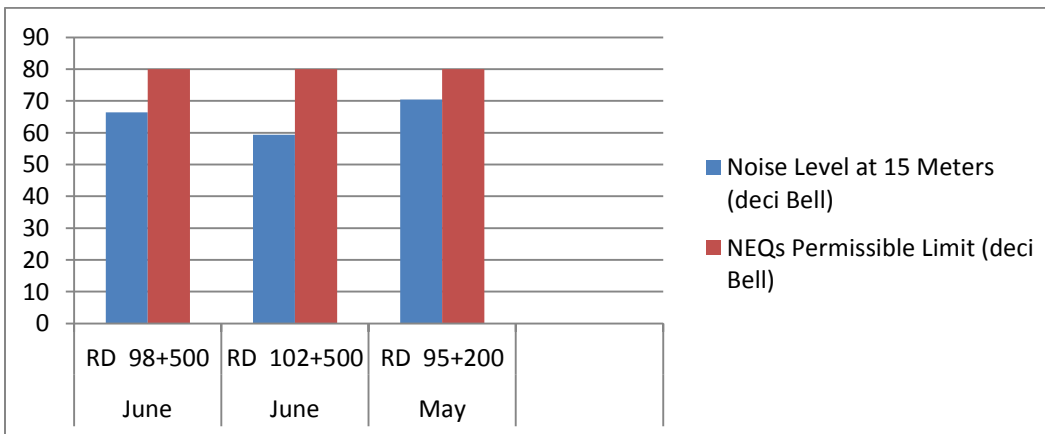
1. PM₁₀ Analysis May - June 2016



Comments:

The graphic chart shows that the particulate matter was within the permissible limits. However they shall be reduced further by increasing the frequency of sprinkling of water on the service

2. Noise Level May - June 2016



Comments: The noise levels are below the Pak NEQs level; however vehicles producing noise shall be maintained and workers shall be provided necessary PPEs.