Environmental Monitoring Report

Project Number: 42266-023
February 2017

Period: July 2016 – November 2016

IND: Kolkata Environmental Improvement Investment Program (KEIIP), Project 1

Submitted by

Kolkata Municipal Corporation, Government of West Bengal

Asian Development Bank

Re: Semi Annual Environmental Monitoring Report - Tranche-1 (July to November, 2016)
Md. Ghulam Ali Ansari
to:
npokhrel, smajumder
16/02/2017 12:31 PM
Cc:
Del Fabe, khalilias, "mc@kmcgov.in", Soumya Ganguly, Narayan chandra Mondal, Chinmoy Chakrabarti
Hide Details
From: "Md. Ghulam Ali Ansari" <pdkeiip@gmail.com> Sort List...
To: npokhrel@adb.org, smajumder <smajumder@adb.org>
Cc: Del Fabe <bfabe@adb.org>, khalilias <khalilias@rediffmail.com>, "mc@kmcgov.in" <mc@kmcgov.in>, Soumya Ganguly <soumya6@yahoo.com>, Narayan chandra Mondal <ncmcbs@yahoo.in>, Chinmoy Chakrabarti <chin_moy@yahoo.com>
History: This message has been replied to and forwarded.

Dear Neeta,

Kindly ignore the previous mail and find herewith the link for the the Semi Annual Environmental Monitoring Report for the period of July to November, 2016, for your kind perusal :

https://www.dropbox.com/s/sv39ddlx6z0dkz7/Updated%20SEMR%20July%20to%20November%202016%20final_DSC_09_02_17.zip?dl=0

Inadvertently the wrong link was given.

With warm regards,

Md. Ghulam Ali Ansari, IAS
Project Director
Kolkata Environment Improvement Investment Programme
Kolkata Municipal Corporation
Kolkata

On Tue, Dec 20, 2016 at 6:18 PM, Md. Ghulam Ali Ansari <pdkeiip@gmail.com> wrote:

> Dear Neeta,
>
> Kindly find herewith the link for the the Semi Annual Environmental Monitoring Report for the period of July to November, 2016, for your kind perusal :
>
> https://www.dropbox.com/s/6aokp7bf5uplxaz/SEMR%20July%20to%20November%202016_Environment_KEIIP-%2014_12_16.docx?dl=0
>
> With warm regards,

Comments & Reply Matrix – Semi Annual Environmental Monitoring Report – Tranche 1 (July to November 2016)

(Ref. Mail dated 3rd February 2017 from INRM, ADB)

Serial No.	Remarks	Reply	Reference
1	The SEMR is very organized and well written	Noted	
2	All corrective action plans as indicated in the SEMR for Jan-Jun 2016 have been complied, except for (i) full implementation on the use of PPE by workers; and (ii) improvement of construction camp/ workers' quarters which remained partially complied.	Noted. Instruction has been given to the contractors for further improvement on use of PPE and construction work camp	
3.	No planned consultations were conducted during the reporting period. However, it has been noted in the SEMR that informal consultations were carried out at the construction sites with local people, pedestrians and other stakeholders.	Done and to be continued throughout the project period	
4	**Section VI. Consultations and Disclosures Conducted, para. 31, page 91.** Please correct the indicative target date for the consultation on safety issues and implementation of EMP. This should be sometime in the next reporting period (i.e. Dec- May 2017)	Corrected as per suggestion in Table 18	Page no. 92
5	**Appendix 17: Filled Grievance Redress format, page 229-** Recorded grievances received during the reporting period was resolved at the level of contractors. However, the complaints received by ADB and during Sept- Oct 2016 and forwarded to PMU are not included. Please include these grievances in the matrix and provide a discussion on the developments, in either the main body of the report or a separate appendix.	Included in Appendix 18 and mentioned in the updated report	Appendix 18,and para 52 page 94
6.	**Table 19. Corrective Action Plan, page 94**. This action plan pertains to issues that affect the welfare of workers. Revise this table to include comprehensive safety training for contractors and workers, including good housekeeping for construction sites and workers camps. Ensure that these corrective action plans are strictly implemented by the contractors. If necessary, the	Mentioned in the para 55 Table 19	Updated report page 94 para 55 and Table 19 in page 95

Serial No.	Remarks	Reply	Reference
	contractors should provide a written commitment that they should implement the corrective action plan seriously to avoid any complaints in the future.		
7	Ambient air quality samplings were within the limits/ standards, except for samplings of PM_{10} parameter at 2 different sites which substantially exceeded the standard (i.e. at PS Joka and KEIIP Office Bldg.). Corrective action plan is provided to mitigate these non compliances. Ensure that the contractors will strictly implement the action plan.	Contractor are being advised regularly to take necessary action on dust suppression by sprinkling of water whenever required It is ensured that the contractors will strictly implement the action plan as per EMP	Para 26, page 76
8.	Noise levels were within the standards, except for 1 marginally higher measurement (i.e. at Near Jetty Intake 2- Palta at Monirampur and WTP- Palta at Monirampur) and 1 significantly higher measurement (i.e. at KEIIP Office Bldg.). Corrective action plan is provided to mitigate these high levels of noise in the areas. Ensure that the contractors will strictly implement the action plan.	It is ensured that the contractors will strictly implement the action plan as per EMP for reduction of noise level and minimization of noise impact.	Para 27 page 80
9	Noted that the BOD level of the river is above the national standards. However, it has also been noted that the baseline value for this parameter was already above the standard before the start of construction. Confirm project- related activities have not contributed to the increase of BOD level.	It is noted that base line BOD level for River water was above the national standard but the present (report period) level of BOD is below that of base line BOD level. It is mentioned that “project related activities have not contributed to the current elevated (above national standard) BOD concentration”	Para 28 page 83

Semi-Annual Environmental Monitoring Report

ADB Loan Number 3053-IND
Period Covered: July to November 2016

February 2017

IND: KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP) – Project 1

Prepared by Project Management Unit, Kolkata Environmental Improvement Investment Program, Kolkata Municipal Corporation, Government of West Bengal for Asian Development Bank

KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP) – PROJECT 1

PROJECT MANAGEMENT UNIT

5th

SEMI ANNUAL ENVIRONMENT MONITORING REPORT

TRANCHE 1

ADB Loan 3053-IND

(Period July to November 2016)

February 2017

KOLKATA MUNICIPAL CORPORATION

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ABBREVATIONS

AAI	-	Airport Authority of India
ADB	-	Asian Development Bank
ASI	-	Archaeological Survey of India
BIS	-	Bureau of Indian Standards
BOD	-	Biochemical Oxygen Demand
CBO	-	Community Based Organization
COD	-	Chemical Oxygen Demand
CPCB	-	Central Pollution Control Board
CPHEEO	-	Central Public Health and Environmental Engineering Organisation
CTE	-	Consent to Establish
CTO	-	Consent to Operate
CW	-	Canal Water
DG	-	Diesel Generator
DO	-	Dissolved Oxygen
DPR	-	Detailed Project Report
DSC	-	Design and Supervision Consultants
DWF		Dry Weather Flow
KMC	-	Kolkata Municipal Corporation
EA	-	Executing Agency
EARF	-	Environmental Assessment and Review Framework
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
GRC	-	Grievance Redressal Committee
GRM	-	Grievance Redress Mechanism
GW	-	Groundwater
HC	-	Hydrocarbons
IEE	-	Initial Environmental Examination
INR	-	Indian National Rupee
KEIP	-	Kolkata Environmental Improvement Project
KEIIP		Kolkata Environmental Improvement Investment Program
KMC	-	Kolkata Municipal Corporation
KMDA	-	Kolkata Metropolitan Development Authority
LPG	-	Liquefied Petroleum Gas
MoEFCC	-	Ministry of Environment and Forest & Climate Change, Government of India
MTBM	-	Micro Tunnel Boring Machine
NIOSH	-	National Institute of Occupational Health
NGO	-	Non Government Organization
O and M	-	Operation and Maintenance
PMC	-	Project Management Consultant
PMU	-	Project Management Unit
PS	-	Pumping Station
REA	-	Rapid Environmental Assessment

ROW	-	Right of Way
RP	-	Resettlement Plan
S & D	-	Sewage & Drainage
SEIAA	-	State Level Environmental Impact Assessment Authority
SPM	-	Suspended Particulate Matter
SPS	-	Safeguard Policy Statement
STP	-	Sewage Treatment Plant
SWF	-	Storm Water Flow
SW	-	Surface Water
TDS	-	Total Dissolved Solids
TMP	-	Traffic Management Plan
TSS	-	Total Suspended Solids
UFW	-	Unaccounted For Water
USD	-	US Dollar
WBPCB	-	West Bengal Pollution Control Board
WTP	-	Water Treatment Plant

I. INTRODUCTION

A. Background

1. The completed Kolkata Environmental Improvement Project (KEIP) was a key urban infrastructure initiative of the Kolkata Municipal Corporation (KMC) and achieved improvement of the urban environment and quality of life in parts (mainly added areas) of Kolkata Municipal Corporation area. On completion of KEIP, both KMC & ADB agreed to continue their combined effort to arrest environmental degradation and to improve basic urban services of Kolkata by a multi - tranche financing program 'Kolkata Environmental Improvement Investment Program' (KEIIP). Figure in **Appendix 1** shows the areas of Kolkata considered to be taken up under KEIIP Tranche 1 & 2. On their part ADB expressed their willingness to support this program by providing a multi-tranche financing facility amounting to US $400 million. Under Tranche 1 works, ADB has already released about US $100 million and the remaining US $300 million is expected for the proposed works under Tranche 2 & 3. The total investment duration for Tranche 1, 2 & 3 is from 2014 to 2022, whereas the duration for Tranche 1 works is from 2014 to 2019.

2. The goal of the Kolkata Environmental Improvement Investment Program is to support sustainable economic growth through improved quality of urban life and urban environment. The main objective of the Program is to improve service quality and operational sustainability of increased water supply and sewerage in 20% of the KMC area. The Investment Program also aims towards increase in operational efficiency and scale of water supply, sewerage and drainage services in 5% of KMC area.

3. The Program output comprises of:

- ✓ rehabilitation of inefficient and outdated water supply assets;
- ✓ continued extension of sewerage to newly developed areas and
- ✓ further development of financial and project management capacity.

4. The Program is being carried out at Kolkata by the Govt. of West Bengal (GoWB) acting through Kolkata Municipal Corporation (KMC) as the Executing Agency (EA). Location of Kolkata city in West Bengal is shown in **Figure 1.** Sub project location map for **Tranche 1 (Project 1)** is shown in **Figure 2.**

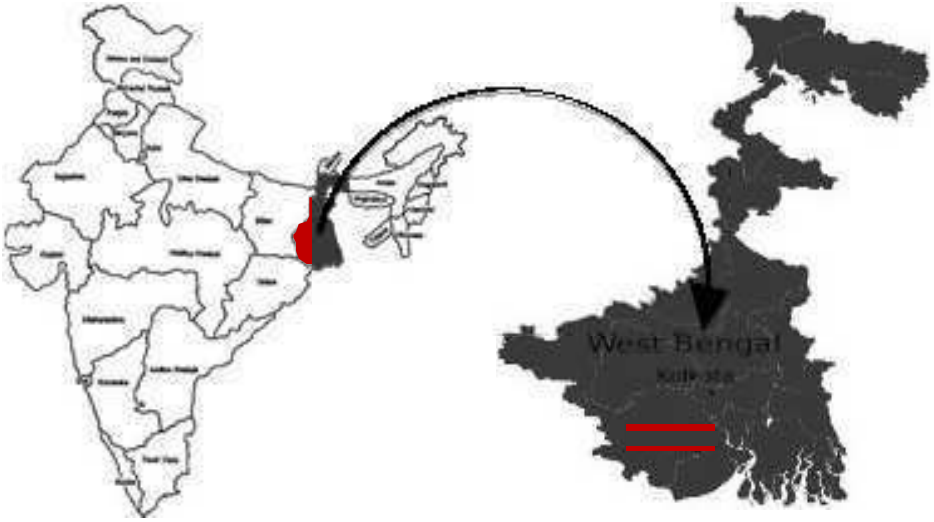


Figure 1: Map showing the location of Kolkata City in West Bengal

B. Project & Report Purpose

5. Sub projects under **Project 1** has been classified by ADB as environmental assessment category B (some negative impacts but less significant than category A) and the

impacts of subprojects were assessed through Initial Environmental Examination (IEE), prepared according to ADB Safeguard Policy (SPS 2009).

6. This report is the semi-annual environment monitoring report (SEMR) covering period from **July to November 2016** and describes the implementation of the environmental management plan (EMP) in respect of each subproject as laid down in the approved IEE.

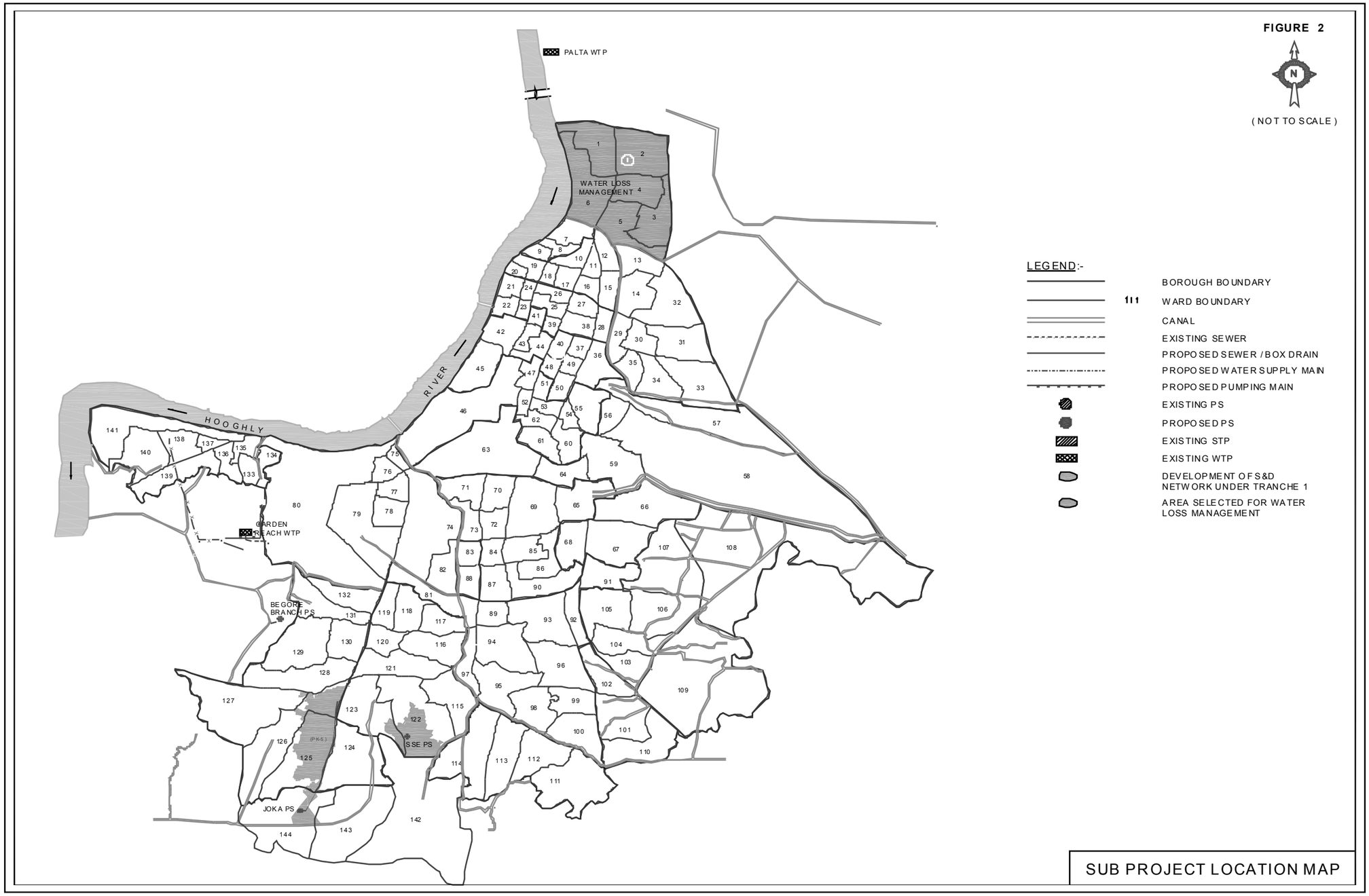


Figure 2: Sub Project location map- Project 1(Tranche 1)

II. IMPLEMENTATION PROGRESS

A. Status of Subprojects under Tranche 1

7. There are **9 packages** under **Tranche 1.** One package is related to Water Loss Management, one package related to building renovation, one package (in 2 lots) related to administrative component, one package for water supply, one package for Supply and Installation of pumps and Motors for water works, three packages related to sewage and drainage and one combined package related to micro-tunnelling for water and sewer pipeline. **Table 1** shows the subprojects under Tranche 1 and the works packages including the status of award of contracts as on 30th November 2016. The contract agreements for 9 packages have been signed and project implementation was initiated for all the 9 awarded packages. Between July and November one package related to sewerage and drainage has been completed. During the report period work of 2 environment non-sensitive package was initiated. Only one lot under one package (environment non sensitive) is to be awarded.

Table 1: Summary of Subprojects under KEIIP Tranche 1 (on 30th November 2016)

Sr. No.	Package No.	Components	Status
1	**KEIIP/ICB/Tr-1/ WS01/2015- 16**	Performance Based Water Loss Management Works at Cossipore Service Zone, Ward no. 01 to 06 • Preparation of System improvement Plan, SIP • Supply, Laying, installation and commissioning of distribution network, length indicated herein, within tentative 25 DMAs- 153 km, HDPE pipe 13 km, DI pipe 140 km • 25,000 nos. House Service Connections with MDPE/GI pipe on D.I pipe and with MDPE/GI pipe on HDPE pipe • Providing and Installing Butterfly, Sluice Valves (DI), Bulk Flow Meters, PRV Valves • Finding invisible leaks in pipeline network, carrying out repairs and allied works • SCADA system for distribution system management within the project area	Procurement process completed. LoA issued on 4th October 2016, date of commencement of contract - 21st October 2016 **Work progress- work just awarded**
2	**KEIIP/ICB/ Tr-1/WS02/2013-14**	**Water supply** - Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach ***Palta Water Works:*** • Rehabilitation/Strengthening of intake jetty 2 • Strengthening of embankment/ construction of new embankment in between Pre settling tanks (length of 650 m) to facilitate movement of the vehicles for collection and removal of sludge disposed (including construction of pond) • Construction of road of width 5 m for a length of 75 m and width of 7.5 for a length of 1850 m. including construction of culverts • Relocation/restructuring of existing drain along a portion of the proposed road alignment to a covered drain length of 245 m • Safe dismantling of existing 18 MGD WTP • Construction of 20 MGD new WTP ***Garden Reach water works:*** Rehabilitation and strengthening of existing jetty no. 1 at Garden Reach intake system	Procurement process completed. LoA issued on 14th October 2014, Implementation started on 7th November 2014 **Physical work under progress- 29.0%**

Sr. No.	Package No.	Components	Status
3	KEIIP/ICB/ Tr-1/WS03/2013-14 **Environment non–sensitive package**	**Water supply**- Supply and Installation of Pumps & Motors at, • Tallah- Palta System • Garden Reach System	Procurement process completed. LoA issued on 16th January 2014, Implementation started on 19th May 2014 **Physical work under progress- 78.35%**
4	**KEIIP/ICB/ Tr-1/WS & SD-04/13-14**	**Water supply & Waste water**- Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method ***Water Supply part -*** Transmission main from Garden reach water works to Taratala valve station by micro tunnelling, approx length 4.05 km MS pipe 1829 dia (Out Dia.) *Additional scope includes Laying of water main pipe line (1100 m long) by micro tunneling from shaft 13 to 16 (from near Taratala valve station to S. N. Roy Market on James Long Sarani)- Length – 5.1 km, Diameter – 1,500mm and 1829 mm dia (OD) , Method of laying – Micro-tunneling (major part) + open cut* • ***Waste water part-*** • Reinforced cement concrete (RCC) gravity main sewer from Sakher bazaar to Joka along Diamond Harbour Road by micro tunnelling, approx length 4.069 km RCC pipe 1400mm - 2400 mm dia *Addition of micro tunneling from Joka PS to Churial canal approx distance of 290 m (with small open cut sections), 1829 mm OD MS pipe.. Lateral connection from western and eastern flank of DH Road*	Procurement process completed. LoA issued on 4th March 2014, Implementation started on 19th May 2014 **Physical work under progress- 86%** (Revised to 67% due to additional scope)
5	**KEIIP/ICB/ Tr-1/SD-05/13-14**	**Waste water -** Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment • Construction of Sewage and Drainage networks within Diamond Harbour Road catchment area including house drainage connections (ward 125 &126) Approx length- 17.5 km and dia ≥250 mm • Construction of RCC box drain inside Behala AAI land • Construction of Joka pumping station inside Joka Tram depot. – ✓ DWF pumping main of dia 800 mm, approx. 3250 m long ✓ SWF pumping main of dia 1626 mm, approx. 500 m long • Construction of Begore khal pumping station	Procurement process completed. LoA issued on 1st September 2014, Implementation started on 27th October 2014 **Physical work under progress- 39.50%**

Sr. No.	Package No.	Components	Status
		located inside Behala Airport Authority of India Area ✓ DWF pumping main of dia 400 mm, approx. 675 m long ✓ SWF pumping main of dia 1626 mm, approx. 270 m long • Desilting and re-sectioning of Bagore branch canal for the portion downstream of box drain up to its outfall at Bagore canal	
6	**KEIIP/NCB/ Tr-1/SD-06/13-14**	**Waste water-** Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant Pressure main between Santoshpur Main pumping station (MPS) and Garden Reach Sewage Treatment Plant (STP) by micro tunnelling approx. Length 525 m, 1800 mm inner dia, RCC NP-4 pipe	Procurement process completed. LoA issued on 16th January 2014, Implementation started on 19th May 2014. **Work completed on 21.05.2016** **Physical work completed -100.0 %**
7	**KEIIP/ICB/ Tr-1/SD-07/15-16**	**Waste water –** Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP	Contractor selected LOA issued on 12th December 2015 Agreement signed on 4th January 2016 and Notice to Proceed given for implementation on 5th January 2016. Work started on 5th January 2016. **Physical work under progress-4.36%**
8	**KEIIP/NCB/TR-1/BR-08A/2015-16**	Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works	Contractor selected LOA issued on 9th November 2015 Agreement signed on 2nd December 2015 and Notice to Proceed given for implementation on 4th February 2016. Work started on 4th February 2016 **Physical work under progress-53%**
9	**KEIIP/NCB/TR-1/BR-08B/2016-17 Lot 1- Environment non–sensitive package**	Supply and Installation of Software & Hardware for development of project accounting system	Under bidding stage
	KEIIP/NCB/TR-1/BR-08B/2016-17 Lot 2 - Environment non–sensitive package	Supply and Installation of Geographical Information System (GIS) Software	Contractor selected LOA issued on 22nd September 2016 Agreement signed on 4th October 2016 and

Sr. No.	Package No.	Components	Status
			Work to be started

8. **Table 2** shows the status of the awarded packages with details of components, starting date, and schedule date of completion, physical progress and progress of implementation of work components.

9. For all awarded packages, contractors have been mobilized and works are in different stages of implementation. **Appendix 2** shows implementation status of different components (package wise). Photo illustration of project locations is shown in **Appendix 3.**

Table 2: Status of Awarded Subproject Under KEIIP Tranche 1 (As of 30th November 2016)

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
KEIIP/ICB/Tr-1/ WS01/2015- 16	Performance Based Water Loss Management Works at Cossipore Service Zone, Ward no. 01 to 06 • Preparation of System improvement Plan SIP within specified period and according to the contract conditions. SIP Preparation & Implementation shall include but not limited to the survey & investigations of existing assets, distribution network, mapping, freezing selected DMA boundaries, hydraulic modelling, the necessity and the extent of rehabilitation required. • Survey and investigations of transmission and distribution network for levels- project area- 9 sq km • Supply, Laying, installation and commissioning of distribution network, length indicated herein, within tentative 25 DMAs selected in Cossipore zone, ward no. 1 to 6 (25,000 Connections: 24,750 nos. of House Service Connection for connections sizes between 15 NB to 32 NB and balance connections are more than 40 NB)- 153 km • Distribution System - Supply, Laying, installation and commissioning of distribution network with HDPE pipe- 13 km	21.10.2016	36 months	20.10.2019	Work just awarded	-

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
	• Distribution System - Supply, Laying, installation and commissioning of distribution network with DI pipe- 140 km • Providing House Service Connections with MDPE/GI pipe on D.I pipe • Providing House Service Connections with MDPE/GI pipe on HDPE pipe • Providing and Installing Butterfly, Sluice Valves (DI), Bulk Flow Meters, PRV Valves • Finding invisible leaks in pipeline network, carrying out repairs and allied works within existing pipeline • SCADA system for distribution system management within the project area					
KEIIP/ICB/ Tr-1/WS02/2013-14	**Water supply** - Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach ***Palta Water Works:*** • Rehabilitation/ Strengthening of intake jetty 2 • Strengthening of embankment/ construction of new embankment in between Pre settling tanks (length of 650 m) to facilitate movement of the vehicles for collection and removal of sludge disposed (including	07.11.2014	48 months	06.11.2018	29.0	1. **Palta Jetty work :** (i) 27 nos. pile completed out of 27 nos. Rest under construction (ii) 12 nos. fender beam concreting done out of 14 nos. Rest under construction **2. Road between PST** (i) Completed except bituminous work **3. Water Treatment Plant** (i) Structural work of chemical and chlorine house completed (ii) Work of flash mixer under

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
	construction of pond) • Construction of road of width 5 m for a length of 75 m and width of 7.5 for a length of 1850 m. Including construction of culverts • Relocation /restructuring of existing drain along a portion of the proposed road alignment to a covered drain length of 245 m • Safe dismantling of existing 18 MGD WTP • Construction of 20 MGD new WTP ***Garden Reach water works:*** Rehabilitation and strengthening of existing jetty no. 1 at Garden Reach intake system					progress, final lift balance. (iii) Switchgear room construction upto roof slab completed. (iv) Excavation & pile breaking under progress. (v) Raw water MS pipe received at site. Excavation started. **4. Road & Culvert** (i) 5 nos. culvert completed upto top slab (ii) Alum storage room completed. (iii) Switchgear room flooring under progress. (iv) Road completed excluding bituminous work - 745 m. (v) Road under construction – 850 m. (vi) Road till to start – 730 m. **5. Garden Reach Jetty** Design Engineering under progress.
KEIIP/ICB/ Tr-1/WS03/2013-14 **Environment non – sensitive package**	**Water supply**- Supply and Installation of Pumps & Motors at, • Tallah- Palta System • Garden Reach System	19.05.2014	24 months	18.05.2016	78.35	**No work components completed. All are running.** Supply almost completed. Erection work at final stage
KEIIP/ICB/ Tr-1/WS & SD-04/13-14	**Water supply & Waste water**- Laying of water trunk main from Garden Reach waterworks to Taratala valvestation and laying of sewer line along Diamond Harbour Road by Micro tunneling method ***Water Supply part -*** • Transmission main from Garden reach waterworks to Taratala valve	19.05.2014	36 months	18.05.2017	86.0 (Revised to 67% due to additional scope)	**WS-04 (Taratala road) 1800mm dia. Water Pipe line** a) 13 nos. shaft completed out of 13 nos. (original scope). 2 nos. shaft construction completed out of 4 nos. (additional scope) b) Jack pushing of pipe completed (original scope).

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
	station by micro tunnelling, approx length 4.05 km MS pipe 1829 dia (Out Dia.) *Additional scope includes Laying of water main pipe line (1100 m long) by micro tunnelling from shaft 13 to 16 (from near Taratala valve station to S. N. Roy Market on James Long Sarani)- Length – 5.1 km, Diameter – 1,500mm and 1829 mm dia (OD) , Method of laying – Micro-tunneling (major part) + open cut* ***Waste water part-*** • Reinforced cement concrete (RCC) gravity main sewer from Sakher bazaar to Joka along Diamond Harbour Road by micro tunnelling, approx length 4.069 km RCC pipe 1400mm -2400 mm dia *Addition of micro tunnelling from Joka PS to Churial canal approx distance of 290 m (with small open cut sections), 1829 mm OD MS pipe.. Lateral connection from western and eastern flank of DH Road*					312m out of about1100m (additional scope) completed. c) Welding joint of pipe about 3600 m completed. d) Hydraulic Testing 3600 m completed. e) Utility shifting at shaft No. 14 completed and at 15 started (additional scope). f) Pipe laying work within GRWW in progress(original scope). **SD-04 (Diamond Harbor Road) 1600-2400mm dia. Sewer Pipe line** a) 20 nos. shaft completed out of 24Nos b) Micro tunneling of 3120 m pipe completed out of 4010m c) 14 nos. Manhole completed out of 24 nos. d) 2 nos. pressure main shaft completed & one no. pressure main shaft is in progress out of 3 nos. (additional scope) e) Lateral connection by jack pushing – 1 no. completed & 2 nos. in progress
KEIIP/ICB/Tr-1/SD-05/13-14	**Waste water -** Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Harbour Road catchment • Construction of Sewage and Drainage networks within Diamond	27.10.2014	42 months	26.04.2018	39.5	**Beghore Khal PS** a) Well sinking work of & bottom plugging of well is completed b) 2 nos. transformer & 1set LT Panel with capacitor bank installation is completed. c) 5 nos. pump arrived at site

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
	Harbour Road catchment area including house drainage connections (ward 125 &126) Approx length- 17.5 km and dia ≥250 mm • Construction of RCC box drain inside Behala AAI land • Construction of Joka pumping station inside Joka Tram depot. – ✓ DWF pumping main of dia 800 mm, approx. 3250 m long ✓ SWF pumping main of dia 1626 mm, approx. 500 m long • Construction of Begore khal pumping station located inside Behala Airport Authority of India Area ✓ DWF pumping main of dia 400 mm, approx. 675 m long ✓ SWF pumping main of dia 1626 mm, approx. 270 m long • Desalting and re-sectioning of Bagore branch canal for the portion downstream of box drain upto its outfall at Bagore canal Extra work- Construction of PS R. K. Ghosh and Behala flying club					d) Box Duct for pumping main 80% completed e) Beghore branch canal rehabilitation completed. **Joka PS** a) Well sinking work & bottom plugging of well is completed. b) 2nos. transformer, 1 set LT Panel with capacitor bank installation is completed. c) 11 nos. pump arrived at site. **S & D Network** a) 7.44 Km sewer line completed out of 16.66 Km. b) DI Pipe at Mahendra Banerjee Rd. 917 m out of 1430 m **Allied Works** a) Renovation of Behala Cultural Ground (Flying Club) P.S. resumed after completion of Puja festivals. Concrete cutting is in progress. b) Upen Banerjee Road – Sewer line, including house drainage connection & road works completed , kerb-channel fixing almost completed. c) R.K.Ghosh Pumping Station – DWF pumps in operation d) Noapara Pumping Station – sluice gate installed.
KEIIP/NCB/ Tr-1/SD-	**Waste water-** Micro-tunneling works on	19.05.2014	18 months	28.02.2016	100.0	**All work completed during last**

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
06/13-14	pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant Pressure main between Santoshpur Main pumping station (MPS) and Garden Reach Sewage Treatment Plant (STP) by micro tunnelling approx. Length 525 m, 1800 mm inner dia, RCC NP-4 pipe					**report period**
KEIIP/ICB/ Tr-1/SD-07/15-16	**Waste water** • Replacement of GAP line (approx. 3.3 km) for defunct portion (From Gandhi Maidan to Karbala Unnayan Samity and upto Santoshpur Main Road), Extension of Existing drain, Construction of energy dissipater chamber, Desilting of GAP sewer for portion of sewer to be – utilized, Interconnection between sumps at Santoshpur SMPS,. CCTV survey for entire length of sewer about 4.0 km • Development of S & D network in Ward 122 (part) (length of sewer Approx. 5.0 km), • Laying of Pumping main (700 mm diameter about 2.7 km length DI K9 pipe) along Taratala Road and Santoshpur Road from Trenching Ground Sewage PS to Santoshpur Main Sewage PS	05.01.2016	18 months	04.07.2018	4.36	1. **GAP sewer** - For fixing of alignment, trial trench excavation started along the GAP line. 2. **Pumping Main from TG PS to SPS** – Permission from KoPT for digging of Taratala Road sought for. Follow up action taken by Contractor. 3. **S&D network at Ward 122**-Pipe laying work 608m completed out of 4700m. 4. **Pumping Station at SSE** – Sinking of wet well and dry pit well steining wall in progress. 5. **SSE STP renovation**-Dewatering of pond has been started.

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
	• Construction of South Suburban East combined pumping station (capacity DWF – 76 lps and SWF – 4000 lps) • Construction of DWF and SWF pumping mains from SSE PS (300 mm dia. DI, K-9 pipe – 950m length for DWF & 1400 mm dia. MS pipe – 1500 m length for SWF) • Rehabilitation of SSE STP					
KEIIP/NCB/TR-1/BR-08A/2015-16	Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works	04.02.2016	12 months	03.02.2017	53.0	1. **4th floor - Block 'B' -** Works completed. **Block 'A' -** Brick work & plastering, floor tiles, toilet ceramic tiles, partitioning, plumbing, sanitary work including fittings & fixtures completed. Wood works, rendering / painting & A.C. work in progress. 2. **Block 'C' –** Works completed. 3. **3rd floor - Block 'B'** – Floor tiles, brick work, plastering, partitioning & plumbing work completed. Sanitary work, door work, AC , painting & electrical work in progress. 4. **Block 'C' –** Floor tiles, brick work, plastering, partitioning & plumbing work completed. Sanitary work, door work, AC , painting & electrical work in

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th November 2016	Works completed and continued as of 30th November 2016
						progress. 5. **2nd floor - Block 'A' –** Work completed. 6. **5th floor - Block 'B'** – Brick work, plastering, office area floor tiles, plumbing work, partitioning work completed. 7. Electrical work, A.C. work, painting work in progress. 8. **2nd floor Block 'B'** – Work just completed.
KEIIP/NCB/TR-1/BR-08B/2016-17 Lot 2 Environment non – sensitive package	Supply and Installation of Geographical Information System (GIS) Software	04.10.2016	3 months	03.01.2017	0	-

B. Compliance of Safeguard Loan Covenants

10. The loan agreement for KEIIP Project 1 was signed on 3rd March 2014 and details are available in ADB website (http://www.adb.org/projects/documents/loan-agreement-kolkata-environmental-improvement-investment-program-project-1). **Table 3** provides a summary of compliance to the loan covenants related to environmental safeguards.

Table 3: Compliance of Loan Covenants – Environment part

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
Environment		
7	The Borrower shall ensure or cause the EA to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project, and all projects' facilities comply with (i) all applicable laws and regulations of the Borrower and the State relating to environment, health, and safety; (ii) the Environmental Safeguards; (iii) the EARF; and (iv) all measures and requirements set forth in the respective IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	**Under compliance** Document is prepared/ or under preparation by complying all relevant State and National Laws, Safeguard Policy Statement (SPS 2009) of ADB, Environment Assessment Review Framework (EARF) for Tranche-1 program. For **Tranche 1** project Initial Environmental Examination (IEE), Environment Management Plan (EMP) report prepared and approved by ADB. IEE for Sewage and Drainage for Tranche 1 has been updated and that report has already been disclosed in ADB website on October 2015. IEE for water supply for Tranche 1 has been updated and that report has already been disclosed in ADB website on February 2016 IEE will be revised further in case of any change of scope and location. All measures and requirements as prescribed in IEE/EIA and EMP are being considered during implementation. Corrective or preventive action plans will be reflected in Environment Monitoring Report and project implementation authority will take care of such actions when required.
Human and Financial Resources to Implement Safeguards Requirements		
11	The Borrower shall make available, or cause the EA to make available, all necessary budgetary and human resources to fully implement the EMP required.	**Complied** Budgetary provisions have been included in EMP of Tranche 1 project An Environment Specialist has been placed in Project Management Unit and heading Safeguard Monitoring Unit. Human resource (project consultant, i.e Environmental Specialist of DSC) for implementation of EMPs is in place for regular monitoring to secure complete compliance.

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
Safeguards – Related Provisions in Bidding Documents and Works Contracts		
12.	The Borrower shall ensure, or cause the EA to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to:	**Under compliance**
	(a) comply with the measures and requirements relevant to the contractor set forth in the IEE, the EMP, the RP and the IPP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report;	(a) Approved IEE, EMP for Tranche 1 project is attached in Bidding documents. This process will be followed for all the sub projects within the present Tranche. In case of any change of scope, revised IEEs with EMP(s) will be prepared and corrective measures will be disclosed to the contractor and same will be reflected in the "Environment Monitoring Report". IEE for Sewage and Drainage for Tranche 1 has been updated and that report has already been disclosed in ADB website on October 2015. IEE for water supply for Tranche 1 has been updated and that report has already been disclosed in ADB website on February 2016
	(b) make available a budget for all such environmental measures;	(b) IEE indicates budgetary provisions for implementation of EMP.
	(c) provide the EA with a written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the RP or the IPP;	(c) During implementation of any sub project if additional impacts/risks arise due to change in scope/area that will be reflected in the revised IEEs, EMPs and Environment Monitoring Report and accordingly project Executing Agency will inform the Construction Agency for taking relevant corrective measures.
	(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and	(d) Haul roads will be marked properly (by avoiding residential and agricultural land) before commencement of transportation of materials.
	(e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	(e) Pathways, infrastructure and land which are likely to be affected for varying periods during implementation of the sub project will be restored by concerned construction agency before acceptance of the work. Restoration status will be reflected in post construction monitoring report.
Safeguards Monitoring and Reporting		
13	The Borrower shall cause the EA to do the following: (a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose	**Under compliance** (a) This is 5th Semi-annual safeguard monitoring report on Environment for the

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
	relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMPs, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) report any breach of compliance with the measures and requirements set forth in the EMPs, promptly after becoming aware of the breach.	period July to November 2016. The next report will be due by end of May 2017. (b) During implementation of any sub project, if additional impacts/risks arise due to change in scope/area, those will be reflected in revised IEEs with EMPs and accordingly Executing Agency (EA) will inform the ADB such change along with corrective action plan which will be reflected in the subsequent Monitoring Reports. (c) in case of any breach of compliance with the measures and requirements set forth in the EMP, EA will promptly inform ADB and suitable corrective action program will be planned/initiated.
Prohibited List of Investments		
14	The Borrower shall ensure or cause the State to ensure that no proceeds of the Loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	**Complied** Under Tranche -1, there is no violation of prohibited investment activities as per ADB SPS (2009) Appendix 5.
Other Social Measures		
15	The EA shall ensure that civil works contracts under the Project follow all applicable labor laws of the Borrower and the State, and that these further include provisions to the effect that contractors: (i) carry out HIV/AIDS awareness programs for labor and disseminate information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction; and (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, equal pay for equal work), health, safety, welfare, sanitation, and working conditions. Such contracts will also include clauses for termination in case of any breach of the stated provisions by the contractors.	**Complied in Bid documents and being complied during implementation** Provision are included (as per EMP & BID document) to carry out HIV/AIDS awareness programs for construction contractor, application of all relevant labour laws for health and safety including child labour law and engagement of local labours (preferably from economically backward group) covering women labours. In case of any breach of provision, necessary corrective measures as per contract clauses shall be taken. All activities including awareness program will be reflected in "Monitoring Report".

C. Implementation Arrangement

11. The institutional arrangement follows KEIIP's organizational structure and functions **(Figure 3).** The subproject is being implemented and monitored by the Project Management Unit (PMU). The KEIIP's PMU Environment Specialist is the overall in-charge on Environmental safeguard of the program. The responsibilities of the Environmental Specialist ensures that (i) environmental safeguard issues are addressed; (ii) EMP/approved Site Environment Plan (SEP) is implemented; (iii) physical and non-physical activities under the subproject are monitored; and (iv) monitoring reports are prepared on time and submitted to ADB.

12. Safeguard Monitoring Unit (SMU) of PMU is ensuring field level monitoring and safeguard documentation. PMU is supported by the Design and Supervision Consultants (DSC). An Environment Specialist is in place to ensure: (i) EMP/ approved SEP is

implemented; (ii) surveys and measurements are undertaken; (iii) inspections and observations throughout the construction period are recorded to ensure that safeguards and mitigation measures are provided as intended; and (iv) statutory clearances and permits from government agencies/other entities are obtained prior to start of civil works.

13. The Safeguards Monitoring Unit will:

(i) prepare the REA checklist, draft the EIA/IEE and arrange for disclosure of the approved EIA/IEE in the website

(ii) ensure that Environmental Clearance (EC), Consent to Establishment and Consent to Operate and other certificates, as required, are obtained in time from appropriate authorities and ensure compliances with conditions imposed.

(iii) ensure incorporation of the EMP, environmental mitigation and monitoring measures into the contract documents

(iv) monitor disclosure and public consultation arranged by DSC during IEE process and ensure that comments are reflected in the IEE report

(v) ensure disclosure of information throughout the duration of the subproject through suitable visual means and publications

(vi) provide necessary input for grievance redress

(vii) approve contractor's proposed locations for construction work camps, storage areas, hauling roads, lay-down areas, and disposal areas for solid and hazardous wastes on recommendations of DSC

(viii) guide the Contractor for drawing up of Site Environmental Management Plan and to approve the same

(ix) induct the Contractor for taking up the construction following environmental and social safeguards

(x) facilitate scheduled monitoring during implementation of the project.

(xi) carry out regular onsite monitoring and guide the Contractor to adopt the required site management standard.

(xii) ensure the required health and safety measures at work sites

(xiii) obtain in time and to review the monthly monitoring report of the Contractors

(xiv) prepare 6-monthly monitoring and EMP implementation report, including the status of project compliance, statutory clearances and relevant loan covenants, and submit the approved 6-monthly report to ADB and seek permission to disclose the same in the investment program website

(xv) prepare monitoring report on post-construction activities by the contractors as specified in the EMP

14. The Contractor's responsibilities included:

(i). Submission of Site environmental plan (SEP) covering proposed sites / locations for construction work camps, storage areas, haul roads, lay down areas, disposal areas for solid and hazardous wastes

(ii). Compliance with all applicable legislation and be conversant with the requirements of the EMP/ approved SEP;

(iii). Briefing of his staff, employees, and labourer about the requirements of the EMP/ approved SEP;

(iv). Ensuring that any sub-contractors/suppliers engaged within the context of the contract comply with the environmental requirements of the EMP/ approved SEP. The Contractor will be held responsible for non-compliance on their behalf;

(v). Providing methodology/information for all activities requiring special attention as specified and/or requested by the DSC Environment Specialist during the duration of the Contract;

(vi). Providing environmental awareness training to staff, employees, and laborers;

(vii). Bearing the costs of any damages/compensation resulting from non-adherence to the EMP/ approved SEP or written site instructions;

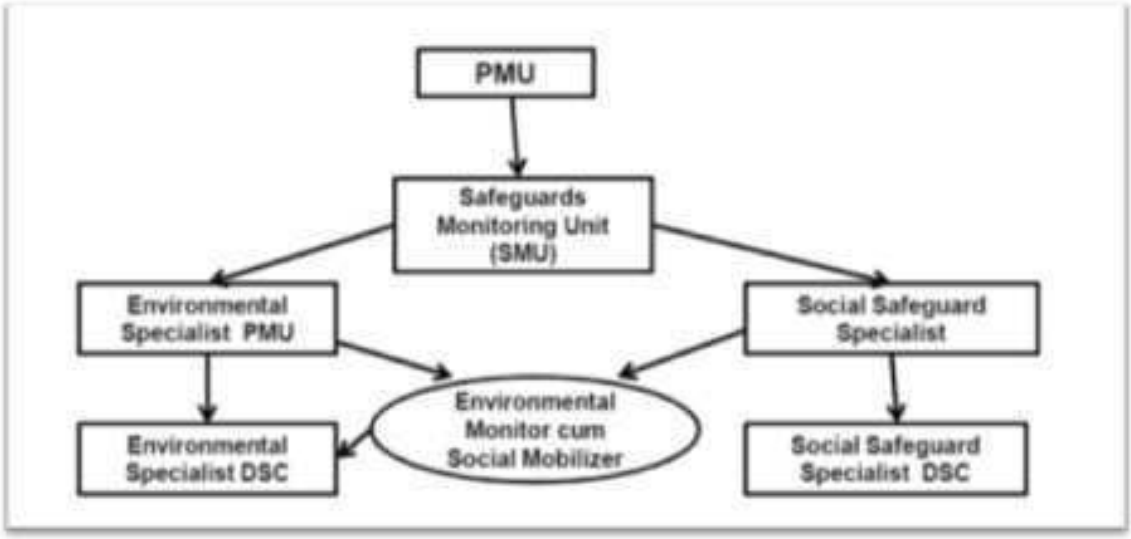
(viii). Conducting all activities in a manner that minimizes disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

(ix). Ensuring that the PMU and DSC Environment Specialists are timely informed of any foreseeable activities that will require their expert input

15. Environment Specialist and Junior Environmental Specialist of DSC visited all construction sites every month and arranged onsite training program for contractors and supervisory staff and instructed contractors for application of corrective action measures to mitigate impacts. **Table 4** shows detail of environment safeguard team for KEIIP.

Table 4: Details of KEIIP Environmental Safeguard Team

Designation	Name and Contact Details
PMU, Environment Specialist Safeguard Monitors in SMU	Name: Dr. Chinmoy Chakrabarti Office Address: Unnayan Bhawan, 206 A. J. C Bose Road, Kolkata 700017 Phone:033 2283 0169 Email:pdkeiip@gmail.com, chin_moy@yahoo.com
DSC, Environment Specialist	Name: Dr. Ardhendu Mitra Office Address: Unnayan Bhawan, 206 A. J. C Bose Road, Kolkata 700 017 Phone:033 2283 0044, 9830415953 Email: ardhendumitra@gmail.com , dsckeip@gmail.com
DSC, Junior Environmental Scientist (Support)	Name: Ms Rukmini Chakrabarty Office Address: Unnayan Bhawan, 206 A. J. C Bose Road, Kolkata 700 017 Phone:033 2283 0044, 9007380908 Email:dsckeip@gmail.com, chakrabarty.rukmini@gmail.com



Notes: PMU = project management unit; DSC = design and supervision consultants

Figure 3: Institutional Arrangement – Safeguards

III. Environmental Procedure Review

A. Environmental Legal Requirement

16. **Table 5** provides a list of national and state laws, rules, policies and regulations applicable to **KEIIP Tranche 1.**

Table 5: Environmental Legal Requirements Applicable to KEIIP Tranche 1

Component	Applicable Legislation	Compliance	Action Required
1. All components that require acquisition of forest land	Forest (Conservation) Act 1980; Wildlife (protection) Act 1972 West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006	Approval from State Forest Office, Principal Chief Conservator of Forest and Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India	Identification of non-forest land and formulate an afforestation program. Tree felling permission as per requirement
2. Water Treatment Plant (WTP) – Surface water and Sewage Treatment Plant (STP)	The Water (Prevention and Control of Pollution) Act, 1974, as amended in 1988	Consent to Establish (CTE) and Consent to Operate (CTO) from West Bengal Pollution Control Board (WBPCB), Government of West Bengal	Based on project review and site inspection, West Bengal Pollution Control Board (WBPCB) provides CTE before construction, and stipulates the disposal standards to be met during operation. After completion of construction, Consent to Operate (CTO) will be issued confirming compliance with the CTE conditions, if any
		Renewal of CTO during operation of surface Water Treatment Plant (WTP) and Sewage Treatment Plant (STP)	Based on the performance of the WTP/STP and its compliance with the disposal standards CTO to be renewed every year.

B. Compliance with Environmental Legal Requirements

17. Before implementation of the project, compliance with environmental policy, law and legislation is necessary.

18. Under **Tranche 1** present status of Environment, forest and other clearances are mentioned below.

Table 6: Status of Compliance with National and State Legal Requirements (up to 30th November 2016)

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
KEIIP/ICB/ Tr-1/WS02/2013-14	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach	Water (Prevention and Control of Pollution) Act. 1974 Consent to Establish (CTE) for rehabilitation of WTP from West Bengal Pollution Control Board Consent to operate will be required before operation	Online application has been submitted to WBPCB on 30th June 2015 for CTE for Rehabilitation of Water Treatment Plant at Palta Water Works. **CTE received on 03.09.2015,** which valid for 5 years	Consent to Establish received on 03.09.2015 Copy attached as **Appendix 4** Conditions and compliance are shown below (**Table 7)**
		Forest (Conservation) Act 1980; West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006 for felling of trees	Pipeline alignment shifted as per design modification. No tree felling is required	Not applicable till date
		The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010.	During implementation of project, compliance with Air Act , Noise Rules and Water Act will be required	
		Also for setting up hot mix plant, batching plant and use of diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	Not required now as per present work	
KEIIP/ICB/ Tr-1/WS & SD-04/13-14	Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method	West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006- Tree felling permission	Tree felling- Permission obtained from Divisional Forest Officer, Forest Utilization Division, Govt. of West Bengal at Kolkata (Ref letter 655/17 T dated 29.09.14) – felling of 17 trees along Taratala Road for laying of	Tree felling has been done Compensatory afforestation at non forest land- Action has already been initiated

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
			water main. Compensatory afforestation of 75 trees is recommended in clearance certificate.	
		Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987	During implementation of project compliance against Air Act , Noise Rules and Water Act will be required	
		Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	Not required for acoustic type of Generator	
KEIIP/ICB/ Tr-1/SD-05/13-14	Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010	During implementation of project compliance with Air Act , Noise Rules and Water Act will be required	-
		Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	Not required now For acoustic type of Generator- not required	
KEIIP/ICB/ Tr-1/SD-07/15-16	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010	During implementation of project compliance against Air Act , Noise Rules and Water Act will be required	-

Table 7: Compliance of Consent to Establish (CTE) Water Treatment Plant under Palta Water Works

Sl. No.	Conditions		Compliances
1	The quality of sewage and trade effluent to be discharged from your factory shall satisfy the permissible limits as prescribed in IS:2490 (Pt.) of 1974, and/or its subsequent amendment and Environment (Protection) Rules 1986.		During operation of WTP sewage will be discharged after conforming permissible limit (IS:2490)
2	Suitable measures to treat your effluent shall be adopted by you in order to reduce the pollution load so that the quality of the effluent satisfies the standards mentioned above.		Effluent will be treated before discharge to reduce pollution load
3	You shall have to apply to this Board for its consent to operate and discharge of sewage and trade effluent according to the provisions of the water (Prevention & control of Pollution) Act, 1974. No sewage or trade effluent shall be discharged by you without prior consent of this Board.		Consent to Operate will be taken from Pollution Control Board before commissioning of WTP. No sewage will be discharged without prior consent of the Board.
4	All emission from your factory shall conform to the standards as laid down by this Board.		No air emission expected from WTP
5	No emission shall be permitted without prior approval of this Board and you shall apply to this Board for its consent to operate and atmospheric emission as per provision of the Air (Prevention & control Pollution) Act, 1981.		No emission expected from WTP
6	You shall comply with		
	(i) (ii)	Water (Prevention and Control of Pollution Cess Act, 1977, if applicable. Water (Prevention and Control of Pollution) Cess Act, 1978, if applicable.	Under compliance during construction and will be complied (relevant Rules & Regulation) during operation Public Liability Insurance for the entire water treatment plant has been taken from National Insurance Company.
	(iii) (iv)	Environment (Protection) Act, 1986 Environment (Protection) Rules, 1986	
	(v)	Hazardous Wastes (Management and Handling) Rules, 1989 and Amended Rules, 2000	
	(vi)	Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and Amended Rules, 2000.	
	(vii)	Manufacture, Use, Import and Storage and Hazardous Micro-Organisms, Genetically Engineered Organisms or Cell Rules, 1989.	
	(viii)	The Public Liability Insurance Act, 1991 and Amended Act, 1992.	
	(ix)	The Public Liability Insurance Rules, 1991 and Amended Rules 1993.	
	(x)	Biomedical Wastes (Management & Handling) Rules, 1998 and Amended rules 2000, if applicable.	
	(xi) (xii)	Recycled Plastics Manufacture and Usage rules 1999, if applicable and Ozone Depleting Substances (Regulation & Control) Rules, 2000, if applicable.	
7	You will have to abide by any other stipulations as may be prescribed by any authority/local bodies/Government Departments, etc.		Will abide by any other stipulations as may be prescribed by any authority/local bodies/Government Departments, etc

Sl. No.	Conditions	Compliances
Special conditions		
1	Water shall be sourced from the Hooghly River.	Presently water sourced from river Hooghly
2	The surface water treatment system shall consist of flash Mixing, flocculation, inclined plate settling rapid sand filtration. Chlorination & sludge handing system.	The surface water treatment system will consist of flash Mxing, flocculation, inclined plate settling rapid sand filtration. Chlorination & sludge handing system.
3	All sorts of precaution should be taken as per statutory rules for handling and storage of chlorine. Explosive license should be obtained from appropriate authorities for handling and storage of Chlorine.	All sorts of precaution would be taken as per statutory rules for handling and storage of chlorine. Explosive license already exists for running plant.
4	No additional machinery/equipment can be installed without prior permission from WBPCB. No change in raw materials, products, production capacity and manufacturing process shall be made without prior permission from the Board.	No additional machinery/equipment will be installed without prior permission from WBPCB. No change in raw materials, products, production capacity and manufacturing process will be made without prior permission from the Board.
5	Noise Control – Ambient noise level not to exceed the permissible limit.	During construction and operation phase noise mitigation measures will be applied
6	Work shall be done under covered shed for noise reduction.	It will be maintained as per site condition
7	Good housekeeping to be maintained.	Satisfactory housekeeping already maintained
8	Free planting, sapling along the periphery of the unit.	Plantation will be done after completion of construction activity
9	Land Conversion Certificate to be obtained	Proposed site within existing premises of Palta water works
10	Consent for Operate to be obtained from the State Board before commissioning of the unit.	Consent for Operate will be obtained from the State Board before commissioning of the new treatment unit.
11	Provision of drinking water & waste water disposal shall be ensured for labour camps. Proper sanitation facilities shall be provided for construction workers to ensure environmental sanitation, health and safety of the workers shall be ensured during construction.	Drinking water and toilet facility are available at labour camp. Waste water discharges as per site condition. Also health and safety of the workers maintained during construction. Health check up camp has been arranged.
12	The project proponent shall take necessary care not to cause any inconvenience to the residents or surrounding neighbourhood. Regular supervision shall be in place all through the construction phase so as to avoid disturbance to the surrounding.	Project location within Palta Water Works campus no impact is expected on resident movement
13	The Project Proponent will ensure that no accumulation of any kind of water occurs within the project area to prevent breeding of various diseases spreading vectors.	The Project Proponent would ensure that no accumulation of any kind of water occurs within the project area to prevent breeding of various diseases spreading vectors.
14	Ground water shall not be abstracted without prior permission of the Local Body as well as the Competent Authority as per the West Bengal Ground Water Resources (Management Control and Regulation) Act, 2005.	There is no need for groundwater abstraction, as per plan only surface (river) water will be utilized Presently for drinking purpose supplied water are used
15	The unit shall be abide by the West Bengal Trees (Prevention and Conservation in Non-Forest Area) Rules, 2007. Adequate green belt shall be developed.	The unit will abide by the West Bengal Trees (Prevention and Conservation in Non-Forest Area) Rules, 2007. Adequate green belt will be developed.
16	No tree can be felled without prior permission	No tree will be felled without prior permission

Sl. No.	Conditions	Compliances
	from the Tree Cutting Authority constituted as per the West Bengal Tree (Prevention and Conservation in Non-Forest Area) Act, 2006 and subsequent rules.	from the Tree Cutting Authority constituted as per the West Bengal Tree (Prevention and Conservation in Non-Forest Area) Act, 2006 and subsequent rules.

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

19. There are 5 environment sensitive subprojects under implementation. Site Environment plan including site specific EMP was submitted by the contractor before starting of each construction packages. These EMPs are generally revised semi annually as per progress of construction work. **Appendix 5** shows sample Site Specific EMP.

20. Environment Specialist from DSC and PMU carried out periodic monitoring of EMP implementation through desk review of contractor's records and site inspections. Package wise findings are presented in **Tables 8 to 12.** It may be noted, though most of the sites are environmentally well managed, in a few cases in packages like **KEIIP/ICB/ Tr-1/WS-02/2013-14, KEIIP/ICB/Tr-1/SD-07/2015-16** and **KEIIP/NCB/TR-1/BR-08A/2015-16** there were scope for further improvement in site management measures as mentioned below,

- Improved discharge of stagnated water from the labour camp (WS-02)
- One construction work camp within STP site needs further improvement in respect of house-keeping and basic facilities to labourers in the construction camp site (SD-07)
- One construction work site within STP requires improved storage and fire prevention facilities (SD-07)
- Complete Use of PPE by contractors' site workers is not always maintained (BR-08A)
- Control of dust at working site within interior construction area (BR-08A)

21. The concerned contractors were instructed verbally and also in writing. During subsequent field visits and from monthly monitoring reports it was observed that such deficiencies are mostly removed and site management has considerably improved.

Table 8: Compliance to EMP for the Package - Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach (KEIIP/ICB/ Tr-1/WS02/2013-14)

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
Pre Construction - Design phase									
1	Site clearance	Site preparation work including necessary clearance and permission	• Tree felling requirement – site environment plan • NOC – paper documents from line agency	All Project locations	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before commencement of final design	Complied Tree felling not required. Design of pipeline alignment modified
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied Site is easily accessible – working location within the Water Treatment Plan premises and near existing jetty
3	Affected utilities	Shifting of affected utilities like electric and telephone poles, pipe lines	• List of affected utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	Specific project location	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Not required now. Utility shifting plan (if any) will be planned before any progress of work
4	Water supply	Health risk due to closure of water supply	• Schedule of closure • Delivery of KMC of potable water to affected people	-	DSC/PMU	Checking of records Visual observation	Environment Specialist of DSC and PMU	Do	Not required as per present nature of work
5	Traffic Management	Planning for Traffic Management	Ensure traffic management plan is part of contract documents and being	-	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Not required as per present nature of work Working location

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
			implemented						within the Water Treatment Plan premises
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Labour camp constructed as per specification. Proper drainage has been developed.
7	Establishing Equipment Lay-down and Storage Area[1]	• Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on–site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all	List of selected location and facility	Proposed locations considered in the package	DSC/PMU	Site visit and checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Storage area inside. Proper storage of fuels, lubricants done. Equipment lay-down area demarcated

[1] Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		storage facilities • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials • These storage facilities (including any tanks) must be on an impermeable surface • Staff must be aware of their potential impacts and follow the appropriate safety measures							
8	Education of site staff on general and Environmental Conduct[2]	• Ensure that all site personnel have a basic level of environmental awareness training • All employees must undergo safety training and wear the necessary protective clothing	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Site Safety training continued for worker and recorded properly
Construction									
9	Materials Management – Sourcing[3]	• Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc), and submit these to the DSC for approval prior to commencement of any work. • Use of Govt. approved	• List of approved quarry sites and sources of materials • Bid document to include requirement for verification of suitability of sources and permit for additional quarry	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Construction Manager, Visit by Environment Specialist and Junior Environmental Scientist on	Complied Approval obtained from PMU and DSC. Procurement continued

[2] These points need to be made clear to all staff on site before the subproject begin.
[3] Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	sites if necessary. • Construction Contractor documentation					30.07.2016 24.08.2016 26.11.2016	
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Campsite	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied mostly. Established within Palta Water Treatment Plant campus. Drinking water and toilet facility available. Housekeeping maintained. Some stagnation of rain water within the camp is noted. Improvement is required- instruction given and action already initiated by the Contractor. Camp site photo attached as **Appendix 3**
11	Landscape and Aesthetics	• Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures • Fencing of storage areas • Disposal of construction debris if any as per mitigation measures • Prepare and implement	• Waste Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Utilization of excess earth done. Demolition waste utilized for land development Material storage at proper place continued Spoil management plan will be applied

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		Waste Management List • Avoid stockpiling of excess excavated soils • Coordinate with KMC for beneficial uses of excess excavated soils							as per EMP (Attached as **Appendix 6)**
12	Dust and Air Pollution[4]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Under Control certification • No fire wood burning is allowed on site • Carry out air quality monitoring	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected. Covering of materials done partially . Water sprinkling done as per requirement. During monsoon period water sprinkling not required During construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles collected

[4] Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions and fires.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
13	Noise level	• Noise producing work needs to be conducted at day time • Regular maintenance of noise producing equipment • Horns not be used unless it is necessary to warn other road users • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s • At sensitive locations, enclosures provided around generator set or other noise producing machinery.	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise producing machinery mobilized at site. PPE utilized as per requirement. During construction monitoring done. Results are attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting of solid waste/silt from waste water generated at construction site	• Areas for stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Drainage of waste water from construction site is done. Improvement is noted
15	Water Quality [5]	• Contractor to ensure run-off from vehicle or plant washing does not enter Hooghly river	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	Complied during construction of Jetty. Water quality

[5] Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Contractor to ensure every effort is made that any chemicals or hazardous substances do not contaminate the soil, Hooghly river, or groundwater on site.							monitoring for River Hooghly done. Results enclosed in **Appendix 7.**
16	Conservation of Natural Environment	• Contractor to ensure removal of only trees that have been marked beforehand • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the sites.	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	To be complied if tree felling required.
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.	Stockpile management	Stockpile / storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Stockpiling of materials done at designated areas
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Site-specific Health and Safety (H&S) Plan under implementation Sample Attached as **Appendix 8**.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at working sites; • Provide H&S orientation training to all new workers • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines • Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection.	workers • Number of accidents • Supplies of potable drinking water; • Record of H&S orientation trainings • Personal protective equipments • Sign boards for hazardous areas such as energized electrical devices and lines, service rooms						H & S training arranged for the labourer on regular basis. Drinking water and first aid box available at site. Insurance arranged for the labourer. Attached as **Appendix 9** Minor accident as reported during report period is enclosed herewith (**Appendix 10**) Overall compliance is satisfactory
19	Social Impacts[6]- Community	• Plan truck routes (for carrying construction materials including pipes)	• Traffic Management Strategy	Project Locations	Contractor	Document check and visual	Environment Specialist of DSC and	Do	Complied Caution tape placed around

[6] Regular communication between the Contractor and the interested and affected parties is important for the duration of the contract.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Health & safety, accessibility	to avoid narrow or congested roads and tourist sites • Contractor to ensure disruption of access for local residents is minimized • Contractor to restrict activities and movement of staff to designated construction areas • Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles • Consideration of public safety - as per prescribed mitigation measures • Contractors to ensure lighting on the construction site • Provide protective fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours	• Complaints from sensitive receptors • Number of signages placed at subproject location			observation	PMU		excavated area as and when required; No permanent barricade required at present
20	Socio cultural resources	• Strictly follow the protocol for chance archaeological finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date Instruction has been given
21	Employment generation	• The use of labor intensive construction measures will be used where	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and	Do	At present local laboures are mostly engaged.

Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject					PMU		List of laborers are attached as **Appendix 11**

Table 9: Compliance to EMP of for the Package - Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method (KEIIP/ICB/ Tr-1/WS & SD-04/13-14)

Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
Pre Construction- Design phase								
1 Site clearance	Site preparation work including necessary clearance and permission	• Tree felling requirement – site environment plan • NOC – paper documents from line agency	All Project locations	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before commencement of final design	Permission obtained for felling of 17 trees along Taratala Road for laying of water main. Compensatory afforestation of 75 trees is recommended in NOC. Tree felling and compensatory afforestation done
2 Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied During laying of pipes, road closed near shaft location. Diversion of traffic at closed part – done.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		traffic in the early stages of the operations during road closure							Access to site maintained after due consultation with traffic dept.
3	Affected utilities	Shifting of affected utilities like electric and telephone poles, pipe lines	• List of affected utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	Specific project location	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Complied as per requirement. Regular consultation with utility dept. carried out
4	Water supply	Health risk due to closure of water supply	• Schedule of closure • Delivery of KMC of potable water to affected people	-	DSC/PMU	Checking of records Visual observation	Environment Specialist of DSC and PMU	Do	Not required now as per present nature of work
5	Traffic Management	Planning for Traffic Management	Ensure traffic management plan is part of contract documents and being implemented	-	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Complied Traffic management plan prepared and approved from traffic / police dept. **Appendix 12** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Rented house has been selected as labour camp.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water							
7	Establishing Equipment Lay-down and Storage Area[7]	• Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on – site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all storage facilities • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials • These storage facilities (including any tanks) must be on an impermeable surface • Staff must be aware of	List of selected location and facility	Proposed locations considered in the package	DSC/PMU	Site visit and checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Proper storage of fuels, lubricants done. Equipment lay-down area demarcated

[7] Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		their potential impacts and follow the appropriate safety measures							
8	Education of site staff on general and Environmental Conduct[8]	• Ensure that all site personnel have a basic level of environmental awareness training • All employees must undergo safety training and wear the necessary protective clothing	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Site Safety training arranged regularly. Awareness program arranged regularly
Construction									
9	Materials Management – Sourcing[9]	• Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc), and submit these to the DSC for approval prior to commencement of any work. • Use of Govt. approved quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	• List of approved quarry sites and sources of materials • Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Construction Manager, Visit by Environment Specialist and Junior Environmental Scientist on 22.07.2016 08.08.2016 10.08.2016 25.08.2016 27.08.2016 16.11.2016 24.11.2016	Complied Approval obtained from PMU and DSC as per requirement
10	Maintenance of Construction	• Establishment of	• Complaints from	Campsite	Contractor	• Visual	Environment Specialist of	Do	Complied Established

[8] These points need to be made clear to all staff on site before the subproject begin.
[9] Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Camp	temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste			inspection of sites	DSC and PMU		within rented house.
11	Landscape and Aesthetics	• Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures • Fencing of storage areas • Disposal of construction debris if any as per mitigation measures • Prepare and implement Waste Management List • Avoid stockpiling of excess excavated soils • Coordinate with KMC for beneficial uses of excess excavated soils	• Waste Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Excess earth and slurry disposed at designated/ approved location Spoil management plan applied as per EMP (Attached as **Appendix 6**) Site photo attached as **Appendix 3.**
12	Dust and Air Pollution[10]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period)	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected. Covering of materials

[10] Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions and fires.

Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	• Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Control Board certification • No fires are allowed on site • Carry out air quality monitoring	and machinery with air pollution control • Water sprinkling arrangement • Cover materials						considered for storage Water sprinkling done as per requirement During construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles and equipment obtained
13 Noise level	• Noise producing work needs to be conducted at day time • Regular maintenance of noise producing equipment • Require horns not be used unless it is necessary to warn other road users • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s • At sensitive locations enclosures provided around generator set or	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise generating problem near the project location. PPE utilized by labourers as per requirement. During construction monitoring was done. Monitoring will be continued as per EMP. Results are

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		other noise producing machinery.							attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting solid waste/silt from waste water generated at construction site	• Areas for stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Arrangement of drainage of waste water from construction locations done
15	Water Quality [11]	• Contractor to ensure run-off from vehicle or plant washing does not enter Hooghly river • Contractor to ensure every effort is made that any chemicals or hazardous substances do not contaminate the soil, Hooghly river, or groundwater on site.	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	No water source near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	15 nos. of tree felling done and compensatory plantation completed with 75 trees

[11] Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the sites.							
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.	Stockpile management	Stockpile / storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Instruction has been given to contractor for stockpiling of materials at designated areas
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for workers • Number of accidents • Supplies of potable drinking water; • Record of H&S orientation trainings • Personal protective equipments • Sign boards for hazardous areas	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Site-specific Health and Safety (H&S) Plan under implementation. H & S training arranged for the labourer on regular basis. Drinking water and first aid box available at site. Insurance arranged for the labourer. Attached as

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at working sites; • Provide H&S orientation training to all new workers • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, appropriate • Disallow worker exposure to noise level greater than85 dBA for a duration of more than8hoursper day without hearing protection.	such as energized electrical devices and lines, service rooms						**Appendix 9.** Minor accident record is attached as **Appendix 10.** Overall compliance is satisfactory
19	Social Impacts[12]- Community Health & safety, accessibility	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites • Contractor to ensure	• Traffic Management Strategy • Complaints from sensitive receptors • Number of signages placed at	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Caution tape placed around excavated area (Ref photo **Appendix 3)** Permanent hard barricade

[12] Regular communication between the Contractor and the interested and affected parties is important for the duration of the contract.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		disruption of access for local residents is minimized • Contractor to restrict activities and movement of staff to designated construction areas • Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles • Consideration of public safety - as per prescribed mitigation measures • Contractors to ensure lighting on the construction site • Provide protective fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours	subproject location						arranged by the contractor with diversion signage Traffic Management Plan under implementation Photo attached as **Appendix 3**.
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of	Do	At present local laboures are

Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	measures will be used where appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject					DSC and PMU		mostly engaged. List of laborers are attached as **Appendix 11**

Table 10: Compliance to EMP of for the Package - Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment (KEIIP/ICB/ Tr-1/SD-05/13-14)

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
Pre Construction- Design phase									
1	Site clearance	Site preparation work including necessary clearance and permission	• Tree felling requirement – site environment plan • NOC – paper documents from line agency	All Project locations	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before commencement of final design	Tree felling not required Discussion continued with utility dept. for getting NOC
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied During laying of pipes, road partially or fully closed near pipe laying area. Improvement is noted on availability of public access at working locations. More attention is paid at narrow lanes.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
									Improvement noted for access to Begore construction site office location
3	Affected utilities	Shifting of affected utilities like electric and telephone poles, pipe lines	• List of affected utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	Specific project location	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Complied as per requirement. Consultation with utility dept. as and when required
4	Water supply	Health risk due to closure of water supply	• Schedule of closure • Delivery of KMC of potable water to affected people	-	DSC/PMU	Checking of records Visual observation	Environment Specialist of DSC and PMU	Do	Not required now as per present nature of work. Will be complied as and when required
5	Traffic Management	Planning for Traffic Management	Ensure traffic management plan is part of contract documents and being implemented	-	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Complied Traffic management plan prepared and approved as per requirement. Arrangement of diversion boards are noted. Overall improvement is recorded **Appendix 12**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	shows traffic management plan Complied. Rented house considered for staying of labourer. Camp has been established within Joka PS campus. Sufficient drinking water, toilet facility noted. Housekeeping improved.
7	Establishing Equipment Lay-down and Storage Area[13]	• Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on – site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all	List of selected location and facility	Proposed locations considered in the package	DSC/PMU	Site visit and checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Proper storage of fuels, lubricants done after necessary instruction. Equipment lay-down area demarcated. Fire prevention facilities arranged.

[13] Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
8	Education of site staff on general and Environmental Conduct[14]	storage facilities • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials • These storage facilities (including any tanks) must be on an impermeable surface • Staff must be aware of their potential impacts and follow the appropriate safety measures • Ensure that all site personnel have a basic level of environmental awareness training • All employees must undergo safety training and wear the necessary protective clothing	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Complied Awareness and toll box training program arranged for contractor. Recoding has been done after necessary instruction. Training document attached as **Appendix 15** Training on regular basis ensured
Construction									
9	Materials Management – Sourcing[15]	• Contractors shall prepare a source statement indicating the	• List of approved quarry sites and sources of	Quarries and material source areas	Contractor	• Checking of records	Environment Specialist of DSC and	Daily visit by construction supervisor of	Complied. Approval obtained from

[14] These points need to be made clear to all staff on site before the subproject begin.
[15] Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc), and submit these to the DSC for approval prior to commencement of any work. • Use of Govt. approved quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	materials • Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation			• Visual inspection of sites	PMU	DSC. Weekly visit by Construction Manager, Visit by Environment Specialist and Junior Environmental Scientist on 22.07.2016 20.08.2016 03.09.2016 04.11.2016 21.11.2016 29.11.2016	PMU and DSC.
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied mostly. Rented house arranged for labourer. Camp has been established within Joka PS campus. Sufficient drinking water, toilet facility noted Improvement of housekeeping noted. instructions issued to the contractor for further improvement

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
11	Landscape and Aesthetics	• Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures • Fencing of storage areas • Disposal of construction debris if any as per mitigation measures • Prepare and implement Waste Management List • Avoid stockpiling of excess excavated soils • Coordinate with KMC for beneficial uses of excess excavated soils	• Waste Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied There is improvement on disposal of excess earth at designated/ approved location. Spoil management plan being applied as per EMP (Attached as **Appendix 6)**
12	Dust and Air Pollution[16]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Control Board certification • No fires are allowed on site • Carry out air quality	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied. Location of stockpiles selected. Covering of materials considered for storage. Water sprinkling done as per requirement. During construction air quality monitoring done as per EMP. (Result certificate shown in

[16] Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions and fires.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		monitoring							**Appendix 7).** Pollution under Control Certificate of vehicles and equipment obtained
13	Noise level	• Noise producing work needs to be conducted at day time • Regular maintenance of noise producing equipment • Require horns not be used unless it is necessary to warn other road users • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s • At sensitive locations enclosures provided around generator set or other noise producing machinery.	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied. No as such noise generating problem near the project location. PPE utilized by labourer as per requirement. During construction, monitoring done. Monitoring will be continued as per EMP. Results are attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting solid waste/silt from waste water generated at construction site	• Areas for stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Arrangement of drainage of waste water from construction locations done
15	Water	• Contractor to ensure run-	Non entry of pollutant in	Project	Contractor	Site	Environment	Do	No water

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Quality [17]	off from vehicle or plant washing does not enter water body • Contractor to ensure every effort is made that any chemicals or hazardous substances do not contaminate the soil, surface water body, or groundwater on site.	water body	Locations		observation	Specialist of DSC and PMU		source near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the sites.	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	No tree felling required till date
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps.	Stockpile management	Stockpile / storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied. Stockpile not obstructing natural flow of water

[17] Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Contractor to ensure all concrete mixing take place on a designated, impermeable surface.							
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at working sites; • Provide H&S orientation training to all new workers • Mark and provide sign boards for hazardous areas such as energized	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for workers • Number of accidents • Supplies of potable drinking water; • Record of H&S orientation trainings • Personal protective equipments • Sign boards for hazardous areas such as energized electrical devices and lines, service rooms	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Site-specific Health and Safety (H&S) Plan under implementation. Sample health and safety plan is attached as **Appendix 8.** H & S training should be more regular with proper recording-instruction given for the improvement Use of PPE – improved. Instructions given for further improvement Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		electrical devices and lines, appropriate • Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection.							Attached as **Appendix 9.** Minor accident record included in **Appendix 10.** Overall compliance is satisfactory
19	Social Impacts[18] - Community Health & safety, accessibility	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites • Contractor to ensure disruption of access for local residents is minimized • Contractor to restrict activities and movement of staff to designated construction areas • Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles • Consideration of public safety - as per prescribed mitigation measures • Contractors to ensure lighting on the construction site • Provide protective	• Traffic Management Strategy • Complaints from sensitive receptors • Number of signages placed at subproject location	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Complied. Caution tape placed around excavated area - improvement noticed Construction work is mostly carried out within narrow lanes where availability of space for placement of hard barricade is a constraint and there are competing users of space. Caution tape placed and flag person placed at working area for smooth movement of locals and

[18] Regular communication between the Contractor and the interested and affected parties is important for the duration of the contract.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours							vehicles. Traffic Management Plan under implementation Placement of more number of caution and diversion boards are noted. Site photo attached as **Appendix 3.**
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	At present local laboures are mostly engaged. List of laborers are attached as **Appendix 11**

Table 11: Compliance to EMP of for the Package - Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP (KEIIP/ICB/ Tr-1/SD-07/15-16)

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
Pre Construction - Design phase									
1	Site clearance	Site preparation work including necessary clearance and permission	• Tree felling requirement – site environment plan • NOC – paper documents from line agency	All Project locations	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before commencement of final design	Tree felling not required till date
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied. Access to site maintained after due consultation with local councilor / authority
3	Affected utilities	Shifting of affected utilities like electric and telephone poles, pipe lines	• List of affected utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	Specific project location	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	No shifting of utilities is required till date
4	Water supply	Health risk due to closure of water supply	• Schedule of closure • Delivery of KMC of potable water to affected people	-	DSC/PMU	Checking of records Visual observation	Environment Specialist of DSC and PMU	Do	Not required now as per present nature of work. Will be complied as and when required
5	Traffic	Planning for Traffic	Ensure traffic	-	DSC/PMU	Observation	Environment	Do	Complied;

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Management	Management	management plan is part of contract documents and being implemented			and document checking	Specialist of DSC and PMU		Traffic management plan prepared; required approvals have been obtained periodically. **Appendix 12** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Partially Complied. Camp has been established within Keorapukur STP. Sufficient drinking water, toilet facility available. Improvement of camp environment-housekeeping, access is required. Sufficient arrangement of beds for worker is also required Instruction has been given to contractor for immediate improvement. Required action initiated by the Contractor; being closely monitored for compliance
7	Establishing	• Choice of location for	List of selected	Proposed	DSC/PMU	Site visit and	Environment	Before start of	Complied

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Equipment Lay-down and Storage Area[19]	equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on – site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all storage facilities • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials • These storage facilities (including any tanks) must be on an impermeable surface • Staff must be aware of their potential impacts and follow the appropriate safety measures	location and facility	locations considered in the package		checking	Specialist of DSC and PMU	physical work & Continuous	partially. Proper storage of fuels, lubricants done Equipment lay-down area not demarcated Fire prevention facilities not yet arranged. Instruction has been given for immediate arrangement of the same; action initiated by the Contractor; compliance is being closely monitored
8	Education of site staff on general and Environmental Conduct[20]	• Ensure that all site personnel have a basic level of environmental awareness training • All employees must	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Complied. Site Safety training and awareness

[19] Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully
[20] These points need to be made clear to all staff on site before the subproject begin.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		undergo safety training and wear the necessary protective clothing							arranged on regular basis
Construction									
9	Materials Management – Sourcing[21]	• Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc), and submit these to the DSC for approval prior to commencement of any work. • Use of Govt. approved quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	• List of approved quarry sites and sources of materials • Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Construction Manager, Visit by Environment Specialist and Junior Environmental Scientist on on 20.08.2016 15.09.2016 09.11.2016 22.11.2016	Complied. Approval obtained from PMU and DSC.
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied partially. Camp has been established recently within Keorapukur STP campus. Sufficient drinking water, toilet facility noted but access to toilet not satisfactory. Proper bed needs to be provided to

[21] Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
									labourers. Waste management and overall improvement of housekeeping is required. Appropriate instructions given. Action initiated by the contractor and compliance is being closely monitored **Appendix 3** shows camp site photo
11	Landscape and Aesthetics	• Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures • Fencing of storage areas • Disposal of construction debris if any as per mitigation measures • Prepare and implement Waste Management List • Avoid stockpiling of excess excavated soils • Coordinate with KMC for beneficial uses of excess excavated soils	• Waste Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Excess earth used mostly for backfilling Spoil management plan applied as per EMP (Attached as **Appendix 6).**
12	Dust and Air Pollution[22]	• Selection of materials storage area • Water sprinkling at	• Location of stockpiles • Complaints from	Project Locations	Contractor	• Checking of records • Visual	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected.

[22] Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions and fires.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Control Board certification • No fires are allowed on site • Carry out air quality monitoring	sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials			inspection of sites			Covering of materials not done properly Water sprinkling not required during construction; air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles and equipment obtained
13	Noise level	• Noise producing work needs to be conducted at day time • Regular maintenance of noise producing equipment • Require horns not be used unless it is necessary to warn other road users • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s • At sensitive locations enclosures provided around generator set or other noise producing machinery.	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise generating problem nearby the project location. PPE utilized by labourer as per requirement During construction monitoring done. Monitoring will be continued as per EMP. Results are attached as **Appendix 7**.
14	Storm water	Arrangement of drainage of	• Areas for	Project	Contractor	• Checking	Environment	Do	Complied as per

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	management	waste water and arresting solid waste/silt from waste water generated at construction site	stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Locations		of records • Visual inspection of sites	Specialist of DSC and PMU		requirement
15	Water Quality [23]	• Contractor to ensure run-off from vehicle or plant washing does not enter Hooghly river • Contractor to ensure every effort is made that any chemicals or hazardous substances do not contaminate the soil, Hooghly river, or groundwater on site.	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	Other than STP pond no water source near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	No tree felling required

[23] Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		sites.							
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.	Stockpile management	Stockpile/ storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Stockpile not obstructing natural flow of water
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for workers • Number of accidents • Supplies of potable drinking water; • Record of H&S orientation trainings • Personal protective equipments • Sign boards for hazardous areas such as energized electrical	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Site-specific Health and Safety (H&S) Plan under implementation. H & S training done on regular basis Use of PPE – complied mostly. Verbal instructions given for complete compliance Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as **Appendix 9.**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		working sites; • Provide H&S orientation training to all new workers • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, appropriate • Disallow worker exposure to noise level greater than85 dBA for a duration of more than8hoursper day without hearing protection.	devices and lines, service rooms						Minor accident record is shown in **Appendix 10.** Overall compliance is Satisfactory
19	Social Impacts[24]- Community Health & safety, accessibility	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites • Contractor to ensure disruption of access for local residents is minimized • Contractor to restrict activities and movement of staff to designated construction areas • Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles • Consideration of public safety - as per prescribed mitigation measures	• Traffic Management Strategy • Complaints from sensitive receptors • Number of signages placed at subproject location	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Complied Caution tape placed around excavated area. Caution board noted Traffic Management Plan prepared and road closure done with due permission from local authority Photo attached as **Appendix 3**.

[24] Regular communication between the Contractor and the interested and affected parties is important for the duration of the contract.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Contractors to ensure lighting on the construction site • Provide protective fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours							
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Partially Complied At present outside and local laboures are engaged. List of laborers are attached as **Appendix 11**

Table 12: Compliance to EMP of for the Package - Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works (KEIIP/NCB/TR-1/BR-08A/2015-16)

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
1	Dust and Air Pollution	• Use of nose mask to check entry of dust through respiratory system, use of hat/ helmet and covering of body is must • Selection of areas for disposal	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Partially complied Instructions given for complete use of nose mask by all workers; Demolition waste

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		of demolition waste- dusty materials • Particularly for outside work dampen access and other cleared surfaces whenever possible and especially in dry and windy conditions to avoid excessive dust. • Indoor air quality monitoring will be conducted • Use tarpaulins to cover sand and other loose material				filled in a bag, stored within office premises and finally transferred to disposal area after due permission. Process was delayed for some time but has now been completed after appropriate instructions were given. Contractor has been advised for covering of waste material during transportation Photo attached as **Appendix 3**.
2	Noise level impact	• Plan activities in consultation with consultant/ project executing agency so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the working area • Indoor noise level monitoring	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Improvement noted on application of mitigation measures. Indoor noise level monitoring has been done. .
3	Waste water discharge. Maintaining aesthetic environment	Waste water which will generate from washing needs to be discharge into nearby underground drain without accumulation at working site	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Done as per requirement
4	Occupational Health & Safety	• Develop and implement site-specific Health and Safety	Contractor	Environment Specialist of DSC and	Document check and visual	Partially complied First Aid box

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		(H&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment; (c) H&S Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents. • Specifically use of nose mask at dust producing area, ear plugs at noise producing area, helmet during demolition & renovation work, use of safety / welding goggles both at welding time and demolition and cleaning time is essential. All accident needs to be recorded in register. • Availability of First aid box needs to be ensured by contractor. Also emergency number and contact number for nearby doctor to be displayed at working site. • Medical insurance needs to be provided to all workers engage with the project • Health and safety training needs to be provided to all new workers. Training program will be conducted regularly by contractor's manager/ safety officer for their worker and by supervision consultant to the contractor's safety officer/ Manager • Mark and provide sign boards		PMU- Day to day monitoring	observation	available at the site; H & S training not done on regular basis. Worker use PPE. Partially. Caution tape, board available at different working areas. Instruction has been given to contractor for further improvement. Action has been initiated by the Contractor and is being closely monitored. Health insurance arranged for the worker. Insurance certificate is attached as **Appendix 9.** Site photo attached as **Appendix 3**.

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. • Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively				
5	Public safety	• During renovation time general public will be not allowed at particular working site • For outside building work safety net and caution tape to be placed. Also movement of public will be restricted.	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied General public not allowed at working sites Outside work not yet started
6	Access to work site	• Keep the site free from all unnecessary obstructions • Alternative access for public to be provided at specific zone	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Alternative access available
7	Storage of materials	• Storage of materials should be at a place without obstructing public movement and vehicle movement within the building campus. • No excess materials stored at working site	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Done as per requirement without obstructing public and vehicle movement
8	Maintaining of safety data sheet by contractor	• Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground • Storage of fuels and hazardous materials (paints & varnish	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Under compliance Hazardous materials like use of paints, varnish just started. Separate storage is required- instruction given to the contractor

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		etc.) as per hazardous materials storage and handling rules • Material Safety Data Sheet (MDDS) for hazardous chemicals should be readily available at working site				
9	Disposal of construction waste/ demolition waste	Waste disposal management plan needs to be prepared. Expected generation of construction waste needs to be assessed. Disposal site is to be selected after complying statutory rules and regulations before starting of disposal. Before acceptance of work all sites to be cleaned and complete removal of waste to be ensured	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Waste disposal process continued

V. ENVIRONMENTAL MONITORING AND EVALUATION

22. In addition to desk reviews and site inspections, monitoring of selected environmental parameters have been conducted during the reporting period. The frequencies of the environmental monitoring activities are commensurate to the type and significance of the impacts. For Tranche 1 subprojects, the parameters to be monitored are ambient air quality, noise levels and for one subproject monitoring has been carried out for river water quality.

23. During year 2014 to 2016 base line monitoring has been conducted for different packages. During construction air quality monitoring has been done for all the packages during said report period. Monitoring and health safety budget of contractor is shown in **Appendix 13.**

24. Base line and during construction air quality monitoring results are shown in **Table 13** below. All test certificates from monitoring agency are disclosed in **Appendix 7.**

25. Salient findings from air quality monitoring are as follows,

- In all cases concentration of SO_2 is within the prescribed standard. At few locations there is marginal increase in SO_2 concentration during construction phase compared to base line level. This increase may be due to local emission from burning of fuels.
- In all cases concentration of NO_x is within the prescribed standard. Concentration of NOx for the package KEIIP/ICB/ Tr-1/WS & SD-04/13-14 has marginally increased during construction which may be due to increased movement of traffic at construction site for transportation of workers and materials.
- In all cases concentration of $PM_{2.5}$ is within the prescribed standard. There is marginal decrease of $PM_{2.5}$ for most of the sites of different packages. For package KEIIP/ICB/TR-1/SD-07/2015-16 $PM_{2.5}$ is marginally increase during construction. For package KEIIP/NCB/TR-1/BR-08A/2015-16 $PM_{2.5}$ concentration during construction was below (46.0 microgram/ cubic meter) the standard. It is noted that level of $PM_{2.5}$ increased considerably during construction of the said package. There is requirement of safety equipment like nose mask during construction work
- In most of the cases during construction, PM_{10} are less than base line concentration and within the standard. For package KEIIP/ICB/Tr-1/SD-05/13-14 PM_{10} concentration was marginally above the standard. Application of provisions of EMP like dust suppression and control of vehicle emission at working sites are to be maintained. For package KEIIP/ICB/TR-1/SD-07/2015-16 PM_{10} is marginally increase during construction. For package KEIIP/NCB/TR-1/BR-08A/2015-16 PM_{10} concentration level increased considerably during construction. Such increase level inevitable due to negligible airflow in a closed space, where pollutant (dust) dispersion is possible by settling and spraying of water. Also there is requirement of use of safety equipment like nose mask during construction work
- In most of the cases concentration of Hydrocarbon is below the detection limit

26. Contractors are being advised regularly to take necessary action on dust suppression by sprinkling of water whenever required.

Table 13: Ambient Air Quality Monitoring Data at working sites

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 µg/m^3	NO_2 µg/m^3	$PM_{2.5}$ µg/m^3	PM_{10} µg/m^3	HC µg/m^3
Rehabilitation and	Proposed Water	Base line	04.03.2015	8.17	34.8	52.63	121.62	3.50

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 µg/m^3	NO_2 µg/m^3	PM_{25} µg/m^3	PM_{10} µg/m^3	HC µg/m^3
Refurbishment of Water Works at Palta and Garden Reach **KEIIP/ICB/ Tr-1/WS02/2013-14**	Treatment Plant – Palta at Monirampur							
	Near Jetty (Intake 2) - Palta at Monirampur	Base line	04.03.2015	7.50	29.92	48.62	112.81	3.50
	Gardenreach Intake point and treatment plant- near Surinamghat	Base line	07.03.2015	7.49	30.16	52.36	121.89	3.20
	Average Base line			**7.72**	**31.62**	**51.20**	**118.77**	**3.4**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	30.09.2015	10.04	23.32	19.95	61.79	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction	30.09.2015	10.96	21.07	22.50	68.33	ND
		Average During construction		**10.5**	**22.19**	**21.22**	**65.06**	**ND**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	11.02.2016	8.87	24.90	21.19	68.26	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction	11.02.2016	9.85	22.23	23.72	73.45	ND
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	27.05.2016.	8.75	25.38	19.95	61.62	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction	27.05.2016.	10.84	26.68	22.44	87.18	ND
		Average During construction*		**9.57**	**24.79**	**21.82**	**72.62**	**ND**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction*	31.10.2016	9.08	23.35	22.47	56.85	**ND**
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction*	31.10.2016	10.10	21.55	18.75	84.22	ND
		Average During construction*		**9.59**	**22.45**	**20.61**	**70.53**	**ND**
Laying of water trunk main from Garden Reach waterworks to Taratala valve	2 no. Shaft D H Road Sakherbazar	Base line	03.01.2015	8.50	35.0	28.62	123.82	
	6 no. shaft Taratala Road	Base line	03.01.2015	8.20	36.54	31.21	126.80	-

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 µg/m^3	NO_2 µg/m^3	PM_{25} µg/m^3	PM_{10} µg/m^3	HC µg/m^3
station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **KEIIP/ICB/ Tr-1/WS & SD-04/13-14**	Jhinjira Bazar							
		Average Base line		**8.35**	**35.77**	**29.9**	**125.3**	
	DH Road Shaft no. 17 near 3A bus stand	During construction	31.07.2015	13.41	38.11	28.86	70.85	ND
	Taratala Road Shaft no. 7	During construction	31.07.2015	15.20	36.15	30.10	80.20	ND
	Taratala Road, Shaft No. – 7 (Tunnel) Brace Bridge	During construction	31.07.2015	14.31	34.20	28.82	73.22	ND
		Average During construction		**14.30**	**36.15**	**29.26**	**74.75**	**ND**
	DH Road Shaft no. 19	During construction	07.12.2015	5.11	40.73	33.67	85.12	ND
	Taratala Road Shaft no. 1	During construction	07.12.2015	16.05	42.72	28.68	78.37	ND
		Average During construction		**10.58**	**41.72**	**31.17**	**81.74**	
	DH Road Shaft 19	During construction	08.04.2016	16.75	41.79	34.96	92.45	ND
	Taratala Road, Shaft 11	During construction	08.04.2016	18.72	45.35	29.96	88.83	ND
	DH Road Shaft 21	During construction	02.06.2016	19.29	45.76	31.02	91.32	ND
	Taratala Road, Shaft 03	During construction	02.06.2016	16.88	43.52	26.02	82.45	ND
		Average During construction		**17.91**	**44.10**	**30.49**	**88.76**	**ND**
	DH Road, Shaft 7	During construction*	19.09.2016.	17.14	43.10	31.25	89.57	ND
	Taratala Road, Shaft 13	During construction*	19.09.2016.	16.14	46.70	27.50	92.53	ND
		Average During construction*		**16.64**	**44.9**	**29.37**	**91.05**	**ND**
Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/Tr-1/SD-05/13-14)**	Nearby Incoming sewer pipeline – SWF & DWF pumping main from Begore Khal Pumping station (PS) – near PS /	Base line	27.12.2014	24.15	48.21	51.19	106.44	-
	Box drain and Begore PS location- near Behala Airport	Base line	27.12.2014	25.33	50.89	57.36	126.84	-
	Near pipe laying work – Junction point of Dakshin Behala Road & Swashan Kalitala road – near Barisha Youth club	Base line	27.12.2014	24.15	49.55	41.15	89.26	-

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 µg/m^3	NO_2 µg/m^3	PM_{25} µg/m^3	PM_{10} µg/m^3	HC µg/m^3
	Near Joka Tram Depot. Pumping station	Base line	27.12.2014	22.22	48.60	37.41	84.24	-
		Average Base line		**23.96**	**49.31**	**46.77**	**101.69**	
	Box drain and Begore PS location- near Behala Airport	During construction	31.12.2015	22.66	42.72	38.75	89.02	ND
	Near Joka Tram Depot. Pumping station	During construction	31.12.2015	22.66	62.59	52.43	124.38	ND
	Panch Kari Ghosh Road	During construction	31.12.2015	20.77	59.61	36.30	87.30	ND
		Average During construction		**22.03**	**54.97**	**42.49**	**100.23**	**ND**
	Box drain and Begore PS location- near Behala Airport	During construction	13.06.2016.	20.11	42.06	40.32	96.53	ND
	Near Joka Tram Depot. Pumping station	During construction	13.06.2016.	25.83	57.43	52.74	117.5	ND
		Average During construction		**22.97**	**49.74**	**46.53**	**107.01**	**ND**
	Begore Khal PS	During construction*	27.09.2016.	17.78	44.61	32.46	91.04	ND
	Joka PS	During construction*	27.09.2016.	22.71	51.60	52.43	139.42	ND
		Average During construction*		**20.24**	**48.10**	**42.44**	**115.23**	**ND**
Rehabilitation and Replacement of GAP sewer and allied works, **KEIIP/ICB/TR-1/SD-07/2015-16**	Sodepur Brickfield Road	Base Line	21.06.2016	11.37	26.11	26.28	79.59	-
	Inside Keorapukur STP	Base Line	21.06.2016	10.42	22.48	23.75	65.48	-
		Average Base Line		**10.89**	**24.29**	**25.01**	**72.53**	**-**
	Sodepur Brickfield Road (Doctor bagan)	During Construction*	10.12.2016*	10.50	28.30	29.52	71.25	ND
	K. K. road pipe laying area	During Construction*	10.12.2016*	11.45	29.32	29.36	80.23	ND
		Average During construction*		**10.97**	**28.81**	**29.44**	**75.74**	**ND**
Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	2nd Floor of the building	Base Line	24.02.2016.	13.0	22.0	21.0	69.0	ND
	4th Floor of the building	Base Line	24.02.2016.	14.0	24.0	32.0	92.0	ND
		Average Base Line		**13.5**	**23.0**	**26.5**	**80.5**	**ND**
	4th Floor of the building	During Construction	23.06.2016.	12.0	26.0	59.0	102.0	-
		Average During Construction		**12.0**	**26.0**	**59.0**	**102.0**	**-**
	2nd Floor of the building	During Construction*	**12.12.2016***	**10.0**	**22.0**	**46.0**	**168.0**	**ND**

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 µg/m^3	NO_2 µg/m^3	PM_{25} µg/m^3	PM_{10} µg/m^3	HC µg/m^3
Standard				**80.0**	**80.0**	**60.0**	**100.0**	

Note- * During construction monitoring period from June to November 2016 – Report periods have been changed as per instructions of ADB to June- November and December-May with the current reporting period being July-November, 2016. Since there was late monsoon in Kolkata, ambient air quality monitoring has been carried out in the month of December 2016 and these data are being included in current SEMR ending November 2016.

Note- *(i) In linear pipeline construction, base line air quality data have been calculated as the average air quality status of the project working area from monitoring at 3 to 4 stations before commencement of the construction work of the package as a whole. This provides a rational basis for comparison of monitored data during construction with the average baseline data as calculated.*
(ii) In linear pipe laying packages the activity locations (sinking of shaft, site camp office, deployment of equipment etc.) shifted as construction work progressed from one site to another. Air quality sampling locations shifted accordingly. Location at which construction is complete is abandoned for new stations where construction has commenced.

27. Base line and during construction ambient noise level data are presented in **Table 14.** Noise level (base line and during construction) is always higher at working locations of package KEIIP/ICB/ Tr-1/WS & SD-04/13-14. Since all the working sites are within the main road and accordingly level of ambient noise is higher. Noise level is comparatively low at Palta water works location, which is at an isolated area away from traffic route. In most of the cases Leq value is near the standard in respect to commercial area standard but above the limit when compared to residential area standard. There is marginal increase of noise level for package KEIIP/ICB/ Tr-1/SD-05/13-14 during construction. For package KEIIP/ICB/TR-1/SD-07/2015-16 during construction noise is marginally decreased and values are within the limit. For package KEIIP/NCB/TR-1/BR-08A/2015-16 during construction noise level is less than base line value. In all the cases mitigation measures need to be applied as per site specific EMP. Particularly use of ear plugs by workers at high noise producing area is necessary. It is ensured that the contractors will strictly implement the action plan as per EMP for reduction of noise level and minimization of noise impact.

Table 14: Noise Level Monitoring Data at Working Sites

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach **KEIIP/ICB/ Tr-1/WS02/2013-14**	Proposed Water Treatment Plant – Palta at Monirampur	Base line	04.03.2015	53.63	49.18
	Near Jetty (Intake 2) -Palta at Monirampur	Base line	04.03.2015	52.19	49.10
	Gardenreach Intake point and treatment plant-near Surinamghat	Base line	07.03.2015	53.57	52.49
	Average Base line			**50.1**	**50.2**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	30.09.2015	56.45	47.32
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction	30.09.2015	61.25	53.08
	Average During construction			**58.8**	**50.2**

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction	11.02.2016	65.29	56.09
	Water Treatment Plant – Palta at Monirampur	During Construction	11.02.2016	67.09	56.65
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction	03.06.2016.	58.28	52.15
	Water Treatment Plant – Palta at Monirampur	During Construction	03.06.2016.	55.10	51.67
		Average During construction		**61.44**	**54.14**
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction*	31.10.2016	63.65	50.59
	Water Treatment Plant – Palta at Monirampur	During Construction*	31.10.2016	69.26	49.47
		Average During construction*		**66.45**	**50.03**
Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **KEIIP/ICB/ Tr-1/WS & SD-04/13-14**	2 no. Shaft D H Road Sakherbazar	Base line	03.01.2015	84.50	-
	6 no. shaft Taratala Road Jhinjira Bazar	Base line	03.01.2015	74.44	-
		Average Base line		**79.47**	
	DH Road Shaft no. 17 near 3A bus stand	During construction	31.07.2015	68.71	-
	Taratala Road Shaft no. 7 near Brace Bridge	During construction	31.07.2015	67.34	-
	Average During construction*			**68.0**	**-**
	DH Road Shaft no. 19	During construction	07.12.2015	68.20	-
	Taratala Road Shaft no. 1	During construction	07.12.2015	60.96	-
	Average During construction			**64.58**	
	DH Road, shaft 19	During construction	08.04.2016.	77.58	-
	Taratala Road, Shaft 11	During construction	08.04.2016.	73.39	-
	DH Road Shaft no. 21	During construction	02.06.2016.	78.90	-
	Taratala Road Shaft no. 3	During construction	02.06.2016.	77.62	-
		Average During construction		**76.87**	-

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
	DH Road Shaft no. 7	During Construction*	19.09.16.	73.17	-
	Taratala Road Shaft no. 13	During Construction*	19.09.16.	62.94	-
		Average During construction*		**68.05**	-
Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/ Tr-1/SD-05/13-14)**	Nearby Incoming sewer pipeline – SWF & DWF pumping main from Begore Khal Pumping station (PS) – near PS /	Base line	27.12.2014	63.97	56.32
	Box drain location- near Behala Airport	Base line	27.12.2014	54.23	49.91
	Near pipe laying work – Junction point of Dakshin Behala Road & Swashan Kalitala road – near Barisha Youth club	Base line	27.12.2014	60.74	52.26
	Near Joka Tram Depot. Pumping station	Base line	27.12.2014	52.77	48.86
		Average base line		**57.92**	**51.83**
	Box drain and Begore PS location- near Behala Airport	During construction	31.12.2015	57.15	51.83
	Near Joka Tram Depot. Pumping station	During construction	31.12.2015	60.05	55.32
	Panch Kari Ghosh Road	During construction **Average During construction**	31.12.2015	55.68 **57.6**	51.15 **52.7**
	Near Joka Tram Depot. Pumping station	During construction	13.06.2016.	50.24	47.42
	Box drain and Begore PS location- near Behala Airport	During construction	13.06.2016.	60.08	55.68
		Average During construction	**55.16**	**51.55**	**55.16**
	Box drain and Begore PS location- near Behala Airport	During construction*	27.09.16	57.50	51.59
	Near Joka Tram	During	27.09.16	63.04	56.98

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
	Depot. Pumping station	construction*			
		Average During construction*		**60.27**	**54.28**
Rehabilitation and Replacement of GAP sewer and allied works, **KEIIP/ICB/TR-1/SD-07/2015-16**	Sodepur Brickfield Road	Base Line	21.06.2016	65.86	51.58
	Keorapukur STP	Base Line	21.06.2016	58.45	50,09
		Average Base Line		**62.15**	**50.83**
	Sodepur Brickfield Road (Doctor bagan)	During construction*	10.12.2016*	54.84	49.59
	K. K. road pipe laying area	During construction*	10.12.2016*	50.30	47.56
		Average During construction*		**52.67**	**48.57**
Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	Business Tower, 2nd Floor	Base Line	24.02.2016.	62.64	-
	Business Tower, 4th Floor	Base Line	24.02.2016.	77.55	-
		Average Base Line		**70.09**	-
	Business Tower, 4th Floor	During Construction	23.06.2016.	82.03	–
		Average During construction		**82.03**	-
	Business Tower, 2nd Floor	**During Construction***	**12.12.2016***	**53.72**	
Standard		**Day time:** Industrial area:75 Commercial: 65 Residential area: 55 **Night time:** Industrial area:70 Commercial: 55 Residential area: 45			

Note- * During construction monitoring from July to November 2016 – Report periods have been changed as per instructions of ADB to June- November and December-May with the current reporting period being July-November, 2016Note *(i) In linear pipeline construction, base line data have been calculated as the average noise level status of the project working area from monitoring at 3 to 4 stations before commencement of the construction work of the package as a whole. This provides a rational basis for comparison of monitored data during construction with the average baseline data as calculated.*
(ii) In linear pipe laying package, the activity locations (sinking of shaft, site camp office, deployment of equipment etc.) shifted as construction work progressed from one site to another. Noise level monitoring locations shifted accordingly. Location at which construction is complete is abandoned for new stations where construction has commenced.

28. Since water source is involved for the package "Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach", water quality was monitored for the said package. Results indicate that concentration for monitored parameters during construction is within the limit except BOD. It is noted that base line BOD level for River water was above the national standard but the present (report period) level of BOD is below that of base line BOD level. Therefore project related activities have not contributed to the current elevated (above national standard) BOD concentration. It is noted during construction period both turbidity and total suspended solids are increased. This is due to monsoon condition when river water is more turbid. **Table 15** shows water quality monitoring result.

29. "During construction" air quality, noise level and water quality monitoring will be continued for all packages as per Environment Management and Monitoring Plan. All monitoring expenses will be borne by contractors from their project Health safety monitoring budget (**Appendix 13).**

30. A performance monitoring fact sheet has been prepared to facilitate tracking and quick reference on environmental monitoring of Tranche 1 subproject packages **(Tables 17 and 18).**

Table 15: Water quality monitoring data for Package KEIIP/ICB/ Tr-1/WS02/2013-14

Sl. No.	Parameters	SW1	SW2	SW3	SW4*	SW5	SW6	SW7	SW8*	Limit**
	Date of sampling	04.03.2015	11.02.2016	18.05.2016	**31.10.2016**	04.03.2015	11.02.2016	18.05.2016	**31.10.2016**	
1	pH	7.27				7.42				**6.5 – 8.5**
2	Total Hardness as $CaCO_3$ (mg/l)	104.0				112.0				
3	Calcium as Mg(mg/l)	33.67	54.6	44.5	**41.8**	33.67	56.6	47.4	**49.1**	
4	Magnesium as Mg (mg/l)	4.8				6.72				
5	Chloride as Cl (mg/l)	23.96	22.0	19.0	**12.1**	23.96	17.1	19.0	**12.1**	**600.0**
6	Iron as Fe (mg/l)	2.5				2.72				**50.0**
7	Arsenic (mg/l)	<0.01				<0.01				**0.2**
8	Cadmium (mg/l)	<0.01				<0.01				**0.01**
9	Hexavalent Chromium (mg/l)	<0.05				<0.05				
10	Copper as Cu (mg/l)	<0.04				<0.04				**1.5**
11	Cyanide(mg/l)	<0.05				<0.05				**0.05**
12	Lead (mg/l)	<0.05				<0.05				**0.1**
13	Mercury (mg/l)	<0.001				<0.001				
14	Nitrate as NO_3 (mg/l)	6.50				8.50				**50.0**
15	Total Dissolved Solid (mg/l)	295.0	203.0	220.0	**136.0**	313.0	191.0	250.0	**146.0**	**1500.0**
16	Phenolic Compounds as Phenol(mg/l)	<0.002				<0.002				**0.005**
17	Zinc as Zn (mg/l)	0.05				0.03				**15.0**
18	Sulphate as SO4 (mg/l)	31.0				29.0				**400.0**
19	Turbidity (NTU)	6.0	238.0	133.0	**234**	7.0	133.0	**116.0**	**291.0**	
20	Residual Free Chloride (mg/l)	<0.04				<0.04				
21	Fluoride (mg/l)	<0.1				<0.1				**1.5**
22	Manganese (mg/l)	<0.1				<0.1				

23	COD (mg/l)	40.0				50.0				
24	BOD (mg/l)	12.0	4.90	7.88	**5.8**	14.0	<2.0	9.2	**8.8**	**3.0**
25	Alkalinity (mg/l)	140.0				140.0				
26	Aluminium (mg/l)	<0.02				<0.02				
27	Boron (mg/l)	<0.1	<0.1	<0.1	**<0.1**	<0.1	<0.1	<0.1	**<0.1**	
28	Total Suspended Solids (mg/l)	37.0	60.0	85.0	**112.0**	42.0	80.0	61.0	**96.0**	

**Limit – BIS 2296, surface water quality standard

Locations: SW1: Ganges River water at Palta intake jetty- upstream (Base line)
SW2: Ganges river water at Palta intake jetty upstream (During construction)
SW3: Ganges river water at Palta intake jetty upstream (During construction)
SW4*: Ganges river water at Palta intake jetty upstream (During construction – Report period)
SW5: Ganges river water at Palta intake jetty - downstream (Base line)
SW6: Ganges river water at Palta intake jetty- downstream (During construction)
SW7: Ganges river water at Palta intake jetty- downstream (During construction)
SW8*: Ganges river water at Palta intake jetty- downstream (During construction- report period)

Table 16: Performance Fact Sheet for Required Environmental Consents/Clearances of KEIIP Tranche 1 (Package-wise)

	Package	Name of Contractor	EMP Part of contract Document(Yes / No)	Environmental Consents / Clearances Required					
				Tree Cutting	Crusher	Batching Plant	Hot Mix Plant	Diesel Generator Set	Pollution Under Control (PUC) Certificates for Contractor's Vehicles
1	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach **(KEIIP/ICB/ Tr-1/WS02/2013-14)**	M/s ITD-CEM India JV	Yes	Not required till date.	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained
2	Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **(KEIIP/ICB/ Tr-1/WS & SD-04/13-14)**	M/s ITD-ITD CEM Jv	Yes	Done after due permission. Compensatory plantation completed	Not required	NR as per present work	NR as per present work	Acoustic type of Generator used. No permission is required. Emission monitoring done.	Obtained
3	Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/ Tr-1/SD-05/13-14)**	M/s Tantia – MPPL (WILO) Jv	Yes	Not required till date	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained

	Package	Name of Contractor	EMP Part of contract Document(Yes / No)	Environmental Consents / Clearances Required					
				Tree Cutting	Crusher	Batching Plant	Hot Mix Plant	Diesel Generator Set	Pollution Under Control (PUC) Certificates for Contractor's Vehicles
4	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP **(KEIIP/ICB/ Tr-1/SD-07/15-16)**	M/s SNET-SSG Joint Venture	Yes	Not required till date	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained
5	Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	M/s S. Mishra Infradev Private Ltd.	Contract clauses related to health and environment attached in the BID document	Not Applicable	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained

Table 17: Performance Fact Sheet for EMP Implementation of KEIIP Tranche 1 (Package-wise)

	Package Number	Name of Contractor	EMP Part of contract Document(Yes / No)	Contractor Social/ Environment Person[25]	Overall Status of EMP Implementation	Field to be Monitored as per EMP											
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources Employment generation
					In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)												
1	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach **(KEIIP/ICB/ Tr-1/WS02/2013-14)**	M/s ITD-CEM India JV	Yes	Nominated	Complied	2	2	2	2	2	n/a	n/a	n/a	2	2	n/a	n/a 2
2	Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **(KEIIP/ICB/ Tr-1/WS & SD-04/13-14)**	M/s ITD- ITD CEM Jv	Yes	Nominated	Complied	2	2	2	2	2	2	2	2	n/a	2	2	n/a 2

[25] Nomination of Environmental & Social Safeguard Officer by Contractor(Nominated / Yet to be Nominated)

	Package Number	Name of Contractor	EMP Part of contract Document(Yes / No)	Contractor Social/ Environment Person[25]	Overall Status of EMP Implementation	Field to be Monitored as per EMP											
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources Employment generation
						In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)											
3	Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment (KEIIP/ICB/ Tr-1/SD-05/13-14)	M/s Tantia – MPPL (WILO) Jv	Yes	Nominated	Complied	2	2	2	2	2	2	n/a	2	n/a	2	2	n/a 2
4	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP **(KEIIP/ICB/ Tr-1/SD-07/15-16)**	M/s SNET-SSG Joint Venture	Yes	Nominated	Complied	2	1	2	2	2	2	n/a	2	n/a	2	2	n/a 1

	Package Number	Name of Contractor	EMP Part of contract Document(Yes / No)	Contractor Social/ Environment Person[25]	Overall Status of EMP Implementation	Field to be Monitored as per EMP											
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources Employment generation
						In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)											
5	Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, (**KEIIP/NCB/TR-1/BR-08A/2015-16)**	M/s S. Mishra Infradev Private Ltd.	Contract clauses related to Safety and Environment added in BID document	No specific person	Complied	2	n/a	2	1	2	n/a	n/a	2	n/a	1	2	n/a 2

Note calculation of numerical value for determining performance status- Calculation is based on addition of numerical value like below-

Package - KEIIP/ICB/ Tr-1/WS02/2013-14= Total score- 2+2+2+2+2+2+2+2 = 16. Number of working field=8, Then-**16/8=2,** More than 1.5 (Complied)

Package- KEIIP/ICB/ Tr-1/WS & SD-04/13-14= Total score- 2+2+2+2+2+2+2+2+2+2+2= 22. Number of working field=11, Then-**22/11=2**, More than 1.5 (Complied)

Package- KEIIP/ICB/ Tr-1/SD-05/13-14= Total score- 2+2+2+2+2+2+2+2+2+2= 20. Number of field=10, Then-**20/10=2**, More than 1.5 (Complied)

Package - KEIIP/ICB/ Tr-1/SD-07/15-16= Total score- 2+1+2+2+2+2+2+2+1= 18. Number of field=10, Then- **18/10=1.8** More than 1.5 (Complied)

Package - KEIIP/NCB/TR-1/BR-08A/2015-16= Total score- 2+2+1+2+2+1+2+2= 14. Number of field=8, Then-**14/8=1.75,** More than 1.5 (Complied)

VI. CONSULTATIONS AND DISCLOSURES CONDUCTED

31. As per approved IEE, consultations and disclosure will be a continuous process throughout Project 1 implementation involving public consultations and focus group discussions. However, no "planned" consultation and disclosures were conducted during the reporting period but informal consultations were carried out with local people, pedestrian, etc.

32. The indicative schedule for consultations and disclosure is presented in **Table 18. Appendix 14** shows sample consultation sheet as provided by the contractor.

Table 18: Indicative Schedule for Consultations and Disclosure

Type of Consultation/ Disclosure	Target Date	Location	Target Participants	Responsible Person and Source of Funds
Local level consultation	Weekly – to be continued	At all construction locations	General public, shop keepers, pedestrian population	Construction supervisor, Environment & safety officer of contractor Project budget – continuous process
Consultation – safety issues, implementation of EMP	During December 2016 to May 2017	At KEIIP office and project site office	Supervisor Engineer, PMU Engineer, all safety and environment staff of contractors	Construction Manager, Environment specialist of DSC and PMU

33. Field level training program has been arranged for contractors, supervisors by DSC's Environment Specialist on safety and environment on regular basis.

34. There are series of informal discussions by the DSC & PMC engineering Consultants with Chief Engineers of KMC and Director General (Projects), PMU mainly on understanding current situation and optimum design to be adopted in order to attain the objectives of taking up the work items.

35. **Appendix 15** indicates sample training documents as submitted by contractors.

VII. GRIEVANCE REDRESSAL

36. **Common Grievance Redress Mechanism**. A common grievance redress mechanism (GRM) has been established for social, environmental or any other subproject related grievances.

37. Grievance Redress Process. PMU will maintain a Complaint Cell at KEIIP office located in 206 A J C Bose Road Kolkata 700017 headed by a designated Grievance Officer (currently the Administrative Officer) under Project Director. The Complaint Cell will also serve as Public Information Centers, where, apart from grievance registration, information on the Project, subprojects, social and environmental safeguards, etc can be provided.

38. At every Borough of KMC under which works are in progress, a Public Relations & Grievance Redressal Unit is to be established for information disclosure on request from public and for receipt of complaints.

39. At Contractors' site offices, complaint and suggestion books will be available for lodging any complaint. The concerned Executive Engineers of KEIIP will monitor these books and if possible take necessary actions for redressal of minor complaints with intimation to the complainant.

40. The Grievance Registration/Suggestion Form will be available at the Complaints Cell and in Borough Offices and will also be downloadable from the KEIIP/KMC websites. Grievances/ suggestions of affected persons can be dropped in suggestion boxes or

conveyed through phone or mail. Affected Persons will also be able to register grievances - social, environmental or other, personally at the Complaint Cell and at Borough offices of KMC. The Grievance Officer and designated official at the Boroughs will be able to correctly interpret/record verbal grievances of non-literate persons and those received over telephone.

41. All complaints (unresolved at local site/Borough level) relating to KEIIP will be sent to the Project Director, KEIIP including those received in the KMC/KEIIP website for redressal The Grievance Officer will resolve simple unresolved issues and in case of complicated issues, consult/seek the assistance of the Environment/Social Specialist of the DSC/PMU. Grievances not redressed through this process within one month of registration will be brought to the notice of the Project Director, KEIIP. Action taken in respect of all complains will be communicated to the complainant by letter, over phone or e-mail or WhatsAp as the case may be.

42. Periodic community meetings with affected communities to understand their concerns and help them through the process of grievance redress (including translation from local dialect/language, recording and registering grievances of non-literate affected persons and explaining the process of grievance redress) will be conducted if required. The above Grievance Redress Process will be discussed with the stakeholders at the proposed disclosure workshop.

43. **Grievance Redressal Committee (GRC).** A PMU level GRC has already been constituted by the Project Director to address grievances. Grievances not resolved at borough level are referred to PMU level. However grievances that cannot be resolved at PMU level will be referred to an apex grievance redress committee (GRC).[26] Still unresolved issues will be referred to an appropriate court of law.

44. The time limit for grievance redressal will be as follows;

- ✓ Site level – 7 days
- ✓ Borough level – 7 days
- ✓ GRC – PMU level – 15 days
- ✓ Apex GRC- 15 days

45. **Consultation Arrangements**. This will include group meetings and discussions with affected persons, to be announced in advance and conducted at the time of day agreed on with affected persons and conducted to address general/common grievances; and if required with the Environment/Social Specialist of PMU/DSC for one-to-one consultations. Non-literate affected persons/ vulnerable affected persons will be assisted to understand the grievance redress process, to register complaints and with follow-up actions at different stages in the process.

46. Record-keeping. Records will be kept by PMU/Borough Office/Contractors' site office of all grievances received including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were in effect, and final outcome.

47. Information Dissemination Methods of the GRM. Grievances received and responses provided will be documented and reported back to the affected persons. (**Appendix 16 -** Sample Grievance Registration Form). The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the offices of the different Boroughs of KMC and web. The phone number where grievances are to be recorded will be prominently displayed at the construction sites.

[26] The apex GRC will have the following members: KMC Commissioner as Chairperson, KEIIP Project Director, Director General (P), KEIIP, Environment/Social Safeguard Officer, Administrative Officer as the convener, representatives of APs, Community Based Organizations (CBOs), and eminent citizens. The GRC must have at least two women members.

48. Periodic Review and Documentation of Lessons Learned. PMU will periodically review the functioning of the GRM and effectiveness of the mechanism, especially on the Project's ability to prevent and address grievances.

49. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting / information dissemination) will be borne by PMU.

50. **Figure 4** shows GRM flow chart.

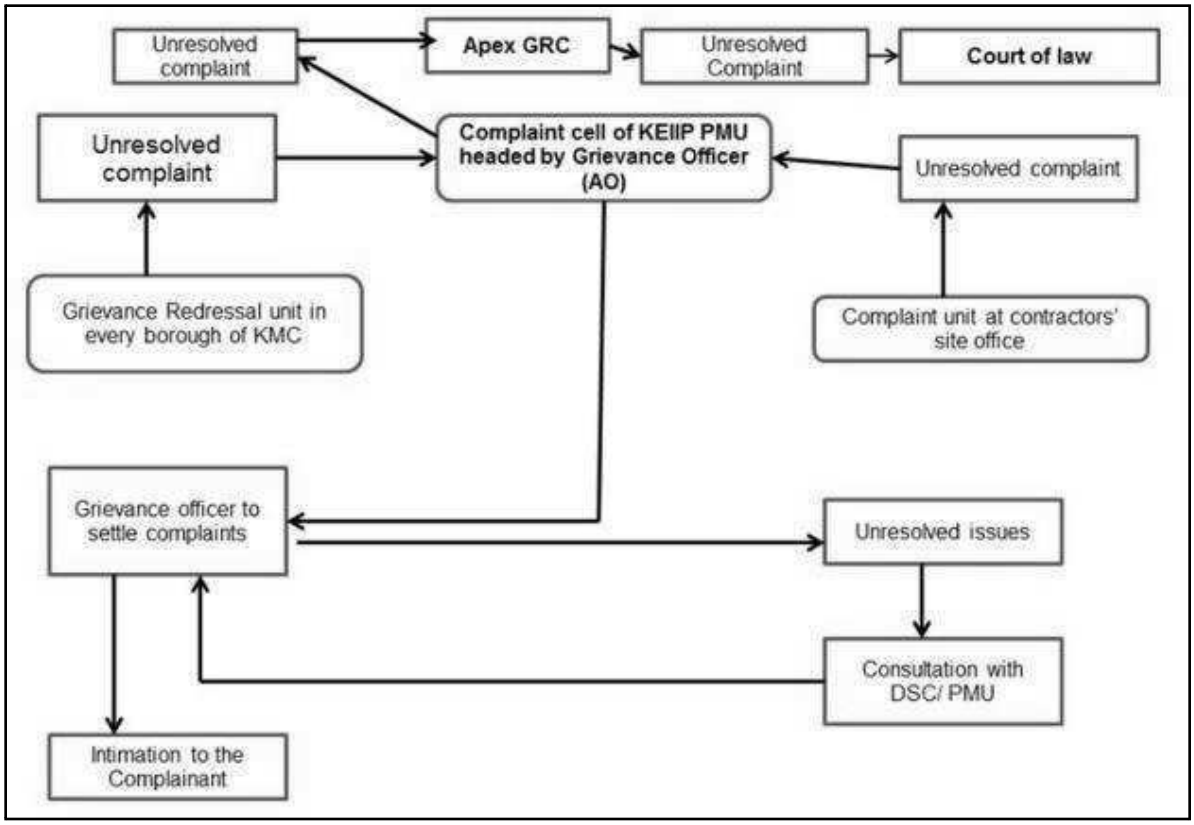


Figure 4: Grievance Redress Mechanism

51. **Appendix 17** sows filled up grievance register as received from contractor.

52. **Appendix 18** shows the details of complaints received by ADB directly and reply forwarded to PMU during the report period and compliance status of those grievances. Complaints related to technical issues are not considered to include in the said SEMR.

VIII. FINDINGS AND RECOMMENDATIONS

53. Based on the foregoing observations, findings and environmental monitoring carried out from July to November 2016, it may be concluded that KEIIP Tranche 1 sub projects have been implemented in almost full compliance of the required environmental safeguards.

54. Minor, localised and short duration non-compliances in some work sites of a few packages during this period have been listed in paragraph 20. It may please be noted that such new non-compliances arose at new sites opened up during the period under review and which may not be ranked as non-resolved non-compliances reported during January to June, 2016.

55. **Table 19** provides the recommended corrective action plan that has been devised and target dates that have been set so as to remove these non-compliances. The concerned

Contractors have been suitably advised. Contractors have been advised to provide written commitment for implementation of corrective action plan.

Table 19: Corrective Action Plan

	Partial complied issues	Action Required	Responsible	Target Date	Indicator of Compliance
1	Discharge of stagnated water from the labour camp not done properly **(KEIIP/ICB/ Tr-1/WS02/2013-14)**	Immediate draining of stagnated water	Contractor	15th January 2017	Site observation and checking
2	One construction camp within SSE STP site needs improvement **(KEIIP/ICB/Tr-1/SD-07/15-16)**	Improvement of housekeeping and access to the camp needs to be improved further. Training for the contractor will be organized for maintaining good housekeeping	Contractor	15th January 2017	Site observation and checking
3	One construction work site within STP requires improved storage and fire prevention facilities **(KEIIP/ICB/Tr-1/SD-07/15-16)**	Improvement of storage and arrangement of fire extinguisher	Contractor	15th January 2017	Site observation and checking
4	Use of PPE by contractors' site workers is not always maintained **(KEIIP/NCB/TR-1/BR-08A/ 2015-16)**	Use of PPE particularly nose mask should be at all times as per site condition and work type. Training for the contractor will be organized for proper use of PPE for maintaining personal safety	Contractor	31st December 2016	Availability and use of PPE
5	Control of dust at working site within interior construction area **(KEIIP/NCB/TR-1/BR-08A/2015-16) and** KEIIP/ICB/Tr-1/SD-05/13-14	Isolation of dust production area for package BR-08A/2015-16, regular cleaning of the working area and use of nose mask by the workers. Water sprinkling at SD-05/13-14 construction area at required intervals is necessary. Contractors are being advised regularly to take necessary action	Contractor	31st December 2016	Site observation and checking

56. **Table 20** lists the implementation status of corrective action (during July-November 2016) in work sites active during January-June 2016.

Table 20: Implementation of Corrective Action Plan

Sr. No	Issues as per SEMR January to June 2016	Action Required as per SEMR January to June 2016	Implementation status of corrective action (during July to November 2016) in work sites of identified Packages active during January to June 2016
1	More comprehensive Tool box	Induction and tool box training	Improvement has been noted

Sr. No	Issues as per SEMR January to June 2016	Action Required as per SEMR January to June 2016	Implementation status of corrective action (during July to November 2016) in work sites of identified Packages active during January to June 2016
	training for labourers is required for active sites of KEIIP/ICB/ Tr-1/ SD-05/2013-14 and KEIIP/NCB/TR-1/BR-08A/2015-16	on regular basis	for package KEIIP/ICB/ Tr-1/ SD-05/201313-14 More regular training is required for the package KEIIP/NCB/TR-1/BR-08A/2015-16
2	Insufficient display and caution board for active sites of KEIIP/ICB/ Tr-1/ SD-05/13-14	Sufficient and proper display board with contact number for grievance registration	Issue has been resolved. Caution board noted
3	One construction camp (newly set up) within SSE STP site needs improvement of KEIIP/ICB/Tr-1/ SD-07/15-16	Improvement of housekeeping and access to the camp needs to be improved	Issue partially resolved in KEIIP/ICB/Tr-1/ SD-07/15-16. But more improvement is required
4	Use of PPE by contractors' site workers is not always maintained (KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/TR-1/BR-08A/2015-16)	Use of PPE should be at all times as per site condition and work type.	Issue more or less resolved for KEIIP/ICB/ Tr-1/ SD-05/2013-14 Further improvement is required for the package KEIIP/NCB/TR-1/BR-08A/2015-16 particularly use of nose mask at dust producing area
5	Further improvement of use of caution tape at excavated area for public safety for KEIIP/ICB/ Tr-1/ SD-05/13-14	Complete use of caution tape at all working sites	Issue resolved – caution tape noted mostly
6	Quicker disposal of excess earth and spoil from active and completed project site (KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14)	Post construction disposal as per EMP	Issue resolved –disposal of excess earth and spoil continued

APPENDIX 1: LOCATION MAP PROJECT AREA

Project Area – water Supply project

Sewerage and Drainage Project Area

LEGEND:-

BOROUGH BOUNDARY

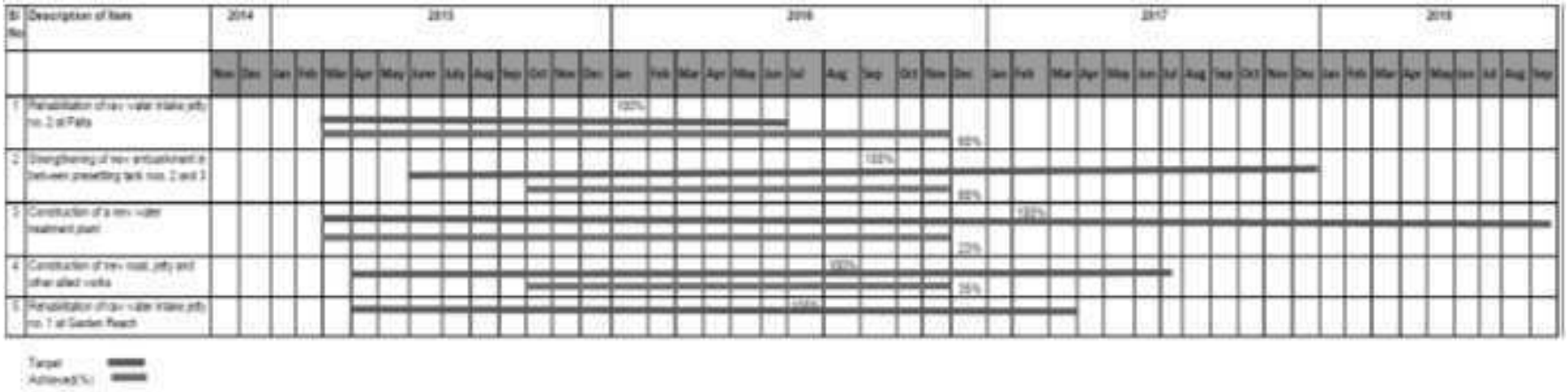
WARD BOUNDARY

AREA TAKEN UP UNDER KEIIP PHASE I

AREA TO BE CONSIDERED UNDER KEIIP FOR S&D DEVELOPMENT

APPENDIX 2: IMPLEMENTATION SCHEDULE

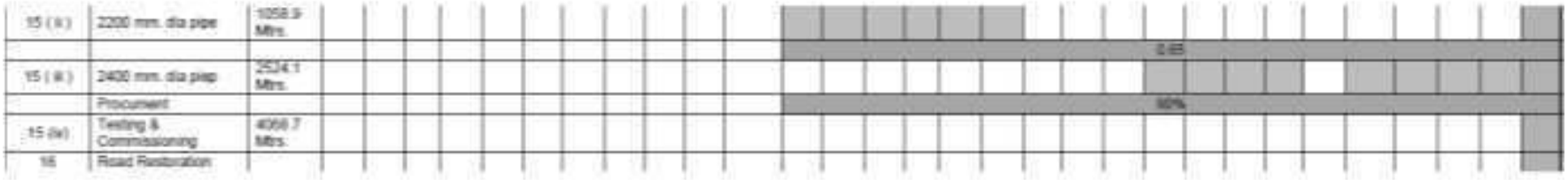
Package- Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach KEIIP/ICB/ Tr-1/WS02/2013-14



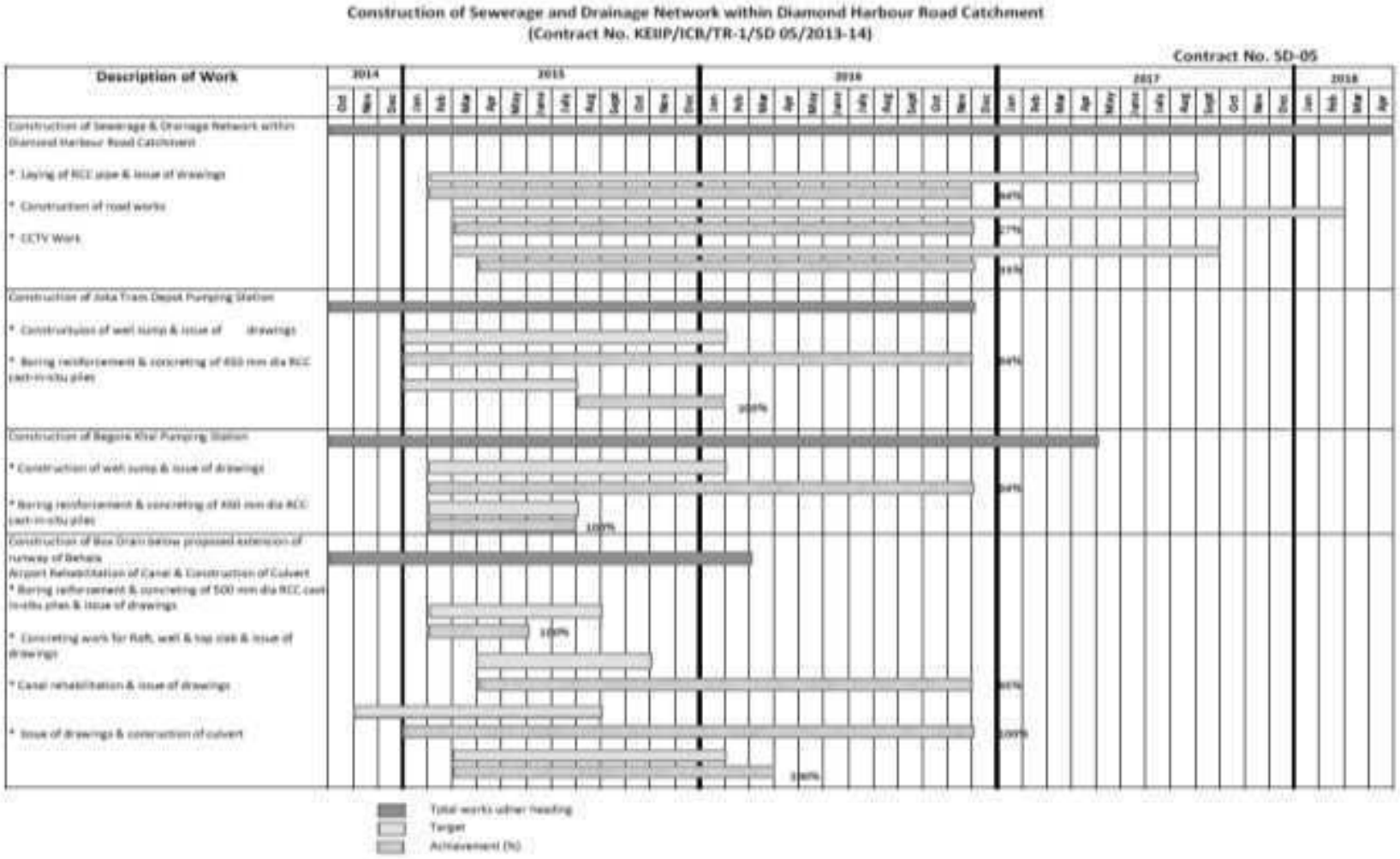
Package- Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method KEIIP/ICB/ Tr-1/WS & SD-04/13-14

LAYING OF WATER TRUNK MAIN FROM GARDEN REACH WATER WORKS TO TARATALA VALVE STATION AND LAYING OF SEWER LINE ALONG DIMOND HARBOUR ROAD PACKAGE NO. KEIIP/ICB/IT-1/WS &SD/04/2013-14

	Activity	Quantity	Year 2014								Year 2015										Year 2016										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
			May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct
1	Issue of LOA																														
2	Receipt of Mobilisation Advance																														
3	Site Survey & Layout fixing																														
4	Soil Investigation																														
5	Approval of Alignment by KEIIP																														
6	Design for shaft/Tunnel submission																														
7	Approval of design by KEIIP																														
8	Site setup (store Office Workshop)																														
9	Utility identification & Relocation																														
10	Mobilisation of MTBM-1																														
11	Mobilisation of MTBM-2																														
12	Mobilisation of MTBM-3																														
13	Construction of Shaft	35 Nos.																													
	Achievement																				95%										
Water Trunk main along Taratala Road																															
14	Supply of 1829 mm. dia MS Pipe	4050 Mtrs.																													
	Procument																				100%										
14 (i)	Cement Mortar Lining	4050 Mtrs.																													
	Procument																				100%										
14 (ii)	Microtunneling work	4050 Mtrs.																													
																					98%										
14 (iii)	Testing & Commissioning	4050 Mtrs.																													
SEWER Line along Sakher Bazar to Zoka D.H. Road.																															
15	R.C.C. Pipe Procurement with laying																														
15 (i)	1600 mm. dia pipe	455.7 Mtrs.																													
	Completed	477.0M												100%																	


15 (ii)
2200 mm. dia pipe
1058.9 Mtrs.
15 (iii)
2400 mm. dia pipe
2534.1 Mtrs.
Procument
15 (iv)
Testing & Commissioning
4068.7 Mtrs.
16
Road Restoration

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment (KEIIP/ICB/ Tr-1/SD-05/13-14)

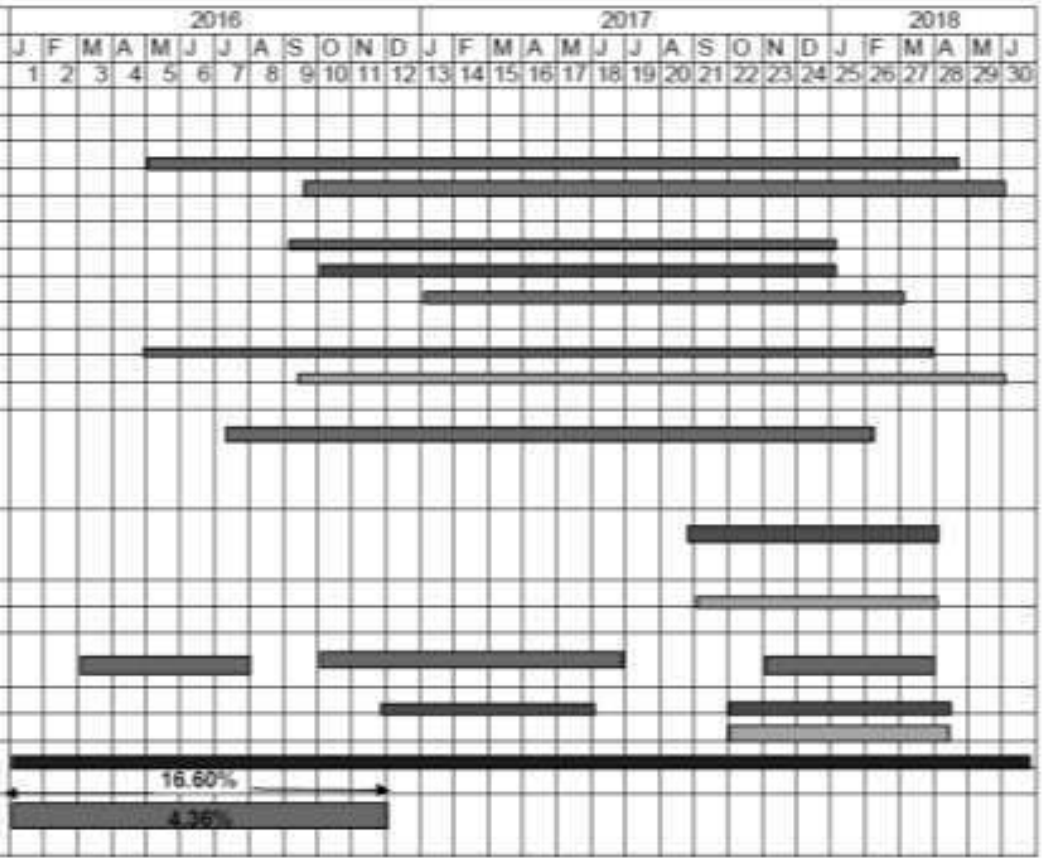


Package- Project: - Construction of S&D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Station(s) and STP (Contract Package: - KEIIP/ICB/TR-1/SD07/ 2015-16)

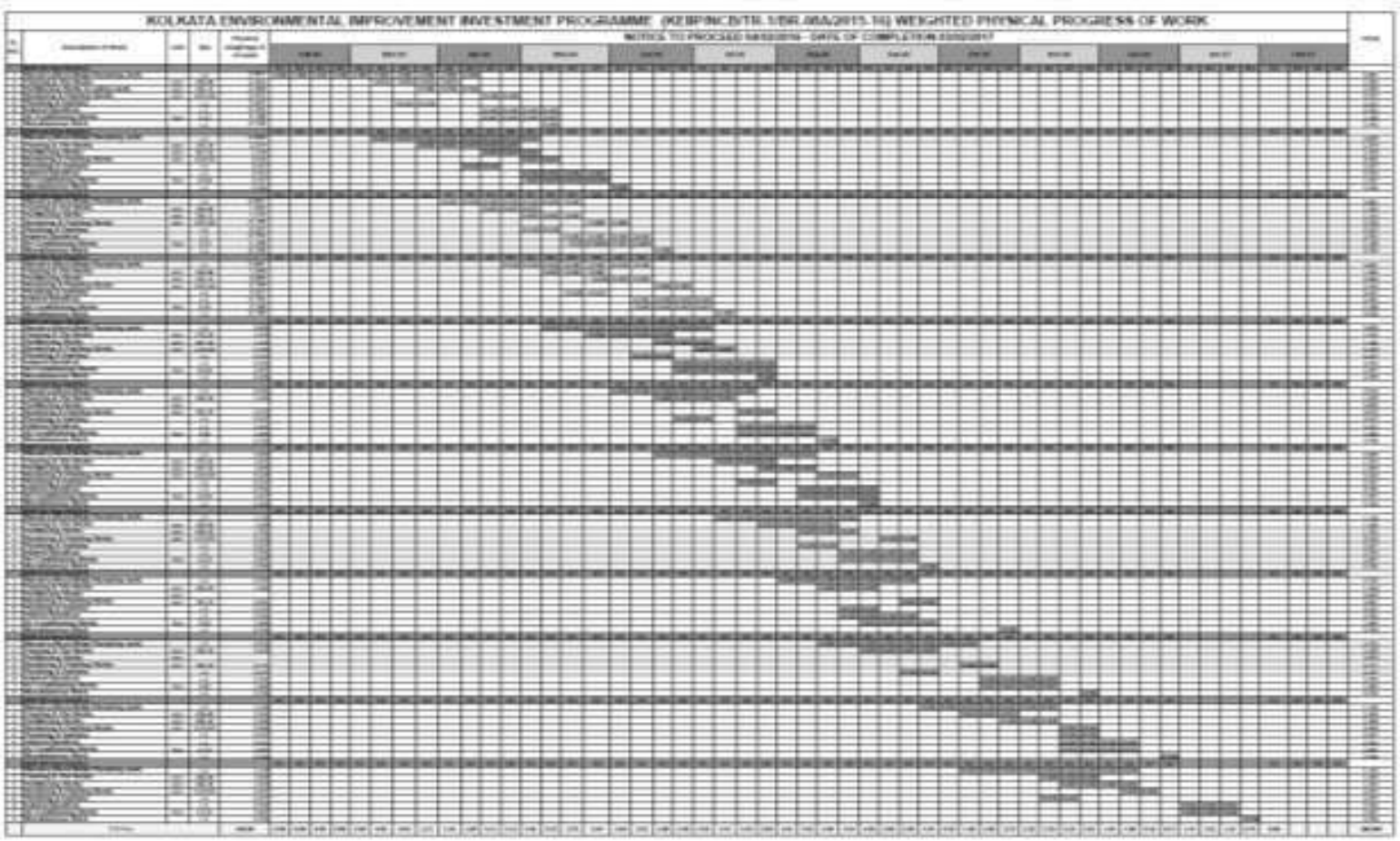
PROJECT PLANNING SCHEDULE

Project: - Construction of S&D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV,
Contractor: - SNET - SSG JV

Sl No	Activities	Qnty
A	**Replacement of GAP Sewer (Br XV)**	
1	Laying of Sewer Line	3260 M
2	Restoration of Road	
B	**Pumping main from Trenching**	
1	Laying of M.S Pipe	1545 M
2	Laying of DI pipe	1200 M
3	Restoration of Road	
C	**S & D network at Ward 122 Borough XIII**	
1	Laying of Sewer Line	4700 M
2	Restoration of Road	
D	**Construction of SSE Pumping Station**	
1	Civil Work	Pump House, Elec. Sub-station
2	Mechanical work	SWF Pump 4Nos DWF Pump 4 Nos
3	Electrical work	
E	**Rehabilitation of SSE STP**	
1	Rehabilitation of Ponds	6 nos. Pond
2	Road works	
3	Mechanical work	
F	Overall Completion	Planned
		Achieved



Package- Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, (**KEIIP/NCB/TR-1/BR-08A/2015-16)**



APPENDIX 3: PHOTO ILLUSTRATION

Package: Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach

Use of PPE by worker during work at jetty area

Separate storage of scrap materials at working site

Work site display board

Use of PPE by workers

Labour camp within the WTP campus

Labour camp – some improvement of housekeeping should be required

Water sprinkling at road construction site for suppression of dust

Water stagnation within the labour camp – needs discharge

Use of Bleaching powder for control of vector borne disease

Safety training for workers

Safety arrangement – jacket available at Jetty location

Safety requirement signage at working location

Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method

Proper storage of cylinder noted at shaft 9 Buro Ashwattala of DH Road micro tunnelling location

Proper Caution board noted near shaft no 9

Placement of proper display board at Shaft no 9

Well stocked first aid box at Shaft 9, near Buro Ashwattala

Worker with proper PPE engaged in welding at Shaft no. 8, Buro Ashwattala

Placement of proper display board with complete road closure at Shaft no 9

All contact number related to safety and grievances available at working site

Worker with proper PPE engaged in welding at Shaft 8 of DH Road

Road divider used with proper colour code at DH road working site

Caution board used to focus to public and driver to avoid reckless driving

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

Access available at working site

Display board noted at pipe laying area

Caution board noted at working area

Use of PPE by workers at site

Road restoration done. Removal of excess earth from road - noted

Use of caution tape and demarcation of camp at Joka Ps area

Labour camp. Cleanliness need to be maintained

First aid box available at working sites

Access available at working site

Partial road closure noted. Use of caution tape noted. Excess earth needs to be remove from construction site

Package- Construction of S&D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Station(s) and STP

Work in progress at Gardenreach area for GAP sewerline. Use of PPE, caution board and tape noted

Labour camp. No beds provided to labouers. Improvement is required

Improvement of housekeeping is required within labour camp

Caution tape and use of PPE by workers – noted at pipe laying area

Access road maintained at working area

Access road maintained at working area

Stabilization work done near STP location of Keorapukur

Use of PPE by worker at pumping station construction site

Pipe laying work within treatment plant area. Partial use of PPE noted. Proper dress need to be maintained

Temporary access provided during rains

Well stocked first aid box available at working site

Display board with complete information

Package - Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works

Work continued renovation of KEIIP office

Work continued renovation of KEIIP office. Generation of dust noted

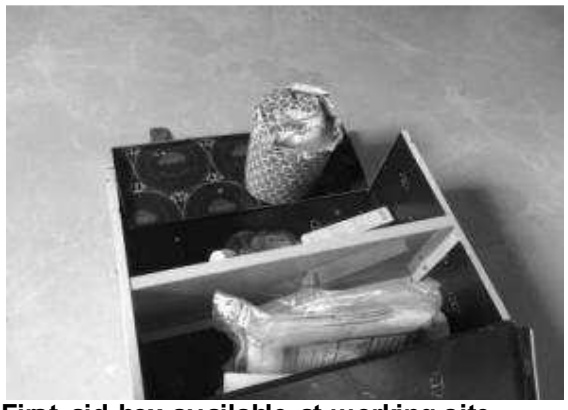
Finished floor before handed over

Use of PPE and safety belt by workers during outside work

Construction waste materials need to be dispose

Caution notice displayed at working area

No use of nose mask by workers



First aid box available at working site

APPENDIX 4: CTE FOR PALTA WTP

W.B. POLLUTION CONTROL BOARD * BARRACKPORE REGIONAL OFFICE *

ORANGE CATEGORY

Sl. No. NO137933

WEST BENGAL POLLUTION CONTROL BOARD

Paribesh Bhawan
10A, Block-LA, Sector-III
Bidhannagar, Kolkata-700 098

Memo No. 2049/NC/15/WPB/BR/214/15 Dated 10.09.2015

From:
Member Secretary,
West Bengal Pollution Control Board

To:
M/s. Indira Gandhi
Palta Water Works, Monirampur,
P.O: Manirampur,
Kolkata - 700120.

WEST BENGAL

Sub: Consent to Establish/NOC from Environmental point of view

Ref: Your ... PMU/252/2015-16 Dated 17/08/15 submitted on 03/09/2015

Dear Sirs,

In r... applic... Es... expansion ... Indira Gandhi ... t...

for ... ation ... tr... an... city- 20 MGD.

at Palta Water ... re... K... Corporation at Monirampur, P... ir... K... P.S: Barrackpore, North Barrackpore Municipality Ward no.19

this is to inform you that this ... by g... Con... from the environmental point of the above subject to the following ... ons ... eci... ... xed.

1. The quality of sewage and trade effluent to be discharged from your factory shall satisfy the permissible limits as prescribed in IS : 2490 (Pt. I) of 1974, and/or its subsequent amendment and Environment (Protection) Rules 1986.

2. Suitable measures to treat your effluent shall be adopted by you in order to reduce the pollutional load so that the quality of the effluent satisfies the standards mentioned above.

3. You shall have to apply to this Board for its consent to operate and discharge of sewage and trade effluent according to the provisions of the water (Prevention & Control of Pollution) Act, 1974. No sewage or trade effluent shall be discharged by you without prior consent of this Board.

4. All emission from your factory shall conform to the standards as laid down by this Board.

5. No emission shall be permitted without prior approval of this Board and you shall apply to this Board for its consent to operate and atmospheric emission as per provision of the Air (Prevention & Control Pollution) act, 1981.

6. No industrial plant, furnace, flues, chimneys, control equipment, etc. shall be constructed/reconstructed/erected/re-erected without prior approval of this Board.

NOC Sl.No. NO137934   M/s. Indira Gandhi Water Treatment Plant,

7. You shall comply with
   (i) Water (Prevention and Control of Pollution) Cess Act, 1977, if applicable
   (ii) Water (Prevention and Control of Pollution) Cess Act, 1978, if applicable.
   (iii) Environment (Protection) Act, 1986
   (iv) Environment (Protection) Rules, 1986
   (v) Hazardous Wastes (Management and Handling) Rules, 1989 and Amended Rules, 2000
   (vi) Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and Amended Rules, 2000
   (vii) Manufacture, Use, Import and Storage and Hazardous Micro-Organisms, Genetically Engineered Organisms or Cell Rules, 1989
   (viii) The Public Liability Insurance Act, 1991 and Amended Act, 1992
   (ix) The Public Liability Insurance Rules, 1991 and Amended Rules 1993
   (x) Biomedical Wastes (Management & Handling) Rules, 1998 and Amended Rules 2000 if applicable.
   (xi) Recycled Plastics Manufacture and Usage Rules 1999, if applicable and
   (xii) Ozone Depleting Substances (Regulation & Control) Rules, 2000, if applicable

8. You will have to abide by any other stipulations as may be prescribed by any authority/local bodies/Government Departments etc.

SPECIAL CONDITION :

See Annexure attached herewith.

Gross capital investment for expansion Rs. 43,48,00,000/- (forty three crore forty eight lac only).

This NOC is valid for 5(five) years from the date of issue of this letter for setting up of the unit only.

/ /

/ /

Any violation of the aforesaid conditions shall entail cancellation of this Consent to Establish (NOC)

Yours faithfully,

05/09/15

Dr. Somnath Narayan
Senior Environmental Engineer
Kankinara Circle Office
W.B. Pollution Control Board

f Member Secretary
West Bengal Pollution Control Board

Memo No. ....   Dated..........................

Copy forwarded for information to :

1. Chief Inspector of Factories, Government of West Bengal, N. S. Building, Kolkata-700 001
2. Director of Industries/Director of Cottage & Small Scale Industries, Government of West Bengal, N. S. Building, Kolkata-700 001
3. Guard file, West Bengal Pollution Control Board.
4. Environmental Engineer, I/II/Alipur R.O./Howrah R.O./Hooghly R.O./B.R.O./D.R.O./Haldia R.O./S.R.O./ Asansol/ Sub-R.O./WBPC Board

Himalaya Bhawan
Delhi Road, Dankuni
Dist. Hooghly

Vill. Panpur
Kalyani Expressway
P.O. Narayanpur
Dist. 24 Pgs. (N)

Sahid Khudiram Sarani
City Centre, Durgapur-16
Dist. Burdwan

10, Camac Street
2nd Floor
Kolkata-700 017

Paribesh Bhawan
10A, LA-Block, Sector-III
Salt Lake City,
Kolkata - 700 098

Block-05 at 40
Flats Complex
Adjacent to Priyambada
Housing Estate
P.O. : Khanjanchak,
P.S. Durgachak
Haldia-721602
Dist. : Purba Medinipur

Paribahan Nagar
Matigara, Siliguri
Dist.-Darjeeling

Satya Chowdhury
Indoor Stadium
Balurghat Road
Malda-732101

Asansol Sub-Regional Office
ADDA Commercial Market (2nd Floor)
Opposite Asansol Fire Station
G.T. Road, Asansol-713 301

Member Secretary,
West Bengal Pollution Control Board

W. B. POLLUTION CONTROL BOARD
KANKINARA
BARRACKPORE REGIONAL OFFICE

Annexure to NOC Sl. No. : NO137933
Special Conditions issued to: M/s. Indira Gandhi Water Treatment Plant, Palta Water Works, Monirampur, P.O: Monirampur, Kolkata – 700120.

A. **Emission:** – Nil.

B. **Effluent :-**

1. Process wash – Water generated from rinsing and backwashing of filter media should be recirculated.
2. Domestic – to be treated through septic tank to municipal drain.

C. **Solid Waste:** Sludge generated from the water treatment plant to be disposed off in an environment friendly manner.

D. **General :-**

1. Water shall be sourced from the Hooghly River.
2. The surface water treatment system shall consist of flash Mixing, flocculation, inclined plate settling, rapid sand filtration, Chlorination & sludge handling system.
3. All sorts of precautions should be taken as per statutory rules for handling and storage of chlorine. Explosive licence should be obtained from appropriate authorities for handling and storage of Chlorine.
4. No additional machinery /equipment can be installed without prior permission from WBPCB. No change in raw materials, products, production capacity and manufacturing process shall be made without prior permission from the Board.
5. Noise Control – Ambient noise level not to exceed the permissible limit.
6. Work shall be done under covered shed for noise reduction.
7. Good housekeeping to be maintained.
8. Tree planting – saplings – along the periphery of the unit.
9. 'Land Conversion Certificate' to be obtained.
10. 'Consent to Operate' to be obtained from the State Board before commissioning of the unit.
11. Provision of drinking water & wastewater disposal shall be ensured for labour camps. Proper sanitation facilities shall be provided for construction workers to ensure environmental sanitation. Health and safety of the workers shall be ensured during construction.
12. The project proponent shall take necessary care not to cause any inconvenience to the residents of surrounding neighbourhood. Regular supervision shall be in place all through the construction phase so as to avoid disturbance to the surrounding.
13. The Project Proponent will ensure that no accumulation of any kind of water occurs within the project area to prevent breeding of various disease spreading vectors.
14. Ground water shall not be abstracted without prior permission of the Local Body as well as the Competent Authority as per the West Bengal Ground Water Resources (Management, Control and Regulation) Act, 2005.
15. The unit shall abide by the West Bengal Trees (Protection and Conservation in Non-Forest Area) Rules,2007. Adequate green belt shall be developed.
16. No tree can be felled without prior permission from the Tree Cutting Authority constituted as per the West Bengal Tree (Protection and Conservation in Non-Forest Area) Act, 2006 and subsequent rules.
17. No water body shall be filled and no embankments shall be cemented. The water body, if any, is to be kept in natural conditions without disturbing the ecological habitat.
18. No expansion of the project shall be undertaken without prior permission of the State Board.
19. This NOC is valid for 5(five) years for setting up the unit effective from the date of issuance of Environment certificate.

W.B. POLLUTION CONTROL BOARD

09/09/15

Senior Environmental Engineer
Dr. Somnath Narayan
Senior Environmental Engineer
Kankinara Circle Office
W.B., Pollution Control Board

consent to operate and atmospheric emission as per provision of the Air (Prevention & Control Pollution) act, 1981.

6. No industrial plant, furnace, flues, chimneys, control equipment, etc. shall be constructed/reconstructed/ erected/re-erected without prior approval of this Board.

APPENDIX 5 SAMPLE SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN

Site Specific Environmental Management Plan

DECEMBER- 2016

PROJECT: **LAYING OF WATER TRUNK MAIN FROM GARDEN REACH WATER WORKS TO TARATALA VALVE STATION AND LAYING OF SEWER LINE ALONG DIAMOND HARBOUR ROAD BY MICROTUNNELING METHOD**

Contract No: **KEIIP/ICB/TR-1/WS & SD-04/2013-14**

PROGRAM: **KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)**

EMPLOYER: **KOLKATA MUNICIPAL CORPORATION (KMC)**

CONTRACTOR: **ITD – ITD CEM JOINT VENTURE**

Prepared by

ITD-ITD CEM JOINT VENTURE

Pre Construction and Construction phase Site Specific Environmental Management Plan

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Climate	The nature and intensity of rainfall events in an area, has implications for storm water management. Smoke from burning activities could be wider spread on windy days especially when dust could be blown off site.	Seasonal climatic variations during scheduling of construction activities in the area will be followed. Any excavation work will be done during dry season Storm water will be controlled as per method approved by PMU. As per company Health Safety & Environment (HSE) policy no open fires will be allowed	HSE work permit system of the company will be followed.
Air Quality	Sensitive receptors (e.g. hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts during the construction phase (from the proposed detour). Fugitive dust can also impact on roadside air quality during construction. Exhaust fumes from construction machinery, and potential smoke from cooking fires. Burning of waste and cleared vegetation Odors from use of toilet 'facilities' other than provided facilities.	Guidelines that deal with the control of air pollution and dusts as per Environmental Management Plan (EMP) have been followed Compliance with the Air Act. has been ensured Compliance with emission standards has been ensured Air quality monitoring for base line environment is already taken up. Which will be continued during entire construction period Construction equipment and vehicles will be maintained regularly. Pollution Under Control Certificates have been collected for the vehicles presently engaged in project activity Materials carrying vehicle suitably cover. Covering of materials carrying vehicles-reducing dust hazard Covering or damp down sand/ earth stockpiled at site will be maintained as per site condition Open fires will be fully avoided at working sites Portable toilets have been provided at all working locations	Air quality Monitoring data will be included in Environmental Monitoring Report
Geology and soil	Strong water flows into open excavations below the water table will occur, causing micro-tunnel collapse. Layers of mixed fill cover natural ground surface in many places. Contamination from spillage of petroleum products, spent engine oil and oil leaks from construction vehicle maintenance taking place on site.	TBM will used for micro tunnelling where proper drainage system is include. That drainage system shall be check regularly to control runoff from the micro-tunnels and open areas in line with topographical features of the site Rehabilitation at all sites during construction including stockpile area, temporary access and hauling routes, as soon as possible after the disturbance has ceased. Company to exercise strict care in the disposal of construction waste, with proof of disposal at an approved site provided after offloading each waste load and this logged/registered. Solid waste will be managed according to the following preference hierarchy: reuse, recycling and disposal to designated areas. If oil spills occur, contaminated soil will be dispose at a disposal site in consultation with WBPCB.	Maintaining our company's policy for Waste Management & also follow up the requirements of bid documents.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		Stockpile subsoil and overburden in all construction and lay down areas. Concrete plinth Tray / Bin has shall be provided to avoid land pollution.	
Drainage and hydrology	The proposed development is situated within an existing built up area. Due to the nature and locality of the subproject there is unlikely any significant impacts on water resources within the immediate area.	The site surface has been engineered and shaped in such a way that rapid and efficient evacuation of runoff is achieved. Pipeline is as a depth of 6 meter from ground level as indicated in tender. No major ground disturbance has been observed till now Waste management practices will be maintained Transport, storage, handling and disposal of hazardous substances will be done as per prevailing laws and approval of concerned authority	
Establishing Equipment Lay-down and Storage Area	Affect social life, public and transport movement	Choice of location for equipment lay-down and storage areas will be taken into account as per site topography and water erosion potential of the soil. Impervious surfaces would be provided where necessary Storage area secured so as to minimize the risk of crime. They shall also be safe from access by children / animals etc. It is very important that the proximity of residents, businesses, schools etc. will be taken into account when deciding on storage areas for hazardous substances or materials. Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area Equipment lay-down and storage areas have been designated, demarcated and fenced if necessary. Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used would be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s).	
Biodiversity Fauna and Flora	The proposed development is situated within an existing built up area. No areas of ecological diversity occur within the subproject location. Due to the nature and locality of the subproject there is unlikely to any significant impacts on biodiversity within the area The pipe laying for the transmission mains may however affect existing roadside trees.	Divisional Forest Officer, Utilization Division, Kolkata given permission of felling of 17 trees along Taratala Road for laying of water main, and at the same time instructed to plant 75 trees along the road as compensatory afforestation. Work has been completed No faunal activity within the impact zone Landscaping will be undertaken with locally indigenous species and low maintenance requirements.	
Land Uses	Due to the location and nature of the subproject, there will be interference	Project executing agency and consultant have consulted with various organizations, departments, etc within the area and will be continued during	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	with access Existing public transport facilities and operations will be affected by the road closure and detours. Shops and establishments are located along the transmission mains alignment therefore will need to be relocated during construction. This may impact on livelihoods. There will be disruptions to health services, education services, local businesses, transport services, pedestrian movements, due to traffic and construction related noise, visual, and air pollution.	the construction phase. HSE caution board has been display at all site location to aware people Walkways and metal sheets will be provided if required to maintain access across for people and vehicles. Workforce will be increased in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. Businesses and institutions will be consulted regarding operating hours and factoring this in work schedules. Sign boards to be provided for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	
Infrastructure and Services	There is likely to have temporary disruption of infrastructure and services during the pipe laying of the transmission mains. There are a number of existing infrastructure and services (roads, railway lines, telecommunication lines, power lines and various pipelines within the vicinity of the subproject.	Utility shifting will be done by utility agency prior to commencing pipe laying/micro-tunnelling. Keep construction-related disturbances to a minimum. Affected service providers will be consulted regarding impacts on access to infrastructure and services and alternatives. Affected communities or businesses will be consulted prior to foreseeable disruptions, for example notifying residents of a temporary severance of water supply. Executing agency and consultant have consulted with various organizations, departments, to provide access points for infrastructures and services. Regular monitoring and resolving the complaints by the public will be done by company/ DSC/ KMC	
Traffic	Increased volume of construction vehicles on the roads may lead to increased wear and tear of roads in the vicinity of the subproject site. Road safety concerns due to slow moving construction vehicles. Traffic flow within the vicinity will be affected. The temporary road closure will result in a decrease in overall	Traffic Management Plan is prepared and permission is obtained from Traffic Police Dept. TMP ensured safety of all the road-users along the work zone and to address: (i) protection of work crews from hazards associated with moving traffic; (ii) mitigation of the adverse impact to the road capacity and delays to the road-users; (iii) maintenance of access to adjoining properties; and (iv) issues that may delay the subproject works. Schedule transport and hauling activities will be plan during non-peak hours Site will be free from all unnecessary obstructions. Affected sensitive receptors if any will be notified by providing sign boards informing nature and duration of construction works	Before starting of project activities on the road TMP needs to be approved from DSC/ KMC and Traffic Police Dept.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	network performance in terms of queuing delay, travel times/speeds. The road closure will impact on a public transport operations and routing. On street parking and loading bays will be affected by the proposed road closure. Pedestrian movements will be affected by the road closure.	Privately-owned public transport operators will be negotiated regarding the affected public transport facilities and routing. Business owners and social service operations will be negotiated regarding the loss of parking and loading bays. Clear roads signs has been arranged and to be maintained for the full length of the construction period. City Traffic Police will be available on site (as per requirement). All working sites barricaded Communicate will be done for road closure/diversion together with the proposed detour via advertising, pamphlets, road signage, etc. The implementation of the road detour is also dependent on advance road signage indicating the road detour and alternative routes. Construction area clearly defined Deliveries during peak traffic hours will be not allowed	
Health and Safety	Danger of construction related injuries. Open fires in construction camp can result in accidents Safety of workers and general public must be ensured. Poor waste management practices and unhygienic conditions at temporary ablution facilities can breed diseases. Standing water due to inadequate storm water drainage systems, inadequate waste management practices, pose a health hazard to providing breeding grounds for disease vectors such as mosquitoes, flies and snails. The use of hazardous chemicals in the micro-tunnelling and restoration of roads can pose potential environmental, health and safety risks. Road safety may be affected during	Implement good housekeeping practices at the site office, working area. Strictly implemented health and safety measures and audit on a regular basis. Construction site – particularly shafts area already barricaded . Warning signs has been proved at hazardous working areas. Working area clearly demarcated, barricaded to protect pedestrians from open areas- Jacking and receiving pits Thoroughly trained workers assigned to dangerous equipment. Waste management practices will be well undertaken Speed and movement of construction vehicles restricted Personal Protective Equipment are provided to all workers Visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas have been ensured First Aid system available at working sites Medical insurance provided to workers Drinking water arranged at working sites Mark and provide sign boards for hazardous areas Signage has been in well known to, and easily understood by workers, visitors, and the general public as appropriate. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.	Company's health and safety guidelines will be followed

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	construction, especially when traffic is detoured.		
Noise and Vibrations	Sensitive receptors (hospitals, schools, religious places) may be affected temporarily by increased traffic and related impacts Use of heavy vehicles and equipment may generate high levels of noise. Vibrations resulting from bulk earthworks, micro-tunnelling and compaction may create significant disturbances to nearby people and businesses. Disturbance from afterhours work	Construction activities to be restricted at reasonable working hours near any sensitive receptors. Adjacent landowners will be informed about noisy activities Ensured that machinery in a good state of maintenance. Maintenance of silencers to all machinery is ensured Base line noise level monitoring has been conducted near project sites	Noise level Monitoring data will be included in Environmental Monitoring Report Maintain maximum sound levels not exceeding 75 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s
Aesthetics, Landscape Character, and Sense of Place	The presence of heavy duty vehicles and equipment, temporary structures at site office, stockpiles, may result in impacts on aesthetics and landscape character	Storage areas fenced properly. Solid waste will be manage according to the following preference hierarchy: reuse, recycling and disposal to designated areas Removal of all wreckage, rubbish from the sites should be done at earliest Waste needs to dispose at suitable location after taken permission from DSC/ KMC Except few cases mature trees on and around the site remain untouched Unwanted material and litter will be remove at certain intervals	Excavated soils are utilized for filling purpose. Company's policy for Waste Management & also follow up the requirements of bid documents. The no objection certificate from Amgachia Gram Panchayat is enclosed.(ref to spoil management plan)
Construction camps	Affect local environment – soil, air, noise and impact on vegetation	Till date not required. Only site office has been established	
Workers Conduct	Construction workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering.	Ensure strict control of labourers Labourers covered under group insurance Working hours will be fixed as per rules Littering at project sites is being avoided Overnight accommodation will be provided as per requirement. – Still now not required	Company policy will be followed
Employment	The subproject will provide	Local Workers/labourers are mostly engaged at site	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Generation	employment opportunities for local people during construction. Expectations regarding new employment will be high especially among the unemployed individuals in the area. Labour gathering at the site for work can be a safety and security issue, and must be avoided. The training of unskilled or previously unemployed persons will add to the skills base of the area.	Construction materials will be procured from local market	
Archaeological and Cultural Characteristics	The proposed development will not require demolition of ASI- or state-protected monuments and buildings	There is no Heritage or archaeological protected sites. Construction staff members would be aware of the likelihood of heritage resources being unearthed and of the scientific importance of such discoveries. Building and other construction workers Act 1996 to follow	
Social Impacts	Impact on local social environment	Restrict activities and movement of staff to designated construction areas. ITD will assist in locating DSC Environment Specialist and/or PMU Environment Coordinator in the event construction staffs is approached by members of the public or other stakeholders.	
Security and Safety	Affect project activity and impact on workforce	Lighting on site is provided maximum security and to enable easier policing of the site, without creating a visual nuisance to local residents or businesses. Material stockpiles or stacks, such as, pipes will be stable and well secured to avoid collapse and possible injury to site workers / local residents. Flammable materials will be stored as far as possible from adjacent residents / businesses.	

APPENDIX 6: SPOIL MANAGEMENT PLAN

ITD CemIndia (Joint Venture)

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

SPOIL MANAGEMENT PLAN (SMP)

NAME OF PROJECT: REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDEN REACH .

▪ **1.0**	▪ **PURPOSE**
	To describe how the project will manage the spoil generated and reuse related to design and construction works.
▪ **2.0**	▪ **SCOPE**
	The procedure is applicable to ITD CEMINDIA (JOINT VENTURE) sites and depots.
▪ **3.1**	▪ **RESPONSIBILITY**
	Project In charge is responsible for its implementation. Corporate Head EHS is responsible for its review and modification.
3.2	**RESPONSIBILITY AND AUTHORITY FOR EHS MANAGEMENT**
	RESPONSIBILITY Project In charge (PI) • The project PI will have overall responsibility of EHS Management at the site and improving safety and health in all areas. He shall: • Comply with Client's requirements, HSE-Policy of the company and relevant statutory requirements that are applicable to the relevant work. • Ascertain that all plants and machinery utilized at the project site meets the safety standard and are safe for use. • Get familiar with and demonstrate his commitment to continual improvement in EHS performance; • Ensure that all personnel are aware of commitment to environmental protection and worker safety; • Monitor EHS performance of the personnel and activities under his control; • Ensure that safe system of work are implemented and maintained by the project Engineers / Supervisors / Foreman and employees at the work site. • Ensure that Site EHS Plan is accessible to all relevant parties; • Ensure that sufficient induction training for all employees and workers is given before commencement of work at site and subsequently for new inductees; • Undertake program of regular EHS Inspection at site. • Arrange and chair monthly Site EHS Management Review Meeting.

Site/Front In-charge

The Site/Front In-charge will be responsible to the PM for implementation of EHS operational control procedures. In the absence of PM, he would take control of the Site. His duties are similar to that of the PM.

Site Engineers/Supervisors

- They will be responsible to the PM / Site / Front In-charge for implementing the requirements of this plan. In particular they are required to: -
- Be familiar with Site EHS Plan;
- Maintain safe working conditions and good housekeeping in all areas under his supervision.
- Enforce use of PPE as requested by Project Specific Rules and regulations.
- Liaise and cooperate with Site Safety EHS Officer and ensure that defects brought to attention are corrected.
- Immediately Inform & report to the EHS-Officer while any accident, near misses, dangerous occurrence, occupational poisoning or diseases shall be noticed within the project sites.
- Plan safety in accordance with the approved work methodology for daily work activities.
- Prepare S.O.P and GRA for each activity and it should be explained to employee before begins work.
- Establish and maintain proper communication with all workers with regard to EHS; and
- Provide proper supervision for the work.

Environment, Health & Safety (EHS) Officer

He will be accountable to the PM for fulfilling the duties assigned to him and ensure implementation of EHS Plan.

His duties will include: -

- Monitor and advise relevant personnel on compliance with EHS statutory obligations at the site;
- Facilitate inclusion of safety elements into work Method Statement.
- Highlight the requirement of safety through Tool-Box / other meetings.
- Conduct investigation of all accident/dangerous occurrences and recommend appropriate safety measures.
- Advice & co-ordinate for implementation of operational control procedures etc.
- Convene safety meeting & minute the proceeding for circulation & follow-up action.
- Provide copies of site / office inspection report to relevant managers;
- Plan procurement of PPEs and safety devices and inspect their healthiness.
- Report to PM/Divisional Manager on all matters pertaining to status of safety and promotional program at site level.
- Facilitate administration of FIRST – AID.
- Facilitate screening of workman and safety induction.

	• Conduct fire drill and facilitate emergency preparedness. • Design campaigns, competitions and other special emphasis programs to promote safety in the work place. • Notify site personnel non-conformance to safety norms observed during site visits / site inspections. • Attend and participate in Site EHS Management Review Meetings; • Access and advise PM on the perceived EHS training needs of project personnel; • Monitor EHS performance of subcontractors and make appropriate recommendations for performance improvement. **Employees** All employees will be accountable for conforming to the requirement of the EHS Plan and statutory requirements. In particular every employee will be required to: - • Take care of environmental protection and safety of himself & others; • Co-operate to fulfill statutory EHS obligations; • Co-operate in pursuit of continuous EHS performance Improvement; and • Conform to requirement of Project EHS plan. • Report defects in lifting appliances, lifting gears, transport equipments and any other equipments or tools & tackles to your immediate superior. • Not to remove or interfere with any fencing, gangway, ladder, covering, life saving appliances, lighting and other things whatsoever required by site safety rules & regulations. • Take care of personal protective equipment • Don't let your work put another worker in danger. • Use only means of access provided for specific work at site. • Avoid horseplay, practical jokes or other activities to create a hazard. • Don't use drugs or alcohol on the job. • Keep the latrines, urinals, wash points, canteen and other facilities provided in a clean and hygienic condition • Report any unsafe work practice and any injury or accident to your supervisor.
▪ **4.0**	▪ **DEFINITIONS**
	Project In charge: Person responsible for the execution of the project.
▪ **5.0**	▪ **LEGAL REQUIREMENT**
	☞ The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule ☞ Environmental Protection Act 1986. ☞ The Water [Prevention & Control Of Pollution] Act – 1974 and Rules 1975 ☞ The Water [Prevention & Control Of Pollution] CASs Act-1977 and Rules-1978 as amended in 2003 ☞ The Air [Prevention & Control Of Pollution] Act – 1981 and Rules 1983 ☞ The Environment [Protection] Act – 1986 & Rules-1986 as amended from time to time ☞ The Hazardous Waste (Management and Handling) Rules, 1989 as amended from time to time.

	☞ Municipal Solid Waste (Management and Handling) Rules 2000 ☞ Noise Pollution Regulation & Control rules, 2000.
▪ **6.0**	▪ **REQUIREMENTS**
6.1	Procedure
	☞ Spoil volume calculations: Estimate the volumes of spoils produced from each of the construction sites. ☞ Characterization of spoil: Based on the type of spoil; characterization is done (sand stone, mud mix materials, reusable materials) Adopt Spoil Reduce, Reuse Opportunities An overview of the assessment methodology to be used is mentioned below. ☞ Consideration of likely spoil characteristics ☞ Identification of possible reuse sites ☞ Screening of possible reuse opportunities ☞ Identification of possible safe disposal sites for spoil: Those spoils which can't be reuse shall be properly disposed in designated areas, such disposal areas should be identified in project locations. Such disposal areas should be safe from environmental aspects and there should be any legal and resettlement related issues. Such areas need to be identified and prior cliental approval should be obtained to use it as spoil disposal area. The local administration must be consulted and if required permission should be obtained from them.
6.2	<u>Identification and Assessment of Spoil Aspects and Impacts</u>
	☞ In this project, there are some places assessed and identified jointly along with design engineer. Places inside the Indira Gandhi Water Treatment Plant for dumping and dressing the extra earth have been selected, which is presently down from actual ground level. ☞ Potential for high winds generating airborne dust from stockpiles, potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on road, contamination of water, associated with spoil handling and haulage and storage, limited sites for storage and reuse opportunities. ☞ In this project, we had generated some bentonite slurry during our piling activity which has been disposed to the nearest brick field area for re-cycling. ☞ In this project We had been excavated 2200 m^3 spoil till date during our excavation work and which has been disposed inside the IGWTP.
7	▪ **SPOIL VOLUMES, CHARACTERISTICS AND MINIMIZATION**
	• Volumes 40,000 Cu.M approx. 1540 Cu.M approx.(Bentonite slurry) • Characteristics Normal earth basically clay types

<table>
<tr><td></td><td>• Minimization
Excavation of earth to be done as per requirements only. No extra earth shall be excavated.</td></tr>
<tr><td>8</td><td>Spoil Reuses Opportunities, Identification and Assessment</td></tr>
<tr><td></td><td>• All quantity of spoils will be re used for new road.
• Balance spoils will be removed.</td></tr>
<tr><td>9.</td><td>Spoil Transportation Methodology</td></tr>
<tr><td></td><td>• No extra earth will generate.</td></tr>
<tr><td>10</td><td>Monitoring, Reporting, Review and Improvements</td></tr>
<tr><td></td><td>• Monitoring, Reporting and all necessary improvements will be as required.</td></tr>
<tr><td>11</td><td>List of Relevant Guide Lines/ Documents
Nil</td></tr>
<tr><td>12</td><td>References
Nil</td></tr>
<tr><td>13</td><td>Related other Procedures

The key aspects of potential impacts are listed in table below
<table>
<tr><th>Aspects</th><th>Potential Impacts</th></tr>
<tr><td>Air Quality</td><td>Potential for high winds generating airborne dust from the stock piles</td></tr>
<tr><td>Sedimentation</td><td>Potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on roads</td></tr>
<tr><td>Surface and Groundwater</td><td>Contamination of water (surface and ground water)</td></tr>
<tr><td>Noise</td><td>Associated with spoil handling and haulage and storage</td></tr>
<tr><td>Traffic</td><td>Impacts associated with spoil haulage</td></tr>
<tr><td>Land Use</td><td>Potential for spoil to be transported to a receivable site that doesn't have permission for storage/disposal</td></tr>
<tr><td>Design specifications</td><td>Limitations on opportunities to minimize spoil generation</td></tr>
<tr><td>Sustainability</td><td>Limited sites for storage, reuse opportunities</td></tr>
</table></td></tr>
</table>

ITD CemIndia (Joint Venture)

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

SPOIL MANAGEMENT PLAN (SMP)

Name of Project: **Laying of Water Trunk Main from Garden Reach Water Works to Taratala Valve Station and Laying of Sewer Line along Diamond Harbor Road by Micro-tunneling Method.**

▪ 1.0	▪ Purpose
	To describe how the project will manage the spoil generated and reuse related to design and construction works.
▪ 2.0	▪ Scope
	The procedure is applicable to ITD-ITD CEM JV sites and depots.
▪ 3.1	▪ Responsibility
	Project In charge is responsible for its implementation. **Corporate Head EHS is responsible for its review and modification.**
3.2	RESPONSIBILITY AND AUTHORITY FOR EHS MANAGEMENT
	Project In charge (PI) • The project PI will have overall responsibility of EHS Management at the site and improving safety and health in all areas. He shall: • Comply with Client's requirements, HSE-Policy of the company and relevant statutory requirements that are applicable to the relevant work. • Ascertain that all plants and machinery utilized at the project site meets the safety standard and are safe for use. • Get familiar with and demonstrate his commitment to continual improvement in EHS performance; • Ensure that all personnel are aware of commitment to environmental protection and worker safety; • Monitor EHS performance of the personnel and activities under his control; • Ensure that safe system of work are implemented and maintained by the project Engineers / Supervisors / Foreman and employees at the work site. • Ensure that Site EHS Plan is accessible to all relevant parties; • Ensure that sufficient induction training for all employees and workers is given before commencement of work at site and subsequently for new inductees; • Undertake program of regular EHS Inspection at site. • Arrange and chair monthly Site EHS Management Review Meeting. **Site/Front In-charge** The Site/Front In-charge will be responsible to the PM for implementation of EHS operational control procedures. In the absence of PM, he would take control of the Site. His duties are similar to that of the PM. **Site Engineers/Supervisors** • They will be responsible to the PM / Site / Front In-charge for implementing the requirements of this plan. In particular they are required to: - • Be familiar with Site EHS Plan;

- Maintain safe working conditions and good housekeeping in all areas under his supervision.
- Enforce use of PPE as requested by Project Specific Rules and regulations.
- Liaise and cooperate with Site Safety EHS Officer and ensure that defects brought to attention are corrected.
- Immediately Inform & report to the HSE-Officer while any accident, near misses, dangerous occurrence, occupational poisoning or diseases shall be noticed within the project sites.
- Plan safety in accordance with the approved work methodology for daily work activities.
- Prepare S.O.P and GRA for each activity and it should be explained to employee before begins work.
- Establish and maintain proper communication with all workers with regard to EHS; and
- Provide proper supervision for the work.

Environment, Health & Safety (EHS) Officer

He will be accountable to the PM for fulfilling the duties assigned to him and ensure implementation of EHS Plan.

His duties will include: -

- Monitor and advise relevant personnel on compliance with EHS statutory obligations at the site;
- Facilitate inclusion of safety elements into work Method Statement.
- Highlight the requirement of safety through Tool-Box / other meetings.
- Conduct investigation of all accident/dangerous occurrences and recommend appropriate safety measures.
- Advice & co-ordinate for implementation of operational control procedures etc.
- Convene safety meeting & minute the proceeding for circulation & follow-up action.
- Provide copies of site / office inspection report to relevant managers;
- Plan procurement of PPEs and safety devices and inspect their healthiness.
- Report to PM/Divisional Manager on all matters pertaining to status of safety and promotional program at site level.
- Facilitate administration of FIRST – AID.
- Facilitate screening of workman and safety induction.
- Conduct fire drill and facilitate emergency preparedness.
- Design campaigns, competitions and other special emphasis programs to promote safety in the work place.
- Notify site personnel non-conformance to safety norms observed during site visits / site inspections.
- Attend and participate in Site EHS Management Review Meetings;
- Access and advise PM on the perceived EHS training needs of project personnel;
- Monitor EHS performance of subcontractors and make appropriate recommendations for performance improvement.

Employees

All employees will be accountable for conforming to the requirement of the EHS Plan and statutory requirements. In particular every employee will be required to:

	• Take care of environmental protection and safety of himself & others; • Co-operate to fulfill statutory EHS obligations; • Co-operate in pursuit of continuous EHS performance Improvement; and • Conform to requirement of Project EHS plan. • Report defects in lifting appliances, lifting gears, transport equipments and any other equipments or tools & tackles to your immediate superior. • Not to remove or interfere with any fencing, gangway, ladder, covering, life saving appliances, lighting and other things whatsoever required by site safety rules & regulations. • Take care of personal protective equipment • Don't let your work put another worker in danger. • Use only means of access provided for specific work at site. • Avoid horseplay, practical jokes or other activities to create a hazard. • Don't use drugs or alcohol on the job. • Keep the latrines, urinals, wash points, canteen and other facilities provided in a clean and hygienic condition • Report any unsafe work practice and any injury or accident to your supervisor.
▪ 4.0	▪ Definitions
	Project In charge: Person responsible for the execution of the project.
▪ 5.0	▪ Legal Requirement
	☞ The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule ☞ Environmental Protection Act 1986. ☞ The Water [Prevention & Control Of Pollution] Act – 1974 and Rules 1975 ☞ The Water [Prevention & Control Of Pollution] CASs Act-1977 and Rules-1978 as amended in 2003 ☞ The Air [Prevention & Control Of Pollution] Act – 1981 and Rules 1983 ☞ The Environment [Protection] Act – 1986 & Rules-1986 as amended from time to time ☞ The Hazardous Waste (Management and Handling) Rules, 1989 as amended from time to time. ☞ Bio-Medical waste (Management & Handling) Rules1998 ☞ Municipal Solid Waste (Management and Handling) Rules 2000 ☞ Noise Pollution Regulation & Control rules, 2000. ☞ Battery (Management and Handling) rules, 2001.
▪ 6.0	▪ Requirements
6.1	Procedure
	☞ Spoil volume calculations: Estimate the volumes of spoils produced from each of the construction sites. ☞ Characterization of spoil: Based on the type of spoil; characterization is done (sand stone, mud mix materials, reusable materials) Adopt Spoil Reduce, Reuse Opportunities An overview of the assessment methodology to be used is mentioned below. ☞ Consideration of likely spoil characteristics ☞ Identification of possible reuse sites ☞ Screening of possible reuse opportunities ☞ Identification of possible safe disposal sites for spoil: Those spoils which can't be reuse shall be properly disposed in designated areas, such disposal areas should be identified in project locations. Such disposal areas should be safe from environmental aspects and there should be any legal and resettlement related issues. Such areas need to be identified and prior cliental approval should be obtained to use it as spoil disposal area. The

<table>
<tr><td></td><td>local administration must be consulted and if required permission should be obtained from them.</td></tr>
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<tr><td></td><td>☞ There is some place assessed and indentified jointly inside the Garden reach STP for dumped and dressed the extra earth which is presently down from actual level.
☞ Potential for height winds generating airborne dust from stockpiles, potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on road, contamination of water, associated with spoil handling and haulage and storage, limited sites for storage and reuse opportunities.</td></tr>
<tr><td>7</td><td>▪ Spoil Volumes, Characteristics and Minimization</td></tr>
<tr><td></td><td>• Volumes
73489 Cum
• Characteristics
Normal earth basically clay types
• Minimization
Excavation of earth to be done as per requirements only. No extra earth shall be excavated.</td></tr>
<tr><td>8</td><td>Spoil Reuses Opportunities, Identification and Assessment</td></tr>
<tr><td></td><td>• Small quantity of spoils will be re used for back filling of excavated shaft location.
• Balance spoils will be removed.</td></tr>
<tr><td>9.</td><td>Spoil Transportation Methodology</td></tr>
<tr><td></td><td>• Extra earth/ slurry will be shifted by Truck / Dumper from site to dumping yard. Address of dumping yard: Dag no:- 156 & 158, Khaatian No:- P-973, J.L.No:- 93, Mouza Amghachia, Police Station : Bishnupur, District:- South 24 Parganas, West Bengal.
NOC is already obtained for dumping of spoil at that location</td></tr>
<tr><td>10</td><td>Monitoring, Reporting, Review and Improvements</td></tr>
<tr><td></td><td>• Monitoring, Reporting and all necessary improvements will be as required.</td></tr>
<tr><td>11</td><td>List of Relevant Guide Lines/ Documents
Nil</td></tr>
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</table></td></tr>
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	Design specifications	Limitations on opportunities to minimize spoil generation
	Sustainability	Limited sites for storage, reuse opportunities

NOC from land owner

AMGACHIA GRAM PANCHAYAT OFFICE

Bishnupur – I Block South 24 Parganas

(NO OBJECTION CERTIFICATE)

This is to certify that Lavica Estates Ltd (Angshu) Name)
S / D / W of Bishnupur of Vill+P.O- Amgachia
P.S. Bishnupur, Dist- 24 pgs(s) (Address) has
been possessing a plot of land having Dag No 155,156 Khatian
No L-9731 J.L.No 93 Mouza Amgachia which he
wish to convert from Sali (Low land) to Bastu (Homesite).

I do hereby declare that I have no objection on this conversion at all.

05/01/15

Signature of Prodhan

Prodhan
Amgachia Gram Panchayat Office
Bishnupur-I, 24 Parganas (S)


Dumping Yard Address: Dag no:- 156 & 158, Khaatian No:- P-973, J.L.No:- 93, Mouza Amghachia, Police Station : Bishnupur, District:- South 24 Parganas, West Bengal.

Spoil Management Plan

NOVEMBER 2016

PROJECT: **CONSTRUCTION OF PUMPING STATION IN BEGOREKHAL AND IN JOKA TRAM DEPOT AND CONSTRUCTION OF SEWERAGE AND DRAINAGE NETWORK WITHIN DIAMOND HARBOUR ROAD CATCHMENT**

Contract No: **KEIIP/ICB/TR-1/SD05/2013-14**

PROGRAM: **KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)**

EMPLOYER: **KOLKATA MUNICIPAL CORPORATION (KMC)**

CONTRACTOR: **TANTIA-MPPL (WILO) JV**

Prepared by

TANTIA-MPPL (WILO) JV

SPOIL MANAGEMENT PLAN

M/S – TANTIA-MPPL (WILO) JV
KEIIP/ICB/TR-1/SD05/2013-14 PROJECT

1. INTRODUCTION OF SMP

SMP is to describe how the project will manage the spoil generated and reuse related to design and construction works. This is an integral part of EMP. The objective of SMP is to reuse of spoil from works.

2. LEGAL AND OTHER REQUIRMENTS

In the project, there is no legal litigation at site for land and working area or site office establishment, and also there are no legal requirements yet.

3. ROLES AND RESPONSIBILITY

In this project, there are major roles and responsibilities are followings

1) Extra excavated earth should be removed from site
2) Traffic movement should not be obstructed by dumping soil during the work
3) No low land, pond, ditch etc will be filled up by extra soil
4) No accident occurs during rainy season by excavated earth during or finished the work
5) All the drains, outlet should be free from our excavated earth

4. IDENTIFICATION AND ASSESSMENT OF SPOIL ASPECTS AND IMPACTS

In this project, there are some places assessed and identified jointly along with design engineer. Places inside our own RMC Plant located near Nature park Rail Gate for dumping and dressing the extra earth have been selected, which is not a low land area and to raise the ground level to avoid water logged. Potential for high winds generating airborne dust from stockpiles, potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on road, contamination of water, associated with spoil handling and haulage and storage, limited sites for storage and reuse opportunities.

5. SPOIL VOLUMES, CHARACTERISTICS AND MINIMIZATION

In this project, backfilling of any trenches has done by excavated earth. So that the excavated earth do not disturbed areas during construction phase and also minimize the quantity of excavated earth.

6. SPOIL REUSE OPPOETUNITIES, IDENTIFICATION AND ASSESMENT

There are many spaces to reuse spoil. But excess spoils are properly disposed to approve disposal area.

7. ON SITE SPOIL MANAGEMENT APPROACH

In this project, the approach is ready where soil is shifted.

8. SPOIL TRANSPORTATION METHODOLOGY

Extra excavated earth is shifted by truck from working site to disposal area.

9. MONITORING, REPORTING, REVIEW, AND IMPROVEMENTS

Monitoring, Reporting and all necessary improvements is done as per requirement.

NAME OF PROJECT : CONSTRUCTION OF S & D NETWORK AND PUMPING STATION IN BOROUGH XIII (WARD 122) INCLUDING REPLACEMENT OF GAP SEWER LINE IN BOROUGH XV, LAYING OF PUMING MAIN AND REHABITATION OF SSE STP INCLUDING OPERATION & MAINTENANCE OF THE PUMPING STATION(S) AND STP

1.0	**PURPOSE**
	To describe how the project will manage the spoil generated and reuse related to design and construction works.
2.0	**SCOPE**
	The procedure is applicable to SNET-SSG JV sites and depots.
3.0	**RESPONSIBILITY**
	Project In Charge is responsible for its implementation. Corporate Head EHS is responsible for its review and modification.
3.1	**RESPONSIBILITY AND AUTHORITY FOR EHS MANAGEMENT**
	Project In Charge (PI) The project PI will have overall responsibility of EHS Management at the site and improving safety and health in all areas. He shall: Comply with Client's requirements, HSE-Policy of the company and relevant statutory requirement that are applicable to the relevant work. Ascertain that all plants and machinery utilized at the project site meets the safety standard and are safe for use. Get familiar with and demonstrate his commitment to continual improvement in EHS performance; Ensure that all personnel are aware of commitment to environmental protection and worker safety. Monitor EHS performance of the personnel and activities under his control. Ensure that safe system of work are implemented and maintained by the project Engineer/Supervisors/ Foreman and employees at the work site. Ensure that sufficient induction training for all employees and workers is given before commencement of work at site and subsequently for new inductees; Undertake program of regular EHS Inspection at site. Arrange and chair monthly Site EHS Management Review Meeting. **Site/Front In-charge** The Site/Front In-charge will be responsible to the PM for implementation of EHS Operational control procedures. In the absence of PM, he would take control of the Site. His duties are similar to that of the PM. **Site Engineers/supervisor** • They will be responsible to the PM/Site/Front-In-charge for implementing the requirements of this plan. In particular they are required to :- • Maintain safe working condition and good housekeeping in all areas under his supervision. • Enforce use of PPE as requested by Project Specific Rules and regulations. • Liaise and cooperate with Site Safety EHS Officer and ensure that defects brought to attention are corrected. • Immediately Inform & report to the HSE-Officer while any accident, near misses, dangerous occurrence, occupational poisoning or diseases shall be noticed within the project sites. • Plan safety in accordance with the approved work methodology for daily work activities.

- Establish and maintain proper communication with all workers with regard to EHS; and
- Provide proper supervision for the work.

Environment, health & safety (EHS) Officer

He will be accountable to the PM for fulfilling the duties assigned to him and ensure implementation of ESH Plan.

His duties will include :-

- Monitor and advise relevant personnel on compliance with EHS statutory obligation at the site;
- Facilitate inclusion of safety elements into work Method Statement.
- Highlight the requirement of safety through Tool-Box / other meeting.
- Conduct investigation of all accident/dangerous occurrences and recommend appropriate safety measures.
- Advice & co-ordinate for implementation of operational control procedures etc.
- Convene safety meeting & minute the proceeding for circulation & follow-up action.
- Provide copies of site / office inspection report to relevant managers;
- Plan procurement of PPEs and safety devices and inspect their healthiness.
- Report to PM/Divisional Manager on all matters pertaining to status of safety and promotional program at site level.
- Facilitate administration of FIRST – AID.
- Facilitate screening of workman and safety induction.
- Conduct fire drill and facilitate emergency preparedness.
- Design campaigns, competitions and other special emphasis program to promote safety in the work place.
- Notify site personnel non-conformance to safety norms observed during site visits / site inspections.
- Attend and participate in Site EHS Management Review Meetings;
- Access and advise PM on the perceived EHS training needs of project personnel;
- Monitor EHS performance of subcontractor and make appropriate recommendations for performance improvement.

Employees

All employees will be accountable for conforming to the required of the EHS Plan and statutory requirements. In particular every employee will be required to :-

- Take care of environmental protection and safety of himself & others;
- Co-operate to fulfil statutory EHS obligations;
- Co-operate in pursuit of continuous EHS performance Improvement; and
- Conform to requirement of Project EHS Plan.
- Report defects in lifting appliances, lifting gears, transport equipments and any other equipments or tools & tackles to your immediate superior.
- Not to remove or interfere with any fencing, gangway, ladder, covering, life saving appliances, lighting and other things whatever required by site safety rules & regulations.
- Take care of personal protective equipment.
- Don't let your work put another worker in danger.
- Use only means of access provided for specific work at site.
- Avoid horseplay, practical jokes or other activities to create a hazard.
- Don't use drugs or alcohol on the job.
- Keep the latrines, urinals, wash points, canteen and other facilities provided in a clean and hygienic condition.
- Report any unsafe work practice and any injury or accident to your supervisor.

4.0 DEFINITIONS

Project In Charge: Person responsible for the execution of the project.

5.0	**LEGAL REQUIREMENT**
	The building and other Construction Workers (Regular of Employment and conditions of service) act 1996 and Central Rule 1998 Rule. ➢ Environmental Protection Act 1986. ➢ The water [Prevention & Control of Pollution] Act – 1974 and Rules 1975. ➢ The water [Prevention & Control of Pollution] CASs Act-1977 and Rules- 1978 as amended in 2003. ➢ The Air [Prevention & Control of Pollution] Act – 1981 and Rules – 1983. ➢ The Environmental [Protection] Act – 1986 & Rules – 1986 as amended from time to time. ➢ The Hazardous Waste [Management and Handling] Rules, 1989 as amended from time to time. ➢ Bio-Medical waste [Management & Handling] Rules 2000. ➢ Noise Pollution Regulation & Control rules, 2000. ➢ Battery (Management and Handling) rules, 2001.
6.0	**REQUIREMENTS**
6.1	**Procedure**
	➢ Spoil volume calculations: Estimate the volumes of spoils produced from each of the construction sites. ➢ Characterization of spoil: Based on the type of spoil; Characterization is done (sand stone, mud mix materials, reusable materials) Adopt spoil Reduce, Reuse Opportunities An overview of the assessment methodology to be used is mentioned below. Consideration of likely spoil characteristics 1. Identification of possible reuse sites 2. Screening of possible reuse opportunities 3. Identification of possible safe disposal sites for spoil: Those spoils which can't be reuse shall be properly disposed in designated areas, such disposal area should be identified in project locations. Such disposal areas should be identified in project locations. Such disposal areas should be safe from environmental aspects and there should be any legal and resettlement related issues. Such areas need to be identified and prior cliental approval should be obtained to use it as spoil disposal area. The local administration must be consulted and if required permission should be obtained from them.
6.2	**Identification and Assessment of Spoil aspects and Impact**
	Potential for height winds generating airborne dust from stockpiles, potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on road, contamination of water, associated with spoil handling and haulage and storage, limited sites for storage and reuse opportunities.
7	**Spoil Reuses Opportunities, Identification and assessment**
	• Small quantity of spoils will be reused for back filling of excavated shaft location. • Balance spoils will be removed.
8	**Spoil Transportation Methodology**
	Extra earth will be shifted by Truck/ Dumper from site to dumping yard.
9	**Monitoring, Reporting, Review and Improvements**
	Monitoring, Reporting and all necessary improvements will be as required.

APPENDIX 7 – AIR, NOISE, WATER QUALITY DATA

Package: Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach

ICI
S.S.I. Reg. No. 190192100010

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ISO/IEC 17025:2005, ACCREDITED BY **NABL**, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	ICI/A/16-17/ITDCJV/190	Sample Ref. No.	: ITDCJV/190
Issued To	:	M/s. ITD-CEM INDIA JV.	Report Date	: 03.11.16
Address	:	Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120	Date of Sampling	: 31.10.16
			Analysis Started on	: 02.11.16
Sample Description	:	Ambient Air	Analysis Completed on	: 02.11.16
Location	:	Near WTP		
Sample Condition	:	Glass Microfibre Filter Paper & Plastic Bottle		
Sampling Method	:	CPCB, Emission Regulation (Part III)		
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50): Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6): 2006,GC Analysis		
Ambient Temperature in °C (Average)	:	27.0		

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:55 AM to 05:55 PM	56.85	22.47	9.08	23.35	N.D.

N.D= Not Detected

Remarks: During monitoring time no construction was done by M/s. ITD -CEM INDIA JV.

End of Report

Limit: (µg / m³) Ambient Air Quality standard (National)

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Areas)

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board, New Delhi Notification dated 18th November'2009

For, Indicative Consultant India

Checked By

Parbati Gulati
(Manager-Laboratory)
Signatory Authority

Note : 1. Test results shown in this test report relate only to the item tested.
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S.S.I. Reg. No. 190192100010

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/16-17/ITDCJV/191**	**Sample Ref. No.**	:	**ITDCJV/191**
Issued To	:	**M/s. ITD-CEM INDIA JV.**	**Report Date**	:	03.11.16
Address	:	Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120	**Date of Sampling**	:	31.10.16
			Analysis Started on	:	02.11.16
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	02.11.16
Location	:	**Near Intake Jetty No. - 2**			
Sample Condition	:	Glass Microfibre Filter Paper & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50): Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6): 2006,GC Analysis			
Ambient Temperature in °C (Average)	:	31.0			

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:45 AM to 05:45 PM	84.22	18.75	10.10	21.55	N.D.

N.D= Not Detected

End of Report

Limit: ($\mu g/m^3$) Ambient Air Quality standard (National)

PM_{10} = 100 $\mu g/m^3$, $PM_{2.5}$=60 $\mu g/m^3$, SO_2=80 $\mu g/m^3$, NO_2=80 $\mu g/m^3$, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Area)
PM_{10} = 100 $\mu g/m^3$, $PM_{2.5}$=60 $\mu g/m^3$, SO_2=80 $\mu g/m^3$, NO_2=80 $\mu g/m^3$, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board; New Delhi Notification dated 18th November 2009

Checked By

For, Indicative Consultant India

Parbati Goller
(Manager-Laboratory)
Signatory Authority

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/601**
Issued To : **M/s. ITD-CEM INDIA JV.**
Address : Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120

Sample Ref. No. : SL/601
Report Date : 04.11.16
Date of Monitoring : 31.10.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : **Near WTP**
Limit : Industrial Area Day Time : 75 dB (A)
: Commercial Area Day Time : 65 dB (A)
: Residential Area Day Time : 55 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 11:20 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	67.8	0.111111111	602559.586	8442489.771
2	69.4		870963.590	
3	68.2		660693.448	
4	71.3		1348962.883	
5	70.5		1122018.454	
6	68.2		660693.448	
7	66.9		489778.819	
8	68.8		758577.575	
9	70.4		1096478.196	
10	69.2		831763.771	

*** The equivalent Noise Level Leq. 69.26 dB(A)**

Maximum dB(A): 71.3
Minimum dB (A): 66.9

............End of Report............

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Ghosh
(Manager-Laboratory)
Signatory Authority

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/602**

Issued To : **M/s. ITD-CEM INDIA JV.**

Address : Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120

Sample Ref. No. : SL/602

Report Date : 04.11.16

Date of Monitoring : 31.10.16

Sample Description : **Ambient Noise**

Sampling Method : By Digital Noise Meter

Test Method : IS 10988:1984, Reaffirmed 2005

Location : **Near WTP**

Limit : Industrial Area Night Time : 70 dB (A)
: Commercial Area Night Time : 55 dB (A)
: Residential Area Night Time : 45 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:45 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	51.3	0.11111111	13489.629	88447.450
2	48.7		7413.102	
3	50.6		11481.536	
4	47.9		6165.950	
5	48.6		7244.360	
6	50.5		11220.185	
7	51.1		12882.496	
8	48.3		6760.830	
9	47.5		5623.413	
10	47.9		6165.950	

*** The equivalent Noise Level Leq. 49.47 dB(A)**

Maximum dB(A): 51.3
Minimum dB (A): 47.5

.... End of Report ....

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

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Paradeep Office : C/o. Dhuna Chandra Sethy Tarinighara, Bijay Chandrapur, P.O.-Authara, Bankal, P.S.-Paradeep, Dist.-Jagatshingpur Odisha

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/16-17/603**
Issued To	**: M/s. ITD-CEM INDIA JV.**
Address	: Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120
Sample Description	**: Ambient Noise**
Sampling Method	: By Digital Noise Meter
Test Method	: IS 10988:1984, Reaffirmed 2005
Location	**: Near Intake Jetty No. - 2**
Limit	: Industrial Area Day Time : 75 dB (A)
	: Commercial Area Day Time : 65 dB (A)
	: Residential Area Day Time : 55 dB (A)

Sample Ref. No. : SL/603
Report Date : 04.11.16
Date of Monitoring : 31.10.16

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:40 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	61.3	0.11111111	134896.288	2318150.392
2	59.5		89125.094	
3	62.4		173780.083	
4	64.8		301995.172	
5	63.9		245470.892	
6	67.4		549540.874	
7	63.8		239883.292	
8	60.7		117489.755	
9	64.4		275422.870	
10	62.8		190546.072	

*** The equivalent Noise Level Leq. 63.65 dB(A)**

Maximum dB(A): 67.4
Minimum dB (A): 59.5

…………………… End of Report ……………………

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Ghosh
(Manager-Laboratory)
Signatory Authority

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Paradeep Office : C/o. Dhuna Chandra Sethy Tarinighara, Bijay Chandrapur, P.O.-Authara, Barikal, P.S.-Paradeep, Dist.-Jagatsinghpur Odisha. Mob: [illegible]

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/604**
Issued To : **M/s. ITD-CEM INDIA JV.**
Address : Indira Gandhi Water Tretment Plant, Manirampur, Barrackpore, 24 Pgs (N), Kolkata- 700 120

Sample Ref. No. : SL/604
Report Date : 04.11.16
Date of Monitoring : 31.10.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : **Near Intake Jetty No. - 2**
Limit : Industrial Area Night Time : 70 dB (A)
: Commercial Area Night Time : 55 dB (A)
: Residential Area Night Time : 45 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:10 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	52.7	0.11111111	18620.871	114508.798
2	50.6		11481.536	
3	49.8		9549.926	
4	51.2		13182.567	
5	48.8		7585.776	
6	50.5		11220.185	
7	51.7		14791.084	
8	49.7		9332.543	
9	50.1		10232.930	
10	49.3		8511.380	

*** The equivalent Noise Level Leq. 50.59 dB(A)**

Maximum dB(A): 52.7
Minimum dB (A): 48.8

..... End of Report .....

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Gohil
(Manager-Laboratory)
Signatory Authority

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India
Sample submitted and identified by customer as: N.A.

Report No.	:	**ICI/W/16-17/789**	**Sample Ref. No.**	:	W/789
Issued To	:	**M/s. ITD-CEM India JV.**	**Report Date**	:	10.11.16
Address	:	Indira Gandhi Water Treatment Plant, Manirampore, Barrackpore, 24 Pgs.(N), Kolkata – 700 120.	**Date of Sampling**	:	31.10.16
			Analysis Started on	:	01.11.16
Sample Condition	:	In Plastic Bottle & Glass Bottle	**Analysis Completed on**	:	09.11.16
Sample Description	:	**Surface Water**	**Time of Sampling**	:	02:20 PM
Sampling Method	:	IS:3025 (Part I) 1987 (Reaffirmed 2003), APHA 22nd ed 2012			
Test Method	:	APHA 22nd ed 2012, IS:3025			
Location	:	**Intake Jetty No. – 2 (Up Stream)**			

Sl. No.	Parameters	Unit	Result	Method Followed
1.	Colour	Hazen Unit	<5.0	IS:3025(Part-4) 1983 Reaff. 1996
2.	Turbidity	N.T.U.	234	IS:3025(Part-10):1984, Reaff.2002 APHA 22nd Edition 2130 B
3.	Bio-Chemical Oxygen Demand (for 3 days at 27°C)	mg/L	5.80	IS:3025 (Part-44): 1993, Reaffirmed 2003
4.	Dissolved Oxygen	mg/L	5.20	APHA 22nd Edition 4500OC, IS:3025 (Part-38): 1989, Reaffirmed 2003
5.	Total Dissolved Solid (TDS)	mg/L	136.0	IS:3025(Part-16):1984, Reaff.2002 APHA 22nd Edition 2540 C
6.	Calcium as Ca +Magnesium as Mg	mg/L	41.8	IS:3025(Part-40):1991, Reaff.2003 APHA 22nd Edition 3500Ca B & IS:3025(Part-46):1994, Reaff.2003 APHA 22nd Edition 3500Mg B
7.	Chloride as Cl	mg/L	12.1	IS:3025(Part-32):1988, Reaff.2003 APHA 22nd Edition 4500Cl B
8.	Boron as B	mg/L	<0.1	IS:3025(Part-29):1964 APHA 22nd Edition 3500B
9.	Sodium Ratio (upstream/ downstream)	-	0.402	APHA 22nd Edition) 3500 Na
10.	Total Coliform	MPN per 100 ml	570.0	APHA 22nd Edition 9222 B
11.	Heterotropic Plate Count	CFU/ml	62.0	IS: 1622:1981
12.	Floating Matter as TSS	mg/L	112.0	APHA 22nd Edition 2540D, IS:3025 (Part-17):1984, Reaffirmed 1999, Reprint 2000

End of Report

Checked By

For, **Indicative Consultant India**

Parbati Golui
(Manager Laboratory)
Signatory Authority

Sr. Div.

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Page 1 of 1

Towards Sustainable Growth

[redacted]

Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470938, 7797506970
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Paradeep Office : C/o. Dhuna Chandra Sethy Taringhara, Bijoy Chandrapur, P.O.-Authara, Bankai, P.S.-Paradeep, Dist.-Jagatsinghpur, Odisha, Mob.: 8116208984, 9830964194

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

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ISO/IEC 17025:2005, ACCREDITED BY **NABL**, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING.

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India
Sample submitted and identified by customer as: N.A

Report No.	:	**ICI/W/16-17/788**	**Sample Ref. No.**	:	W/788
Issued To	:	**M/s. ITD-CEM India JV.**	**Report Date**	:	10.11.16
Address	:	Indira Gandhi Water Treatment Plant, Manirampore, Barrackpore, 24 Pgs.(N), Kolkata – 700 120.	**Date of Sampling**	:	31.10.16
			Analysis Started on	:	01.11.16
Sample Condition	:	In Plastic Bottle & Glass Bottle	**Analysis Completed on**	:	09.11.16
Sample Description	:	**Surface Water**	**Time of Sampling**	:	11:40 AM
Sampling Method	:	IS:3025 (Part I) 1987 (Reaffirmed 2003), APHA 22nd ed 2012			
Test Method	:	APHA 22nd ed 2012, IS:3025			
Location	:	**Intake Jetty No. – 2 (Down Stream)**			

Sl. No.	Parameters	Unit	Result	Method Followed
1.	Colour	Hazen Unit	<5.0	IS:3025(Part-4) 1983 Reaff. 1996
2.	Turbidity	N.T.U.	291.0	IS:3025(Part-10):1984, Reaff.2002 APHA 22nd Edition 2130 B
3.	Bio-Chemical Oxygen Demand (for 3 days at 27°C)	mg/L	8.80	IS:3025 (Part-44): 1993, Reaffirmed 2003
4.	Dissolved Oxygen	mg/L	3.4	APHA 22nd Edition 4500OC, IS:3025 (Part-38): 1989, Reaffirmed 2003
5.	Total Dissolved Solid (TDS)	mg/L	146.0	IS:3025(Part-16):1984, Reaff.2002 APHA 22nd Edition 2540 C
6.	Calcium as Ca +Magnesium as Mg	mg/L	49.1	IS:3025(Part-40):1991, Reaff.2003 APHA 22nd Edition 3500Ca B & IS:3025(Part-46):1994, Reaff.2003 APHA 22nd Edition 3500Mg B
7.	Chloride as Cl	mg/L	12.1	IS:3025(Part-32):1988, Reaff.2003 APHA 22nd Edition 4500Cl B
8.	Boron as B	mg/L	<0.1	IS:3025(Part-29):1964 APHA 22nd Edition 3500B
9.	Sodium Ratio (upstream/ downstream)	-	0.376	APHA 22nd Edition) 3500 Na
10.	Total Coliform	MPN per 100 ml	720.0	APHA 22nd Edition 9222 B
11.	Heterotropic Plate Count	CFU/ml	90.0	IS: 1622:1981
12.	Floating Matter as TSS	mg/L	96.0	APHA 22nd Edition 2540D, IS:3025 (Part-17):1984, Reaffirmed 1999, Reprint 2000

End of Report

Checked By

For, **Indicative Consultant India**

Parbati Gouri
(Manager Laboratory)
Signatory Authority

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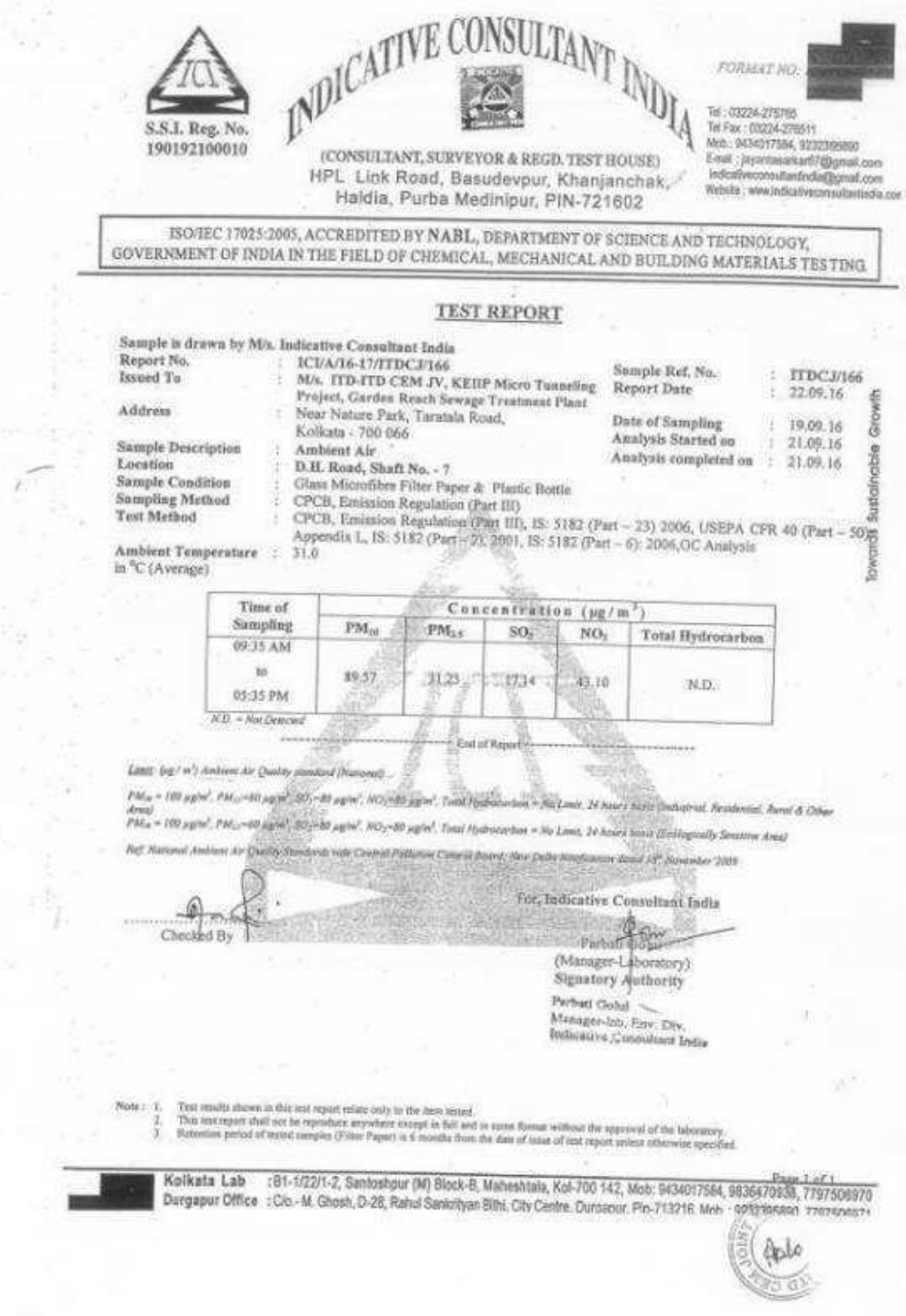
Page 1 of 1

Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method



INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/A/I6-17/ITDCJ/166	Sample Ref. No.	: ITDCJ/166
Issued To	: M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant	Report Date	: 22.09.16
Address	: Near Nature Park, Taratala Road, Kolkata - 700 066	Date of Sampling	: 19.09.16
		Analysis Started on	: 21.09.16
Sample Description	: Ambient Air	Analysis completed on	: 21.09.16
Location	: D.H. Road, Shaft No. - 7		
Sample Condition	: Glass Microfibre Filter Paper & Plastic Bottle		
Sampling Method	: CPCB, Emission Regulation (Part III)		
Test Method	: CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50) Appendix L, IS: 5182 (Part – 7): 2001, IS: 5182 (Part – 6): 2006,OC Analysis		
Ambient Temperature in °C (Average)	: 31.0		

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:35 AM to 05:35 PM	89.57	31.23	17.14	43.10	N.D.

N.D. = Not Detected

End of Report

Limit: (µg / m³) Ambient Air Quality standard (National) –

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Area)

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board, New Delhi Notification dated 18th November 2009

Checked By

For, Indicative Consultant India

Parbati Gohal
(Manager-Laboratory)
Signatory Authority

Parbati Gohal
Manager-lab, Env. Div.
Indicative Consultant India

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Page 1 of 1

Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470838, 7797506970
Durgapur Office : C/o.- M. Ghosh, D-28, Rahul Sankritiyan Sthi. City Centre. Durgapur. Pin-713216. Mob : [redacted]

S.S.I. Reg. No. 190192100010

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/16-17/ITDCJ/165**	**Sample Ref. No.**	: **ITDCJ/165**
Issued To	:	**M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant**	**Report Date**	: 22.09.16
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	**Date of Sampling**	: 19.09.16
Sample Description	:	**Ambient Air**	**Analysis Started on**	: 21.09.16
Location	:	**Taratala Road, Shaft No. - 13**	**Analysis completed on**	: 21.09.16
Sample Condition	:	Glass Microfibre Filter Paper & Plastic Bottle		
Sampling Method	:	CPCB, Emission Regulation (Part III)		
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50) Appendix L, IS: 5182 (Part - 2), 2001, IS: 5182 (Part – 6): 2006,GC Analysis		
Ambient Temperature in °C (Average)	:	31.0		

Time of Sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:05 AM to 06:05 PM	92.53	27.50	16.14	46.70	N.D.

N.D. = Not Detected

End of Report

Limit: (µg/m³) Ambient Air Quality standard (National) –

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Area)
PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board, New Delhi Notification dated 18th November 2009

For, Indicative Consultant India

Checked By

Parbati Gohul
(Manager-Laboratory)
Signatory Authority

Parbati Gohul
Manager-Lab, Env. Div.
Indicative Consultant India

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Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470936, 7797506970
Durgapur Office : C/o.- M. Ghosh, D-28, Rahul Sankrityan Bithi, City Centre, Durgapur, Pin-713216, Mob : [redacted]

Towards Sustainable Growth

S.S.I. Reg. No. 190192100010

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/526
Issued To : M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant
Address : Near Nature Park, Taratala Road, Kolkata - 700 066
Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : D.H. Road, Shaft No. - 7
Limit : Day Time : 75 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Sample Ref. No. : SL/526
Report Date : 22.09.16
Date of Monitoring : 19.09.16

Monitoring Details :
Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 9:55 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	74.5	0.111111111	2818382.931	20762857.495
2	70.8		1202264.435	
3	69.1		812830.516	
4	71.8		1518561.248	
5	76.7		4677351.413	
6	72.8		1905460.718	
7	69.5		891250.938	
8	74.3		2691534.804	
9	70.9		1230268.771	
10	74.8		3019951.720	

* The equivalent Noise Level Leq. 73.12 dB(A)

Maximum dB(A): 76.7
Minimum dB (A): 69.1

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Partha Sarathi Ghosh
Manager-Laboratory
Signatory Authority

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Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470938, 7797506970
Durgapur Office : C/o.- M. Ghosh, D-28, Rahul Sankrityan Bithi, City Centre, Durgapur, Pin-713216, Mob.: 9232395890, 7797506971
Paradeep Office : C/o [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SL/16-17/525
Issued To	: M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant
Address	: Near Nature Park, Taratala Road, Kolkata - 700 066
Sample Description	: Ambient Noise
Sampling Method	: By Digital Noise Meter
Test Method	: IS 10988:1984, Reaffirmed 2005
Location	: Taratala Road, Shaft No. - 13
Limit	: Day Time : 75 dB (A)

Sample Ref. No. : SL/525
Report Date : 22.09.16
Date of Monitoring : 19.09.16

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 11:15 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	59.4	0.11111111	87096.359	1967735.815
2	64.5		281838.293	
3	61.3		134896.288	
4	65.7		371535.229	
5	60.9		123026.877	
6	62.7		186208.714	
7	63.6		229086.765	
8	60.8		120226.443	
9	64.8		301995.172	
10	67.2		[illegible]	

* The equivalent Noise Level Leq. 62.94 dB(A)

Maximum dB(A): 65.7
Minimum dB (A): 59.4

.... End of Report ....

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Ghosh
(Manager-Laboratory)
Signatory Authority

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Durgapur Office : C/o - M. Ghosh, D-28 ...

ITD CEM JOINT V...

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	ICI/A/16-17/TMJ/174	Sample Ref. No.	:	TMJ/174
Issued To	:	M/s. Tantia MPPL (WILO) JV	Report Date	:	29.09.16
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	Date of Sampling	:	27.09.16
			Analysis Started on	:	28.09.16
Sample Description	:	Ambient Air	Analysis Completed on	:	28.09.16
Location	:	Begore Khal Pumping Station			
Sample Condition	:	Glass Microfibre Filter Paper & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50): Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6): 2006,GC Analysis			
Ambient Temperature in °C (Average)	:	31.0			

Towards Sustainable Growth

Time of Sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:45 AM to 05:45 PM	91.04	32.46	17.78	44.61	N.D.

N.D= Not Detected

End of Report

Limit: (µg/m³) Ambient Air Quality standard (National)

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Area)
PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board, New Delhi Notification dated 18th November 2009.

Checked By

For, Indicative Consultant India

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-Lab, Env. Div.
Indicative Consultant India

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Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470938, 7797506970
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Paradeep Office : Cb. Dhuna Chandra Sethy Tanighara, Bijoy Chandrapur, P.O.-Authara, Banka, P.S.-Paradeep, Dist.-Jagatsinghpur, Odisha, Mob.: 8116206984, 9830964194

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/16-17/TMJ/175**	**Sample Ref. No.**	:	**TMJ/175**
Issued To	:	**M/s. Tantia MPPL (WILO) JV**	**Report Date**	:	29.09.16
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	**Date of Sampling**	:	27.09.16
			Analysis Started on	:	28.09.16
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	28.09.16
Location	:	**Joka Pumping Station**			
Sample Condition	:	Glass Microfibre Filter Paper & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50): Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6): 2006,GC Analysis			
Ambient Temperature in °C (Average)	:	31.0			

Towards Sustainable Growth

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:15 AM to 06:15 PM	139.42	52.43	22.71	51.60	N.D.

N.D= Not Detected

End of Report

Limit: (µg / m³) Ambient Air Quality standard (National)

PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Industrial, Residential, Rural & Other Area)
PM_{10} = 100 µg/m³, $PM_{2.5}$=60 µg/m³, SO_2=80 µg/m³, NO_2=80 µg/m³, Total Hydrocarbon = No Limit, 24 hours basis (Ecologically Sensitive Area)

Ref: National Ambient Air Quality Standards vide Central Pollution Control Board, New Delhi Notification dated 18th November 2009

Checked By

For, **Indicative Consultant India**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-Lab. Env. Div.
Indicative Consultant India

Note : 1. Test results shown in this test report relate only to the item tested.
2. This test report shall not be reproduce anywhere except in full and in some format without the approval of the laboratory.
3. Retention period of tested samples (Filter Paper) is 6 months from the date of issue of test report unless otherwise specified.

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)
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ISO/IEC 17025:2005, ACCREDITED BY **NABL**, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING.

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/555**
Issued To : **M/s. Tantia MPPL (WILO) JV**
Address : Joka Tram Depot, Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/555
Report Date : 29.09.16
Date of Monitoring : 27.09.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : **Begore Khal Pumping Station**
Limit : Day Time : 75 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 9:55 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	56.7	0.11111111	46773.514	561744.979
2	60.2		104712.855	
3	58.5		70794.578	
4	55.1		32359.366	
5	53.8		23988.329	
6	57.2		52480.746	
7	54.3		26915.348	
8	59.2		83176.377	
9	57.9		61659.500	
10	57.7		58884.366	

* **The equivalent Noise Level Leq. 57.50 dB(A)**

Maximum dB(A): *60.2*
Minimum dB (A): *53.8*

End of Report

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
(Manager-Laboratory)
Signatory Authority
Parbati Golui
Manag... Div.
Indicative Consultant India

Note : 1. Test results shown in this test report relate only to the item tested.
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Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470938, 7797506970
Durgapur Office : C/o.- M. Ghosh, D-28, Rahul Sankrityan Bithi, City Centre, Durgapur, Pin-713216, Mob. : 9232395890, 7797506971
Paradeep Office : C/o. Dhuna Chandra Sethy Tarinighara, Bijoy Chandrapur, P.O.-Authara, Bankal, P.S.-Paradeep, Dist.-Jagatsingpur, Odisha, Mob.: 8116208984, 9830964194

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/556
Issued To : M/s. Tantia MPPL (WILO) JV
Address : Joka Tram Depot, Gate No. – 3, Kolkata – 700 104
Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : Begore Khal Pumping Station
Limit : Night Time : 70 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Sample Ref. No. : SL/556
Report Date : 29.09.16
Date of Monitoring : 27.09.16

Towards Sustainable Growth

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:10 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	50.8	0.11111111	12022.644	144277.982
2	47.9		6165.950	
3	52.3		16982.437	
4	54.3		26915.348	
5	51.4		13803.843	
6	48.2		6606.934	
7	53.9		24547.089	
8	48.5		7079.458	
9	53.8		23988.329	
10	47.9		6165.950	

* The equivalent Noise Level Leq. 51.59 dB(A)

Maximum dB(A): 54.3
Minimum dB (A): 47.9

..... End of Report .....

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-Lab, Env. Div.
Indicative Consultant India

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Kolkata Lab : B1-1/22/1-2, Santoshpur (M) Block-B, Maheshtala, Kol-700 142, Mob: 9434017584, 9836470938, 7797506970
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S.S.I. Reg. No. 190192100010

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/557
Issued To : M/s. Tantia MPPL (WILO) JV
Address : Joka Tram Depot. Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/557
Report Date : 29.09.16
Date of Monitoring : 27.09.16

Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : Joka Pumping Station
Limit : Day Time : 75 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Towards Sustainable Growth

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:30 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	65.7	0.11111111	371535.229	2015014.694
2	60.3		107151.931	
3	62.9		194984.460	
4	58.1		64565.423	
5	61.0		125892.541	
6	66.3		426579.519	
7	64.5		281838.293	
8	61.4		138038.426	
9	59.8		95499.259	
10	63.2		208929.613	

* The equivalent Noise Level Leq. 63.04 dB(A)

Maximum dB(A): 66.3
Minimum dB (A): 58.1

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager (Lab. Div.
Indicative Consultant India

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S.S.I. Reg. No. 190192100010

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/558
Issued To : M/s. Tantia MPPL (WILO) JV
Address : Joka Tram Depot, Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/558
Report Date : 29.09.16
Date of Monitoring : 27.09.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirmed 2005
Location : **Joka Pumping Station**
Limit : Night Time : 70 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Towards Sustainable Growth

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:45 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	57.3	0.11111111	53703.180	498381.790
2	54.9		30902.954	
3	56.2		41686.938	
4	59.3		85113.804	
5	57.0		50118.723	
6	55.4		34673.685	
7	58.7		74131.024	
8	55.1		32359.366	
9	57.4		54954.087	
10	56.1		40738.028	

* The equivalent Noise Level Leq. 56.98 dB(A)

Maximum dB(A): 59.3
Minimum dB (A): 54.9

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Golui
(Manager-Laboratory)
Signatory Authority
Parbati Golui
Manager-Lab, Env. Div.
Indicative Consultant India

Note : 1. Test results shown in this test report relate only to the item tested.
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Package - Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP (KEIIP/ICB/ Tr-1/SD-07/15-16)

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

HPL Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

S.S.I. Reg. No. 190192100010

ISO/IEC 17025:2005, ACCREDITED BY NABL, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/A/16-17/SSJV/224

Issued To : M/s. SNET - SSG JV

Address : Kamrapukur, S.T.P. Project, Dhatigara Road, Kolkata – 700 104

Sample Ref. No. : SSJV/224

Report Date : 12.12.16

Date of Sampling : [illegible]

Analysis Started on : 12.12.16

Analysis Completed on : 12.12.16

Sample Description : Ambient Air

Location : Brickfield Sodepur Road (Doctor Bagan), [illegible] Dia Pipe Line at Working Site

Sample Condition : Glass Microfibre Filter Paper & Plastic Bottle

Sampling Method : CPCB, Emission Regulation (Part III)

Test Method : CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part – 50) Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6) 2006,GC Analysis

Ambient Temperature in °C (Average) : 25.0

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_x	Total Hydrocarbon as CH_4
10:05 AM to 06:05 PM	71.23	26.92	10.20	28.36	9.13

End of Report

[illegible]

For, Indicative Consultant India

Checked By

Authorised Signatory

Note: 1. [illegible]
2. [illegible]
3. [illegible]

Page 1 of 1

INDICATIVE CONSULTANT INDIA

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(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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ISO/IEC 17025:2005, ACCREDITED BY NABL, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING.

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	ICI/A/16-17/SSJV/225	Sample Ref. No.	:	SSJV/225
Issued To	:	M/s. SNET - SSG JV	Report Date	:	12.12.16
Address	:	Keorapukur, S T P Project, Dhalipara Road, Kolkata – 700 104	Date of Sampling	:	10.12.16
			Analysis Started on	:	12.12.16
			Analysis Completed on	:	12.12.16

Sample Description : Ambient Air
Location : KK Road, 1200mm Dia Pipe Line
Sample Condition : Glass Microfibre Filter Paper & Plastic Bottle
Sampling Method : CPCB, Emission Regulation (Part III)
Test Method : CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, USEPA CFR 40 (Part - 50), Appendix L, IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6) 2006,GC Analysis
Ambient Temperature in °C (Average) : 25.0

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon as CH_4
09:40 AM to 05:40 PM	80.23	29.76	11.45	29.32	N.D

--- End of Report ---

[illegible]

For, Indicative Consultant India

Checked By

Partha Kundu
(Manager Laboratory)
Signatory Authority

Note : 1. [illegible]
2. [illegible]
3. [illegible]

Page 1 of 1

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SL/16-17/697	**Sample Ref. No.**	: SL/697
Issued To	: **M/s. SNET - SSG JV**	**Report Date**	: 12.12.16
Address	: Kasrapukur, S.T.P. Project, Dhalipara Road, Kolkata - 700 104.	**Date of Monitoring**	: 10.12.16

Sample Description	: **Ambient Noise**
Sampling Method	: By Digital Noise Meter
Test Method	: IS 10988 1984, Reaffirm 2005
Location	: **Brickfield Sodepur Road (Doctor Bagan), 1600mm Dia Pipe Line at Working Site**
Limit	: Day Time : 55 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50(E) dated 11.01.2010 under the EPA Act, 1986

Monitoring Details :

Height from the floor	: 1.5 M	Starting Time	: 11:45 AM
Distance of Source	: 3.0 M	Total Time (T)	: 18 Min
		Difference (dt)	: 2 Min

Sl. No.	Noise Level (Li)	ti = dt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	53.7	0.11111111	23442.288	305078.468
2	56.9		48977.882	
3	54.7		29512.092	
4	52.8		19054.607	
5	55.1		32359.366	
6	53.2		20892.961	
7	55.1		32359.366	
8	54.8		30199.517	
9	56.8		47863.009	
10	53.1		20417.379	

*** The equivalent Noise Level Leq. 54.84 dB(A)**

***Maximum dB(A):* 56.9**
***Minimum dB (A):* 52.8**
Remarks : During Sampling time Hydra was in running Condition.

End of Report

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Giri
(Manager-Laboratory)
Signatory Authority

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INDICATIVE CONSULTANT INDIA

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/498**
Issued To : **M/s. SNET - SMG JV**
Address : Kestopukur, S.T.P. Project, Dhalipara Road, Kolkata - 700 104.

Sample Ref. No. : SL/498
Report Date : 17.12.16
Date of Monitoring : 10.12.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirm 2005
Location : **Brickfield Sodepur Road (Doctor Bagan), 1600mm Dia Pipe Line at Working Site**
Limit : Night Time : 45 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the E.P.A Act, 1986

Monitoring Details :
Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:40 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	n = dt/T	n X 10^(Li/10)	Sum of n X 10^(Li/10)
1	49.3	0.11111111	8511.380	90970.068
2	48.7		7413.102	
3	50.2		10471.285	
4	48.3		6760.830	
5	49.0		7943.282	
6	50.3		10715.193	
7	48.7		7413.102	
8	50.6		11481.536	
9	49.3		8511.380	
10	50.7		11748.976	

* **The equivalent Noise Level Leq.** 49.59 dB(A)

Maximum dB(A): 50.7
Minimum dB (A): 48.3

End of Report

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Guha
(Manager-Laboratory)
Signatory Authority

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ISO/IEC 17025:2005, ACCREDITED BY NABL, DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING.

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/699**
Issued To : **M/s. SNET - SSG JV**
Address : Kesrapukur, S.T.P. Project, Dhalipara Road, Kolkata - 700 104.
Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirm 2005
Location : **KK Road, 1200mm Dia Pipe Line**
Limit : Day Time : 55 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the EPA Act, 1986

Sample Ref. No. : SL/699
Report Date : 12.12.16
Date of Monitoring : 10.12.16

Monitoring Details :
Height from the floor : 1.5 M
Distance of Source : 3.0 M
Starting Time : 11.05 AM
Total Time (T) : 10 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	49.3	0.11111111	851.380	107213.192
2	52.3		13489.629	
3	50.0		10000.000	
4	48.7		7413.102	
5	50.3		10715.193	
6	51.2		13182.567	
7	48.6		7244.360	
8	50.7		11748.976	
9	51.8		15135.612	
10	49.9		9772.372	

* The equivalent Noise Level Leq = 80.30 dB(A)

Maximum dB(A) : 52.8
Minimum dB (A) : 48.6

End of Report

For. INDICATIVE CONSULTANT INDIA

Checked By

Parbati Gohil
(Manager-Laboratory)
Signatory Authority

Note : 1. Test results shown on this test report relate only to the item tested.
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S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/16-17/700**
Issued To : **M/s. SNET - SSG JV**
Address : Keorapukur, S.T.P. Project, Dhalipara Road, Kolkata - 700 104.

Sample Ref. No. : SL/700
Report Date : 15.12.16
Date of Monitoring : 10.12.16

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Test Method : IS 10988:1984, Reaffirm 2005
Location : **KK Road, 1200 mm Dia Pipe Line**
Limit : Night Time : 45 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, vide S.O. 50 (E) dated 11.01.2010 under the E.P.A Act, 1986

Monitoring Details :

Height from the floor : 1.5 M
Distance of Source : 3.0 M

Starting Time : 10:05 PM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	47.3	0.1111111	5370.318	57024.928
2	46.5		4466.836	
3	48.7		7413.102	
4	47.2		5248.075	
5	46.5		4466.836	
6	47.3		5370.318	
7	48.9		7762.471	
8	47.2		5248.075	
9	46.3		4265.795	
10	48.7		7413.102	

*** The equivalent Noise Level Leq. 47.56 dB(A)**

Maximum dB(A): **48.9**
Minimum dB (A): **46.3**

End of Report

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Purbati Goba
(Manager-Laboratory)
Signatory Authority

Note : 1. Test results shown in this test report relate only to the item tested.
2. This test report shall not be reproduce anywhere except in full and in same format without the approval of the laboratory.

Towards Sustainable Growth

APPENDIX 8: SITE-SPECIFIC HEALTH AND SAFETY PLAN

ENVIRONMENT, HEALTH & SAFETY PLAN

NOVEMBER 2016

PROJECT: REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDEN REACH

Contract No: KEIIP/ICB/TR-1/WS-02/2013-14

PROGRAM: KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP)

EMPLOYER: KOLKATA MUNICIPAL CORPORATION (KMC)

CONTRACTOR: ITD CEMINDIA JOINT VENTURE

Prepared by:

ITD Cemindia Joint Venture

Commitment, Reliability & Quality

आईटीडी सिमेंटेशन इंडिया लिमिटेड

एकीकृत प्रबंधन व्यवस्था नीति
गुणवत्ता - पर्यावरण – सुरक्षा और स्वास्थ्य नीति

आईटीडी सिमेंटेशन इंडिया लिमिटेड आईटीडी समूह की एक कंपनी है तथा भारत की प्रमुख निर्माण कंपनियों में से एक है। आईटीडी सिमेंटेशन इंडिया लिमिटेड गुणवत्ता पर्यावरण व्यावसायिक स्वास्थ्य और सुरक्षा को ध्यान में रखते हुए अपने कार्य कलापों को कटिबद्धतापूर्वक और जिम्मेदारीपूर्वक तरीके से चलाती है।

हम सुनिश्चित करेंगे कि आईटीडी सिमेंटेशन इंडिया लिमिटेड में :

- ग्राहक के कार्य को गुणवत्ता और कार्य समय सीमा की आवश्यकताओं को पूरा करेंगे।
- पर्यावरण व्यावसायिक स्वास्थ्य तथा सुरक्षा के लागू होने वाले कानूनों का पालन करेंगे।
- बेहतर अभ्यास और तकनीकों को अपना कर प्रदूषण पर रोक व नियंत्रण तथा संसाधनों के उपयोग एवं अपशिष्ट की उत्पत्ति में कमी करेंगे।
- अपनी कार्यविधियों व तकनीकों को अपनाते हुए खतरों पर गौर एवं लगातार स्वास्थ्य को रोकने हेतु सुरक्षित और स्वस्थ वातावरण प्रदान करेंगे।
- नियमित लेखा परीक्षण के द्वारा सुनिश्चित कराएंगे कि सभी व्यवस्थाओं का संचालन सुचारू रूप से चले उनमें समय-समय पर संशोधन किया जाए तथा उनका अनवरत सुधार होता रहे।
- कार्य संबन्धित सुरक्षा व स्वास्थ्य के जोखिम तथा नियंत्रण प्रक्रियाओं और महत्वपूर्ण पर्यावरण संबन्धी तथ्यों के विषय में प्रशिक्षण के जरिये एवं जागरूकता के द्वारा कर्मचारियों, ठेकेदारों और ग्राहकों को जागरूकता में वृद्धि हो।

हम प्रयास करेंगे कि आईटीडी सेम अपने कार्य से देश को उपयुक्त विश्वसनीय कम्पनी बने जो पर्यावरण अनुकूल और स्वस्थ व सुरक्षित वातावरण में गुणवत्तापूर्ण उत्पादों का निर्माण करे

हम यह नीति हर तीन साल में एक बार समीक्षित करेंगे ताकि इसे अद्यतित रखें और इसके द्वारा हम अपने व्यवहार को निरंतर ऊँचे स्तर पर ले जा सकें।

०३ नवंबर २०१४

अतुल सारावान
प्रबंध निदेशक

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গুণগতমান, পরিবেশ, সুরক্ষা ও স্বাস্থ্য নীতি

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1. APPROACH TO ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

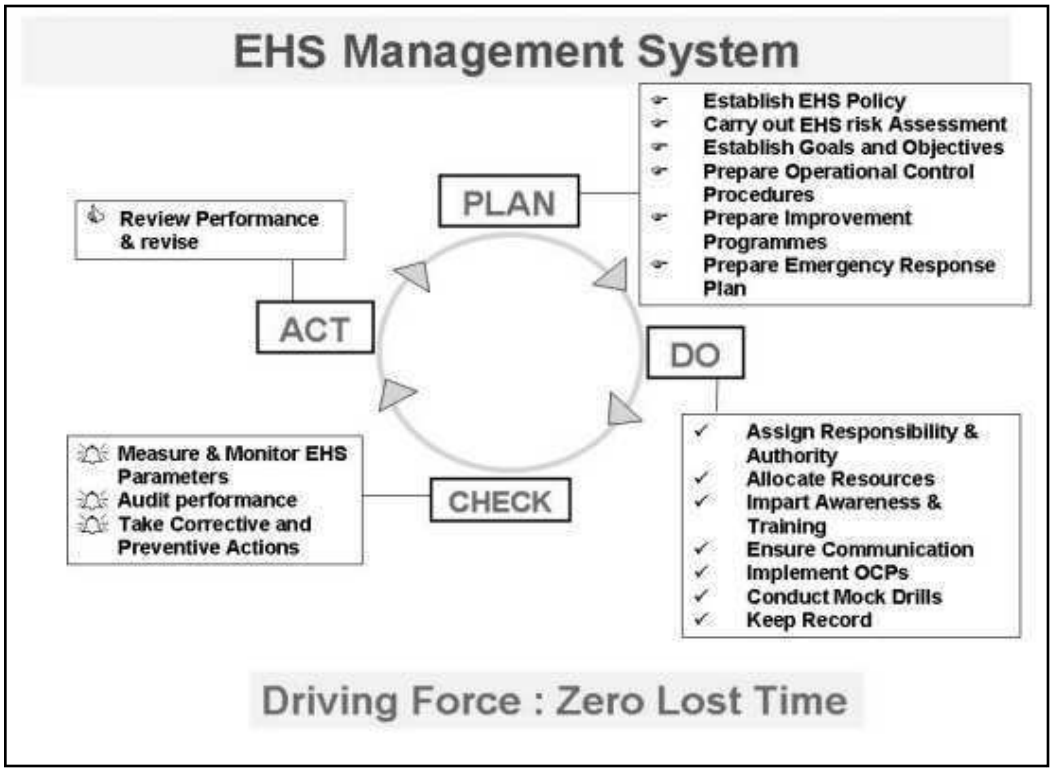
Our approach to Environmental, Safety and Health (EHS) Management is based on overall objective of continually improving EHS performance.

The guiding principles in EHS management are:

- ☞ Prevention of environmental impact and safety risks through sound design practices;
- ☞ Establishing and maintaining systems for "Resource Conservation & Waste Minimization" and "Injury Free Work Environment" in construction activities; and
- ☞ Monitoring of EHS parameters for timely corrective and preventive actions.

The approach takes into account following :

- ☞ Statutory / regulatory and other requirements;
- ☞ Significant environmental aspects and potential hazards; and
- Clients Requirements.



2. SCOPE OF WORK

Site Address:	:	Indira Gandhi Water Treatement Plant,Manirampur,PO & PS : Barrackpore, Kolkata-700120
Client Details:	:	The Kolkata Municipal Corporation Kolkata Environmental Improvement Investment Programme 206, A.J.C.Bose Road, 2nd Floor, Kolkata-700017, West Bengal

Name of Project:	:	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach
Brief Scope of Work:	:	a)Rehabilitation/Strengthening of Intake Jetty No. 2-(Size 15.25m(wide) X 25.50m(Length) b) Strengthening of Embankment in between Presetting Tanks. c) Construction of New Road/Strengthening & Widening of Existing Road including Allied Works. d)Construction of New Water Treatement Plant of capacity 20 MGD(90.90MDL).
Completion Period:	:	12.11.2020
Value of Work:	:	80.5680487 Crores INR

Major Activities.

- ☞ Working Near Water
- ☞ Handling of heavy material by mechanical means
- ☞ Working at height
- ☞ Temporary Site Electrification
- ☞ Operation of heavy machinery
- ☞ Welding and Cutting.
- ☞ Excavation Work
- ☞ Transportation of material
- ☞ Material handling & Housekeeping

Key Environmental Issues:

- ☞ Noise Generation due to Plant & Machinery
- ☞ Dust Generation Due to Vehicle Movement
- ☞ Disposal of Construction Waste
- ☞ Spillage of Diesel and lubricating oils.

3. RESPONSIBILITY AND AUTHORITY FOR EHS MANAGEMENT

Project In Manager(PM)

- The project PM will have overall responsibility of EHS Management at the site and improving safety and health in all areas. He shall:
- Comply with Client's requirements, HSE-Policy of the company and relevant statutory requirements that are applicable to the relevant work.
- Ascertain that all plants and machinery utilized at the project site meets the safety standard and are safe for use.
- Get familiar with and demonstrate his commitment to continual improvement in EHS performance;
- Ensure that all personnel are aware of commitment to environmental protection and worker safety;
- Monitor EHS performance of the personnel and activities under his control;
- Ensure that safe system of work are implemented and maintained by the project Engineers / Supervisors / Foreman and employees at the work site.
- Ensure that Site EHS Plan is accessible to all relevant parties;
- Ensure that sufficient induction training for all employees and workers is given before commencement of work at site and subsequently for new inductees;
- Undertake program of regular EHS Inspection at site.
- Arrange and chair monthly Site EHS Management Review Meeting.

Site/Front In-charge

The Site/Front In-charge will be responsible to the PM for implementation of EHS operational control procedures. In the absence of PM, he would take control of the Site. His duties are similar to that of the PM.

Site Engineers/Supervisors

- They will be responsible to the PM / Site / Front In-charge for implementing the

requirements of this plan. In particular they are required to: -

- Be familiar with Site EHS Plan;
- Maintain safe working conditions and good housekeeping in all areas under his supervision.
- Enforce use of PPE as requested by Project Specific Rules and regulations.
- Liaise and cooperate with Site Safety EHS Officer and ensure that defects brought to attention are corrected.
- Immediately Inform & report to the HSE-Officer while any accident, near misses, dangerous occurrence, occupational poisoning or diseases shall be noticed within the project sites.
- Plan safety in accordance with the approved work methoddology for daily work activities.
- Prepare S.O.P and GRA for each activity and it should be explained to employee before work begins.
- Establish and maintain proper communication with all workers with regard to EHS; and
- Provide proper supervision for the work.

Environment, Health & Safety (EHS) Officer

He will be accountable to the PM for fulfilling the duties assigned to him and ensure implementation of EHS Plan.

His duties will include: -

- Monitor and advise relevant personnel on compliance with EHS statutory obligations at the site;
- Facilitate inclusion of safety elements into work Method Statement.
- Highlight the requirement of safety through Tool-Box / other meetings.
- Conduct investigation of all accident/dangerous occurrences and recommend appropriate safety measures.
- Advice & co-ordinate for implementation of operational control procedures etc.
- Convene safety meeting & minute the proceeding for circulation & follow-up action.
- Provide copies of site / office inspection report to relevant managers;
- Plan procurement of PPEs and safety devices and inspect their healthiness.
- Report to PM/Divisional Manager on all matters pertaining to status of safety and promotional program at site level.
- Facilitate administration of FIRST – AID.
- Facilitate screening of workman and safety induction.
- Conduct fire drill and facilitate emergency preparedness.
- Design campaigns, competitions and other special emphasis programs to promote safety in the work place.
- Notify site personnel non-conformance to safety norms observed during site visits / site inspections.
- Attend and participate in Site EHS Management Review Meetings;
- Access and advise PM on the perceived EHS training needs of project personnel;
- Monitor EHS performance of subcontractors and make appropriate recommendations for performance improvement.

Employees

All employees will be accountable for conforming to the requirement of the EHS Plan and statutory requirements. In particular every employee will be required to: -

- Take care of environmental protection and safety of himself & others;
- Co-operate to fulfill statutory EHS obligations;
- Co-operate in pursuit of continuous EHS performance Improvement; and
- Conform to requirement of Project EHS plan.
- Report defects in lifting appliances, lifting gears, transport equipments and any other equipments or tools & tackles to your immediate superior.
- Not to remove or interfere with any fencing, gangway, ladder, covering, life saving appliances, lighting and other things whatsoever required by site safety rules & regulations.
- Take care of personal protective equipment
- Don't let your work put another worker in danger.

- Use only means of access provided for specific work at site.
- Avoid horseplay, practical jokes or other activities to create a hazard.
- Don't use drugs or alcohol on the job.
- Keep the latrines, urinals, wash points, canteen and other facilities provided in a clean and hygienic condition
- Report any unsafe work practice and any injury or accident to your supervisor.

4. ENVIRONMENTAL RISK ANALYSIS

As a part of preparation of Environmental Management Plan we have analyzed project activities with a view to :

- ☞ Identify environmental aspects associated with all activities that can be controlled and those activities which can be influenced;
- ☞ Assess environmental impact(s) arising out of each identified aspect;
- ☞ Decide aspects that can have significant impact on environment; and
- ☞ Decide appropriate preventive/control measures.

5. HAZARD IDENTIFICATION AND RISK ASSESSMENT

6. SAFETY AND HEALTH OPERATIONAL CONTROL PROCEDURES

To minimize hazards and risks, control measures shall be introduced in the following order of priority: -

- ☞ Engineering controls
- ☞ Administrative controls
- ☞ PPE

7. SITE SAFETY RULES

- No one (including staff and workers etc.) will be allowed to enter the work site without prior induction training & without required PPE.
- Before start of work every day, five minutes pre work briefing shall be conducted by each respective front engineers / supervisor with subcontractor's job supervisor present. The job to be undertaken that day shall be explained.
- Once every week toolbox talks on specific topics will be conducted by the front engineer/supervisor in the presence of safety officer, all talks will be documented on the company's specified format. Toolbox talks will also be given whenever a new activity is taken up or a new gang turns up for work.
- No Staff or workers will be allowed to enter the work site or to start his everyday activity without necessary job related PPE's. If there is any non compliance, Safety Officer or Site Management will issue a warning and if it is repeated impose fine on the concerned person and concerned Sub contractors.
- Smoking is strictly prohibited in all parts of the worksites except specific smoking zone as authorized by the site safety dept.
- Working under influence of drugs, alcohol etc. is strictly prohibited on worksite.
- Carrying unwanted flammable items, explosives etc. strictly prohibited at site.
- No vehicle shall be permitted to enter the work site or introduced into the job without prior induction by the plant and safety dept.
- It is mandatory that all vehicle driver and operator of lifting equipments etc. (heavy

Vehicles like JCB, Tipper, and Crane etc.) should possess valid authorization certificates from the site plant dept. before starting of their respective job.

- It is mandatory that all electrical operated machinery's, equipments etc. (like Vacseal Pump, water pump, welding rectifiers/ transformers, diesel welding generators, panels, Switch gear, starter switch, D G Shed etc.) should be duly certified by ITD-HTD Cem Plant Dept. & Electrical dept. prior to introduction into operation.

- Prior to introduction of any lifting tools, tackles, machinery's etc. in operation it is mandatory to conduct Third Party Competent Persons checking as per requirement and the SWL should be marked on the equipment.

- All employees including workers must know about the exact location and use of fire Fighting equipments. Never restrict the access towards the fire fighting equipment, always keep the access free from any obstructions.

- Considering emergency situation always keep the access around the work site area free from any obstruction for rescue operation.

- Everyone including workers should inform about the accident / incident and dangerous Occurrence to Site In charge, Site Engineer & Safety Officer.

- Always stay alert and keep your mind on the work, when you are engaged in the site work.

- Before starting of everyday work, routine checking of lifting equipments, Tools & Tackles, Winch, all types of pumps etc. to be done by concern Engineer, Supervisor and Worker.

- Don't carry out unfamiliar work without proper instruction. Any error due to ignorance can cause serious damage.

- When working at site especially around the moving machineries, operating winch machine etc., wearing of loose clothing like dhoti, lungi, open sleeve shirt etc. are strictly prohibited.

- Don't leave any tools or materials haphazardly, where they can cause obstruction and create tripping hazards.

- All platforms, walkways, gangways, ramp, work area etc. must be kept clear at all time.

- During gas cutting uses of FLASH BACK ARRESTOR / non return valve are mandatory on each cylinder & torch side.

- It is mandatory to use Earth Leakage Circuit Breaker (ELCB) / Miniature Circuit Breaker (MCB) / Residual Current Circuit Breaker (RCCB) etc. on all site temporary electrical facilities.

- Always use minimum three cores double insulated cables for site electrification job.

- During lifting a load by a crane use of guy rope on both ends is mandatory

- Never use compressed air for cleaning of your clothes or getting relief from excessive heat.

- It is mandatory to install Reverse Horn on all vehicles (Like JCB, Tipper and site

vehicle) and swing horn & over hoist limit switches for lifting equipments like Cranes.

- All materials must be stored in a safe manner and height of stacking should be maintained (below the man height) to protect collapsing of the stack and when material shifting work is carried out manually
- Horseplay inside the site during or after the job is strictly prohibited.
- Never roll the compressed gas cylinders (DA & O_2) at site, either shift it manually or by gas trolley. Use of gas trolley is mandatory for all cutting sets.
- Keep all gas cylinders inside proper shed in upright condition and lock it properly.
- Keep Diesel / Oil in its tank under the shed. Use oil spill trays below diesel tanks.
- Follow the speed limit of 20 Km/hr inside the work premises religiously.

8. FIRST - AID FACILITIES AND MEDICAL TREATMENT

a) Each worksite/area shall be equipped with a first aid box catering to the needs of particular workfront.
b) Medical causality evacuation and treatment procedures involving the nearest clinic / Hospitals shall be instituted.
c) Appointment of trained first aider.

9. EMERGENCY PREPAREDNESS AND RESPONSE PLAN

- **APPROACH**

The aim of this emergency preparedness and response plan is to guide personnel in an accident or emergency situation to prevent or minimize injury, damage and material loss and also to prevent or mitigate environmental impact from the accident or emergency.

- **Emergency Preparedness Facilities**

Following emergency preparedness facilities have been provided at the site:

- All the buildings and structures are well supplied with fire fighting devices.
- Proper security arrangements are functioning round the clock.
- There is quick and efficient transport as well as communication system.
- Smoking is prohibited throughout the flammable premises.
- Water is kept available for fire fighting purpose.
- Sufficient number of trained manpower is available to extinguish any fire and attend emergency.
- Sufficient number of Personal Protective Equipment like helmet and gloves are available
- Audible emergency alarm/whistles are provided.
- First Aid Kit is available.
- All key personnel have been provided communication means such as telephone / walkie-talkie / mobiles. Any message can be communicated immediately.
- All work fronts / floating crafts will have emergency lights and Torches.
- All exit doors are kept unobstructed
- It is ensured that access to fire extinguishers is not obstructed.
- Proper containers are used for flammable liquids.

- Safe distance of POL is maintained from any point of ignition.
- Welding and cutting equipment is checked before and after use.
- Main electrical equipment is switched off when not in use.
- All workers and staff are familiarized with the fire fighting system.
- Escape routes are well defined.
- The POL dumps and gas cylinders are barricaded.
- Fire extinguishers are refilled on time.

Sr. No.	Item	Nos.	Location
1	First aid kits	01 each	In all work fronts
3.	Sand / Fire buckets	As reqd	Store/workshop/office/ Site office container/ All DG Rooms / casting Yard etc.,
4	Fire Extinguishers	As required	Store/workshop/office etc.
5	Safety Helmets	50 Nos	Site Store
6	Safety Shoes Pairs	10 Nos (Each sizes)	Site Store

Annexure IV: Material Safety Data Sheets and Safety Cautions

MSDS - Diesel

- **1.** **PHYSICAL PROPERTIES**

Boiling Point : 170-290 deg.C
Flash point : 35-100 deg.C
Auto ignition temp. : 250-407deg.C
Lower Explosive Limit : 1.3(v/v%)
Melting/Freezing point : -34 to –18°C
Upper Explosive Limit : 6.0(v/v%)
Specific gravity : 0.841 at 16°C (liquid)
Vapour pressure : 2-6 mm @ 10°C
Category : Inflammable
Solubility in water : Floats on water
Reactivity with water : No reaction
Reactivity with other materials : Strong oxidisers

- **2.** **FIRE/EXPLOSION HAZARD**

- Fire : Flammable, may be ignited by spark or flame
- Explosion: Container may explode in heat or fire Vapour explosion hazard indoor, outdoors or in sewers. Forms explosive mixture with air
- Fire-fighting: Dry chemical, CO_2, Halogen, Water spray or standard foam`

- **3.** **HEALTH HAZARDS**

- Target organs : Eyes, skin, respiratory system and central nervous system.
- Pathway : Inhalation, ingestion and contact
- Symptoms: Dizziness, headache, nausea, irritation of eye, nose throat and vomiting

- **4.** **EMERGENCY ACTION**

General
Keep unnecessary people away, isolate hazard area and deny entry.
Stay upwind, out of flow areas, and ventilate close spaces before entering.

Self-contained breathing apparatus and chemical protective clothing which is specifically recommended by the shipper or producer may be worn but they do not provide thermal protection unless it is stated by the clothing manufacturer

Fire

- Small Fires : Dry chemicals, CO_2, Halogen, water spray or standard foam.
- Large Fires : Water spray, fog or standard foam is recommended.

Spill or Leak

- Do not touch spilled material; stop leak if you can do it without risk.
- Small Spills: Take up with sand or other non-combustible absorbent material and place into containers for later disposal.
- Large Spills: Like for ahead or liquid spill for later disposal.

5. FIRST AID

- Eye: If this chemical contacts the eye, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.
- Skin: If this chemical contacts the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention.
- Breath: If a person breathes large amount of this chemical, moves the exposed person to fresh air at once. If breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected person warm and at rest. Get medical attention as soon as possible.
- Swallow: If these chemicals swallowed get medical attention immediately.

6. PERSONAL PROTECTION

Clothing : Wear proper protective equipment to avoid prolonged contact.
Respiratory : Provide proper respiratory devices
Eyes : Wear goggles giving complete protection to eyes.
Gloves : Plastic or rubber gloves.

Safety Cautions: Diesel Storage

- Containers for Diesel petroleum shall be constructed of steel or iron with air space of not less than 5% of its capacity
- No petroleum receptacle shall be repaired by hot work unless thoroughly cleaned and freed from petroleum and later certified by competent person.
- Prohibition on smoking, fires, lights etc. in proximity to place of storage
- No electric line to be used in storage shed
- All apparatus used shall be spark proof.
- Earthing & Bonding: All electrical systems and equipment of structures, plant and other noncurrent carrying metallic parts of major electric equipment or where diesel is stored shall be earthed and resistance of earthing shall not be more than
- a) 4 in case of electrical system
- b) 10 in case of all non current carrying metallic parts of electrical equipment
- c) All joints in pipe line, plant & storage tank made continuously by bonding
- Portable lamp or apparatus shall not be used in hazardous area
- No person shall carry matches, fuses or other appliances or explosives in a shed used for storage of petroleum.

- ☞ Adequate no. of fire extinguishers of DCP type to be provided.
- ☞ Capacity in liters or Kilo liters of each tank shall be conspicuously marked

Health and Safety Management Plan

November 2016

PROJECT: **CONSTRUCTION OF PUMPING STATION IN BEGOREKHAL AND IN JOKA TRAM DEPOT AND CONSTRUCTION OF SEWERAGE AND DRAINAGE NETWORK WITHIN DIAMOND HARBOUR ROAD CATCHMENT**

Contract No: KEIIP/ICB/TR-1/SD05/2013-14

PROGRAM: **KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)**

EMPLOYER: **KOLKATA MUNICIPAL CORPORATION (KMC)**

CONTRACTOR: **TANTIA-MPPL (WILO) JV**

Prepared by

TANTIA-MPPL (WILO) JV

Pre Construction and Construction phase Health and Safety Management Plan

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Health and Safety	Danger of construction related injuries. Open fires in construction camp can result in accidents Safety of workers and general public must be ensured. Poor waste management practices and unhygienic conditions at temporary ablution facilities can breed diseases. Standing water due to inadequate storm water drainage systems, inadequate waste management practices, pose a health hazard to providing breeding grounds for disease vectors such as mosquitoes, flies and snails. The use of hazardous chemicals in the micro-tunnelling and restoration of roads can pose potential environmental, health and safety risks. Road safety may be affected during construction, especially when traffic is detoured.	Implement good housekeeping practices at the site office, working area. Strictly implemented health and safety measures and audit on a regular basis. Construction site – particularly excavated area already barricaded . Warning signs has been proved at hazardous working areas. Working area clearly demarcated, barricaded to protect pedestrians from open areas like trial trench Thoroughly trained workers assigned to dangerous equipment. Waste management practices will be well undertaken Speed and movement of construction vehicles restricted Personal Protective Equipment are provided to all workers Visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas have been ensured First Aid system available at working sites Medical insurance provided to workers Drinking water arranged at working sites Mark and provide sign boards for hazardous areas Signage has been in well known to, and easily understood by workers, visitors, and the general public as appropriate. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.	Company's health and safety guidelines will be followed

APPENDIX 9: SCANNED COPY OF CONTRACTOR'S INSURANCE FOR WORKERS

Package: Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach

नल इन्श्योरेन्स कंपनी लिमिटेड

NATIONAL INSURANCE COMPANY LTD.
(A Govt. of India Undertaking)
DO - XIV, Sterling Cinema Bldg., 2nd Floor,
65, Murzban Street, Mumbai - 400 001.
Tel. : 2201 9971 / 2201 9630 • Fax : 2201 9973

ACY SCHEDULE 266210

Employees Compensation Insurance Policy

INSURANCE

Agent Name: Howden Insurance Brokers India Pvt. Ltd.

Issuing Office Code : 260000
Address :Second Floor, Sterling Cinema Building, 65, Murzaban Street, Fort, Mumbai, Greater Mumbai,
Telephone :022 22819930 (D) 22819971 (O)
Special Client Code : 220
Paid Up Capital Upto Rs. 15 Crores

Sr.No | Description | Sum Insured (Rs)

1 |30 INDIAN WORKERS ENGAGED IN PILING, CIVIL WORKS NOT ON ELEVATED STRUCTURE | 13,80,000.00

2 |19 INDIAN WORKERS EARNING ENGAGED IN CLERICAL STAFF INCLUDING TECHNICIAN ASST., PEONS, SECURITY GUARD, COOKS ETC. EMPLOYED FOR INDOOR AS WELL AS OUT DOOR WORK | 13,76,000.00

Total Sum Insured (Rs.) : Rs.87,76,000.00

Sum Insured (In Words) : RUPEES EIGHTY EIGHT LAKH SEVENTY SIX THOUSAND ONLY

Risk Covered : 49 INDIAN WORKERS ENGAGED -REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDEN REACH PROJECTS, EMPLOYER : KOLKATA MUNICIPAL CORPORATION, KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAMME CONTRACT NO: KEIIP/ICB/TR-1/WORKS/2013-14
Location : KOLKATA, INDIA
Special Perils : AS PER STANDARD WC POLICY WITH COVERING WC ACT 1923 WITH ALL SUBSEQUENT AMENDMENTS, FATAL ACCIDENT ACT 1855 & COMMON LAW
Special Exclusion : AS PER STANDARD WC POLICY
Subject To Clause : AS PER STANDARD WC POLICY, OCCUPATIONAL DISEASES LIMIT RS. 1 LACH PER EMPLOYEE, MEDICAL EXPENSE LIMIT RS. 15,000/- PER ACCIDENT PER EMPLOYEE, AGGREGATE LIABILITY FOR ALL ACCIDENT DURING THE PERIOD OF INSURANCE RS.20,00,000/-
Special Excess : AS PER STANDARD WC POLICY
Special Conditions: AS PER STANDARD WC POLICY.
THE DATA PROVIDED CONSIST OF LOCAL EMPLOYEES, CONTRACTUAL LABOURERS, SUB CONTRACTORS AT ALL LEVEL & EXPAT WORKERS.
GENERAL POLICY NO: 260600/41/14/8500000061

Premium Computation :
Net Premium : Rs.1,32,306.00 Service Tax : Rs.19,184.00 Stamp Duty : Rs.1.00 Total : Rs.1,51,491.00
Chargeable :Rs

Witness whereof this policy has been signed at 2ND FLOOR, STERLING CINEMA this 17th day of December , 2015.

For And On Behalf Of
National Insurance Company Limited

Authorised Signatory

Terms and conditions attached. You are requested to check the document and if any discrepancy is observed, please contact policy issuing office immediately.

AE-01PAE-17/12/2015 14:11:49-1-1 260000 - 4.0.0.0 All other terms and conditions remain unaltered Page 1of 1

ल इन्श्योरेन्स कंपनी लिमिटेड

NATIONAL INSURANCE COMPANY LTD.

(A Govt. of India Undertaking)
DO - XIV, Sterling Cinema Bldg., 2nd Floor,
65, Murzban Street, Mumbai - 400 001.
Tel. : 2201 9971 / 2201 9630 • Fax : 2201 9973

C.D. Debit/Credit Advice 260229

O OFFICE : 260600 (Office Code),
Floor, Sterling Cinema Building,
rzaban Street, Fort, Mumbai, Greater
, Maharashtra, Pin : 400001

Voucher Number : 260600/81/15/0000000954
Voucher Date : 17/12/2015
Development Officer : 913030
Bank Account : 9100

de : 239
D CRN IV
AL PLASTIC BLDG., VILE PARLE(E),
- 57

lance of your CD A/C before inception of Risk was Rs. 1,62,664.09. Adjustment made on 17/12/2015 is Rs.1,51,490.00 Your e after adjustment is Rs.11,174.09 (RUPEES ELEVEN THOUSAND ONE HUNDRED SEVENTY FOUR AND PAISE NINE ONLY), and your balance as e is Rs.11,174.09 (RUPEES ELEVEN THOUSAND ONE HUNDRED SEVENTY FOUR AND PAISE NINE ONLY).

icy Number / icy Effective Dt.	TR Code	End/Dcn/Dec/Clm Year Number	Particulars	Credit Amount (Rs.)	Debit Amount (Rs.)	Amount Received (Rs.)	A/C Head Genl Sub
600/41/15/2600000030 12/2015	11		CASH PREMIUM A/C	1,32,306		1,32,306	5003
600/41/15/2600000030 12/2015	11		SERVICE TAX	19,184		19,184	5443
600/41/15/2600000030 12/2015	11		EDUCATION CESS				5443
600/41/15/2600000030 12/2015	11		C.D CONTROL A/C		1,51,490	-1,51,490	5074 239
			Total(In Rs.) :	1,51,490	1,51,490	1,51,490	

alars : .

For National Insurance Company Limited

Authorised Signatory

ase quote Document No Voucher No and date in all correspondence

पंजीकृत एवं प्रधान कार्यालय : 3, मिडिलटन स्ट्रीट, कोलकाता 700 071 • Registered & Head Office : 3, Middleton Street, Kolkata 700 071 • Visit us at : www.nationalinsuranceindia.com

17/12/2015 14:11:41-1-1 You are requested to check the document and if any discrepancy is observed, please contact policy issuing office immediately. Page 1 of 1

Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method

नेशनल इन्श्योरेन्स कंपनी लिमिटेड

NATIONAL INSURANCE COMPANY L[illegible]

(A Govt. of India Undertaking)
DO - XIV, Sterling Cinema Bldg., 2nd Floor,
65, Murzban Street, Mumbai - 400 001.
Tel.: 2201 5971 / 2201 9830 • Fax: 2201 6973

POLICY SCHEDULE

Dept: Workmen Compensation — Employees Compensation Insurance Policy

Policy Number: [illegible]

Agent Code: [illegible] Agent Name: [illegible] Insurance Brokers India Pvt. Ltd. Agent Contact No: [illegible]

Insured's Name: ITD ITD CEM JV
Address: NATIONAL PLASTIC BUILDING, A-SUBHASH ROAD, PARANJAPE B-SCHEME, VILE PARLE (E), MUMBAI Dist.: GREATER MUMBAI, Maharashtra Pin Code: [illegible]

Issuing Office Code: [illegible]
Address: Second Floor, Sterling Cinema Building, 65, Murzban Street, Fort, Bombay, Greater Bombay.
Telephone: [illegible]
Special Client Code: [illegible]
Paid Up Capital Upto Rs. [illegible] Crores

Development Officer: [illegible]
Date Of Proposal & Declaration: [illegible]/2016 Client Type: Corporate
Policy Period: 00:00 Hrs. On [illegible]/2016 To Midnight of [illegible]/2017
[illegible] FIFTEEN TWO LAKH NINE THOUSAND NINE HUNDRED [illegible] ONLY [illegible]
[illegible]

Srl.No	Description	Sum Insured (Rs.)
1	[illegible] WORKERS ENGAGED IN CONSTRUCTION OF TUNNELING & SHAFT RELATED WORK; THAI WORKERS EARNING BEYOND RS.[illegible]/-	[illegible]
2	[illegible] WORKERS ENGAGED IN CONSTRUCTION OF TUNNELING, [illegible] CLERICAL STAFF, [illegible] ENGAGED IN OPEN CUT & PIPE LAYING, [illegible] WORKERS IN FABRICATION OF PIPES AND RELATED WORK) INDIAN WORKERS EARNING UPTO RS.[illegible]/-	[illegible]
3	[illegible] WORKERS ENGAGED IN CONSTRUCTION OF TUNNELING, [illegible] CLERICAL STAFF, [illegible] ENGAGED IN OPEN CUT & PIPE LAYING, [illegible] WORKERS IN FABRICATION OF PIPES AND RELATED WORK) INDIAN WORKERS EARNING BEYOND RS.[illegible]/-	[illegible]

Total Sum Insured (Rs.): Rs.[illegible]

Total Sum Insured (In Words): RUPEES ONE CRORE EIGHTY EIGHT LAKH TWENTY FIVE THOUSAND [illegible] HUNDRED ONLY

[illegible] Covered: TOTAL [illegible] WORKERS: [illegible] INDIAN WORKERS AND [illegible] THAI WORKERS UNDER EMPLOYEE COMPENSATION INSURANCE POLICY ENGAGED IN PROJECT OF LAYING OF WATER TRUNK MAIN AT KOLKATTA DETAILS OF NATURE OF WORK AS PER SHEET ATTACHED WITH POLICY

Location: KOLKATTA

Special Scope: AS PER STANDARD EMPLOYEE COMPENSATION INSURANCE POLICY WITH [illegible] WC ACT 1923 WITH ALL SUBSEQUENT AMENDMENTS, FATAL ACCIDENT ACT 1855 & COMMON LAW

Special Exclusion: AS PER STANDARD EMPLOYEE COMPENSATION INSURANCE POLICY. [illegible] EXPENSES ARE NOT COVERED

Subject To Clause: AS PER STANDARD EMPLOYEE COMPENSATION INSURANCE POLICY

Special Excess: NIL

Special Conditions: PROJECT COVERS EMPLOYEES ENGAGED IN CONSTRUCTION OF TUNNELING & SHAFT LINING & RELATED WORKS; CLERICAL STAFF INCL ASST, TECH, [illegible]; WORKMEN ENGAGED IN OPEN CUT & PIPE LAYING RELATED WORK; WORKMEN ENGAGED IN FABRICATION OF PIPES & RELATED WORK.
THE DATA PROVIDED CONSIST OF LOCAL EMPLOYEES, CONTRACTUAL LABOURERS, SUB CONTRACTORS AT ALL LEVELS & EXPAT WORKERS.
NATURE OF WORK AS PER SHEET ATTACHED. RENEWAL POLICY NO: [illegible]

Premium Computation:
Net Premium: Rs.[illegible] Service Tax: Rs.[illegible] Stamp Duty: Rs.[illegible] Total: Rs.[illegible]
[illegible]

[illegible] Registered & Head Office: 3, Middleton Street, Kolkata 700 071 [illegible]

[illegible] Insured are requested to check the document and if any discrepancy is observed, [illegible] immediately.
This Policy/Endorsement is valid subject to realisation of cheque. In case of dishonour of cheque the Policy/Endorsement [illegible] stand cancelled and void [illegible]

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

दि ओरिएण्टल इंश्योरेंस कम्पनी लिमिटेड

THE ORIENTAL INSURANCE COMPANY LIMITED

पंजीकृत कार्यालय : ओरिएण्टल हाउस, पो.बॉ.नं. 7037-ए-25/27, आसफ अली रोड, नई दिल्ली-110002

Regd. Office.: "Oriental House", P.B. No. 7037-A-25/27, Asaf Ali Road,New Delhi-110002

(भारत सरकार का उपक्रम)

(A Gov. of India Undertaking)

जारीकर्ता कार्यालय : Issuing Office

श्रमिक क्षतिपूर्ति बीमा पालिसी

WORKMEN'S COMPENSATION INSURANCE POLICY

श्रमिक क्षतिपूर्ति अधिनियम 1923 भारतीय घातक दुर्घटना अधिनियम 1855 लोकविधि

Workmen's Compensation Act, 1923, Indian Fatal Accident Act, 1855 Common Law

जबकि अनुसूची में उल्लिखित व्यवसाय करने वाले व्यक्ति ने प्रस्ताव एवं घोषणा द्वारा, जो इस संविदा का आधार होगा और जिसे इसमें सम्मिलित माना जाएगा, ओरिएण्टल इंश्योरेंस कम्पनी को उल्लिखित प्रयोजन के बीमे के लिए आवेदन दिया है और ऐसे बीमे के प्रतिफल के रूप में प्रीमियम का भुगतान कर दिया है।

Whereas the Insured carrying on the business described in the Schedule and no other for the purpose of this Insurance by a proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein has applied to THE ORIENTAL INSURANCE COMPANY LTD. for the insurance contained and has paid the premium as consideration for such insurance.

अब यह पालिसी साक्षी है कि यदि बीमे की अवधि के दौरान बीमाकृत का कोई भी कर्मचारी व्यवसाय में बीमाकृत द्वारा रोजगार के दौरान रोग या दुर्घटना से वित्तगत रूप में क्षतिग्रस्त होता और यदि नियम के अन्तर्गत बीमाकृत ऐसी क्षतिपूर्ति अदा करने के लिये देय होगा।

Now this policy witnesseth that if at any time during the period of insurance any employee in the insured's immediate service sustain personal injury by accident or disease arising out of and in the course of his employment by the insured in the business and if the insured shall be liable to pay compensation for such injury either under,

सूची में उल्लिखित कानुन / **THE LAW (S) SETOUT IN THE SCHEDULE**

या / **OR AT**

लोक विधि / **COMMON LAW**

तब कम्पनी इसमें उल्लिखित या इसके साथ पृष्ठांकित अपवादों और शर्तों के अधीन बीमाकृत को उन सभी राशि के प्रति क्षतिपूर्ति करेगी जिनके लिये बीमाकृत देय होगा और इसके अतिरिक्त ऐसी क्षतिपूर्ति के लिये किसी दावे को प्रतिवादित करते हुए उसकी सहमति से किये गये सभी खर्चे व लागत देने के लिये उत्तरदायी होगी।

then subject to the terms exceptions and conditions contained herein or endorsed hereon the Company will indemnify the Insured against all sums for which the insured shall be so liable and will in addition be responsible for all costs and expenses incurred with its consent in defending any claim for such compensation.

बशर्ते के लिये शर्त है कि कानुन में किसी परिवर्तन या किसी अन्य कानुन के प्रतिस्थापन की स्थिति में यह पालिसी स्थायी रहेगी लेकिन कम्पनी का दायित्व उस राशि तक सीमित होगा, जिसके लिए कम्पनी कानुन में परिवर्तन न होने की स्थिति में देय होती।

Provided always that in the event of any change in the Law (s) or the substitution of other legislation therefore this policy shall remain in force but the liability of the Company shall be limited to such sum as the Company would have been liable to pay if the law (s) had remained unaltered.

अपवाद / **EXCEPTION**

कम्पनी निम्न के सम्बन्ध में इस पालिसी के अन्तर्गत देय नहीं होगी :

The Company shall not be liable under this policy in respect of :

क) युद्ध आक्रमण, विदेशी शत्रु की कार्यवाही, शत्रुतापूर्ण कार्यवाही (चाहे युद्ध हुआ हो या नहीं) गृह युद्ध, विद्रोह, राजद्रोह, क्रान्ति या मिलिटरी या हथियाई गयी सत्ता के कारण प्रत्यक्ष रूप में रोग या दुर्घटना द्वारा कोई क्षति।

a) Any injury by accident or disease directly attributable to war, invasion, act foreign enemy, hostilities (whether war be declared or not), civil war, mutiny, insurrection, rebellion, revolution or military or usrped power.

ख) ठेकेदारी के कर्मचारियों का बीमाकृत पर दायित्व।

b) The insured's liability to employees of contractors to the insured.

दि ओरिएण्टल इंश्योरेंस कं. लि.
The Oriental Insurance Co. Ltd.
भारत सरकार का उपक्रम/(A Govt. of India Undertaking)
कार्पोरेट बिजनेस यूनिट/Corporate Business Unit
7, रेड क्रॉस प्लेस/7, Red Cross Place
कोलकाता 700 001/Kolkata 700 001

EMPLOYERS LIABILITY-OTHER THAN COLLIERIES POLICY SCHEDULE

Policy No.	: 311800/48/2017/466	Prev. Policy No.	:
Cover Note No.	:	Cover Note Date	:
Insured's Code	: 75786484	Issue Office code	: 311800
Insured's Name	: Tantia -MPL (WILO)JV	Issue Office Name	: CBU Kolkata
Address	: KOLKATA	Address	: 7 RED CROSS PLACE KOLKATA WEST BENGAL 700001
Tel./Fax/Email	: / / 0 / NA	Tel./Fax/Email	: (033)2248-2606 / (033)2248-2555 / 311800@orientalinsurance.co.in

Agent/Broker Details

Dev.Off.Code	:
Agent/Broker	: LC00000000198 SALASAR SERVICES INSURANCE BROKERS P LTD
Address	: 23A NETAJI SUBHAS ROAD,6TH FLOOR,KOLKATTA 700001,CALCUTTA,WEST BENGAL,700001
Tel/Fax/Email	: 03332943438/03332943438/

Period of Insurance : FROM 00:00 ON 01/11/2016 TO MIDNIGHT OF 31/10/2017

POLICY STAMP NOT AVAILABLE

Collection No. & Dt. : CHQCSH 4019001152 - 25/10/2016

Gross Premium : 25,142 Service Tax : 3772 Stamp Duty : 25 Total : 28,914

Co-insurance Details : NIL

Laws

Risk Information

Contract Details

Principal Name	:	
Site of work	:	Brigore Khal, Joka Tram Depot, and Diamond Harbour Road Catchment, Kolkata, West Bengal
Trade description	:	Construction of pumping stations in Beghore Khal and in Joka Tram Depot. And construction of Sewerage and Drainage network within Diamond Harbour Road Catchment
Address	:	Brigore Khal, Joka Tram Depot, and Diamond Harbour Road Catchment, Kolkata, West Bengal
State	:	WEST BENGAL
City	:	SOUTH 24 PARAGANAS
Pincode	:	743512

Contractors Information

Place :
Date : 25/10/2016

For and on behalf of
The Oriental Insurance Company Limited

Authorised Signatory

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33208485

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 1 of 3

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

Attached to and forming part of policy number 311800/48/2017/466

Sr. No.	Name of the Contractor	Occupation	Labour (%)	Amount of Contract
1.	TANTIA - MPPL (WILO) JV (100 Unskilled Workers)		100	8,021,832
2.	TANTIA - MPPL (WILO) JV (25 Skilled Workers)		100	2,426,970

The insurance under this policy is extended to cover risks of (as per forms attached): NIL

Total Premium in words : Indian Rupees Twenty-Eight Thousand Nine Hundred Fourteen Only

The insurance under this policy is subject to Warranties & Clauses(as per forms attached)

"It is hereby agreed that this policy doesnot cover medical expenses" as required under the provision 2A of the Workmen Compensation Act, 1923(as amended) and described above.

Subject to adjustment in the terms of Condition 6 The estimated amount of wages/salaries & other earnings on which premium is based

It is hereby understood and agreed that the indemnity herein is extended to cover the legal liability of the insured to workmen in the employment of contractors performing work for the insured while engaged in the business and occupations in respect of which the within Policy is granted, but only so far as regard claims under the workmen's compensation act , 1923 and subsequent amendments of said Act prior to the date of the issue of this Policy , the premium in respect of such extended insurance to be calculated

In the event of a claim under the policy exceeding Rs. 1 lac or a claim for refund of premium exceeding Rs. 1 lac the insured will comply with the provisions of the AML policy of the Company.The AML policy is available in all our operating offices as well as Company's website

Not applicable

Warranted that in case of dishonour of premium cheque(s) the Company shall not be liable under the policy and the policy shall be void abinitio (from inception).

In witness whereof the undersigned being authorised by and on behalf of the Company has/have herein to set his/their hands at CBU Kolkata on 25TH DAY OF OCTOBER 2016.

Place :

Date : 25/10/2016

For and on behalf of
The Oriental Insurance Company Limited

Authorised Signatory

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33205485

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 2 of 3

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

Package- Compliance to EMP of for the Package - Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP

L&T Insurance

Unique Risk Hold Number	DEL/2016/July/4220		
Date	18-Jul-16		
Risk Hold Letter will be valid for 10 days only			
The insured name below, having proposed to effect the insurance as mentioned below and having paid premium the risk is hereby insured as per the following terms & Conditions			
Insured Name	M/S SNET-SSG JV C/O The Project Director Kolkata Environmental Improvement Investment Programe The Kolkatta Municipal Corporation		
Address	90/32, Okhla Industrial Area, Phase - I, New Delhi- 110020, India		
Site Location	Kolkatta		
Nature of Work	Construction of S&D Network and Pumping Station in Borough XIII (Ward 122) including replacement of GAP Sewer Line in Borough XV, Laying of Pumping main and Rehabilitation of SSE STP, under Municipal Corporation of Kolkatta		
Policy Period	From: 22/07/2016 to 21/01/2017		
Property Details	LOB	Sum Insured	Premium Amount with ST
	WC	2,565,900	11,046
Total			11,046
Payment Details	Bank Name:-United Bank Of India, Chq No:-360460, Chq Date:-18/07/2016, Chq Amt:-11,046/-		

Other terms, clauses, conditions and coverage for the policy would be as per quote attached.
Note: In the event of the dishonor of cheque, this policy document automatically stands cancelled from
Note : Complete identification / machine nos. along with sum insured bifurcation to be provided for policy

Authorized Signatory
For L&T General Insurance Company Limited

L&T Insurance

POLICY SCHEDULE

Workmen's Compensation Insurance

Broker Name: Prudent Insurance Brokers Pvt. Ltd

Broker Code: 133300006 Contact Number: 22 3306 6000

Policy Number: [illegible] Issued at Delhi Branch Date: [illegible]

Policy Servicing Office: Delhi Branch, 4th Floor DCM Building, 16, Barakhamba Road, New Delhi-110001 Ph: [illegible]

THE INSURED:

Name: M/S SNET-SSS JV C/O THE PROJECT DIRECTOR KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAMME THE KOLKATTA MUNICIPAL CORPORATION

Address: B1/22, OKHLA INDUSTRIAL AREA, PHASE - I, NEW DELHI, 110020, INDIA

Telephone / Mobile No: [illegible]

Business Description: CONSTRUCTION OF SSD NETWORK AND PUMPING STATION IN BOROUGH XII (WARD 123) INCLUDING REPLACEMENT OF GAP SEWER LINE IN BOROUGH XV, LAYING OF PUMPING MAIN AND REHABILITATION OF [illegible] STP UNDER MUNICIPAL CORPORATION OF KOLKATA

Period of Insurance: From 00:01 o' clock on 22/07/2016 to midnight on 21/07/2017

PREMIUM DETAILS

Premium	Rs. [illegible]
Service Tax	Rs. [illegible]
Total Premium	Rs. [illegible]

(Subject to premium adjustment based on actual amount of wages, salaries and other earnings to be declared at the end of the policy period.)

Estimated Number of Employees	Occupation of Employees	Estimated Total Earnings (Rs.)	Place or Places of Employment
75	Skilled Workers	[illegible],500.00	Kolkata
[illegible]	Unskilled	1,588,400.00	Kolkata
	Total	[illegible]	

Laws:

a. WC Act 1923 and subsequent amendment of the said Act prior to the date of issue of the policy provided that the insurance granted hereunder is not extended to include:

Any interest and/or penalty imposed on the Insured on account of his/their failure to comply with the requirements laid down under WC Act 1923

Occupational diseases listed in part C of the schedule III of the Act unless specifically requested by the Insured and covered by an endorsement to the policy

Medical expenses incurred by an employee for treatment of injuries caused during the course of employment unless specifically requested by the Insured and covered by an endorsement to the policy and

Compensation for Diseases listed in Part A of the Schedule III of the Act unless specifically requested by the Insured and covered by an endorsement to the policy.

Package: Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works

दि ओरिएण्टल इंश्योरेंस कम्पनी लिमिटेड

THE ORIENTAL INSURANCE COMPANY LIMITED

(A Govt. of India Undertaking)

Regd. & Head Office :

A-25/27, Asaf Ali Road, New Delhi - 110 002

EMPLOYERS LIABILITY OTHER THAN COLLIERIES POLICY SCHEDULE

POLICY STAMP NOT AVAILABLE

Policy No.	: 311504/48/2016/5446	Prev. Policy No.	: -
Cover Note No.	: -	Cover Note Date	: -
Insured's Code	: 71783563	Issue Office code	: 311504
Insured's Name	: M/S.S.MISHRA INFRADEV PVT.LTD.	Issue Office Name	: DIRECT AGENT BRANCH
Address	: ROOM NO.78,CE MARKET,CE BLOCK,SECTOR-1 SALT LAKE CITY,(KEIIP/NCB/TR-1/OR-08A/2015-16) CALCUTTA 700064	Address	: 7 ,REDCROSS PLACE FIRST FLOOR KOLKATA WEST BENGAL 700001
Tel./Fax/Email	: / / 0 / NA	Tel./Fax/Email	: (033)2246-6399 / (033)22311735 / 311504@orientalinsurance.co.in

Agent/Broker Details

Dev.Off.Code	: NA0000004806 DIRECT
Agent/Broker	: BA0000100219 GOUTAM KRJKHAMARU
Address	: KUSUMBA,SAHAPAARA,NARENDRAPUR,SOUTH 24PGS,W.B.700 103,CALCUTTA,WEST BENGAL,700064
Tel/Fax/Email	: 9432346186, 033-2434-6186//

Period of Insurance : FROM 15:35 ON 25/02/2016 TO MIDNIGHT OF 24/02/2017

Collection No. & Dt. : CHQ 4010006822 - 25/02/2016

Gross Premium : 12,040 Service Tax : 1748 Stamp Duty : 12 Total : 13,788

Co-Insurance Details : NIL

Laws

Risk Information

Contract Details

Principal Name	:	
Site of work	:	03 NOS.OF SKILL & 07 NOS OF UNSKILLED LABOURS
Trade description	:	FOR INTERIOR RENOVATION OF KEIIP OFFICE AT BUSINESS TOWERS(206 AJC BOSE ROAD,KOLKATA=17)INCLUDING ELECT.WORKS & AIR CONDITIONING WORK
Address	:	
State	:	WEST BENGAL
City	:	CALCUTTA
Pincode	:	700064

Contractors Information

Place : KOLKATA

Date : 25/02/2016

For and on behalf of The Oriental Insurance Company Limited

Authorised Signatory

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33206485

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 1 of 2

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

ओरिएण्टल इंश्योरेंस कम्पनी लिमिटेड
(भारत सरकार का उपक्रम)

THE ORIENTAL INSURANCE COMPANY LIMITED
(A Govt. of India Undertaking)
Regd. & Head Office :
A-25/27, Asaf Ali Road, New Delhi - 110 002
Visit us at : www.orientalinsurance.org.in
Address all communication to Policy Issuing Office

Attached to and forming part of policy number 211504/48/2016/[illegible]

1 AS ABOVE

128,700

The Insurance under this policy is extended to cover risks of (as per forms attached). NIL

Total Premium in words : Indian Rupees Four Thousand Four Hundred Twenty-Five Only

The Insurance under this policy is subject to Warranties & Clauses(as per forms attached).

"It is hereby agreed that this policy doesnot cover medical expenses" as required under the provision 2A of the Workmen Compensation Act, 1923(as amended) and described above.

Subject to adjustment in the terms of Condition 6.The estimated amount of wages/salaries & other earnings on which premium is based.

In the event of a claim under the policy exceeding Rs. 1 lac or a claim for refund of premium exceeding Rs. 1 lac,the insured will comply with the provisions of the AML policy of the Company.The AML policy is available in all our operating offices as well as Company's website.

It is hereby understood and agreed that the indemnity herein is extended to cover the legal liability of the insured to workmen in the employment of contractors performing work for the insured while engaged in the business and occupations in respect of which the within Policy is granted, but only so far as regard claims under the workmen's compensation act , 1923 and subsequent amendments of said Act prior to the date of the issue of this Policy , the premium in respect of such extended insurance to be calculated.

Not applicable

Warranted that in case of dishonour of premium cheque(s) the Company shall not be liable under the policy and the policy shall be void abinitio (from inception).

In witness whereof the undersigned being authorised by and on behalf of the Company has/have herein to set his/their hands at DIRECT AGENT BRANCH on 25TH DAY OF FEBRUARY 2016

Entered By : PARTHA MAJUMDAR
Examined By : SANJIB DAS

For and on behalf of
The Oriental Insurance Company Limited

Authorised Signatory

Place : KOLKATA
Date : 25/02/2016

For and on behalf of
The Oriental Insurance Company Limited

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158. All the Amounts mentioned in this policy are in Indian Rupee

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Page 2 of 2

APPENDIX 10: SAMPLE ACCIDENT RECORD

Package WS 02

ITD CEMENTATION INDIA LIMITED

SR - 3

ANALYSIS OF INJURIES AND DANGEROUS OCCURRENCES

Site Name & No. : KEIIP - A1114AT

Month:October' 2016

Sr. No.	Date	Name of person	Sex	Age	Time	Designation	Company / Subcontractor	* Agency	Type of Accident	Unsafe Condition / Act	Nature of Injury	Location of Injury	Root Cause
1	28.10.16	Yashwant Bhowmick	M	35	3.30P.M	Helper	Company	itd-cemindia jv	First-Aid	Unsafe Act	First-Aid	Jetty	The worker shifting the material from one side to other suddenly the channel stuck his finger and the worker got injured.

* Note: Agency is the object or substance which is most closely associated with the accident causing the injury like machines, equipments, vehicles, hand tools, ladders, scaffolds, explosive, dust, gases, chemical, radiations, fire, water, floor, roof, animals, insects etc.

ame:Anindya Banerjee

Signature

PERSON COMPLETING FORM

Position :Asst. Engineer

Location :PALTA

Date 20.10.2016

No major Injury at Site.

26/11/16

Issued on: September 2005Revision: 2

Revised on: November 2012Page 1 of 1

Package WS & SD 04

ITD-ITD Cem Joint Venture

KEIIP

ANALYSIS OF INCIDENT

Site Name & No. : KEIIP - A1114AT **Month: November' 2016**

Sr. No.	Date	Name of person	Sex	Age	Time	Designation	Company / Subcontractor	* Agency	Type of Accident	Unsafe Condition / Act	Nature of Injury	Location of Injury	Root Cause
1	17.11.2016	Amitaba Biswas	Male	21 years	12.30 PM	Helper	M/s- Sajid Ekbal	12mm plate	First Aid	Loose material kept on edge	First Aid	Taratala road, Shaft no3	1. Poor house keeping 2. loose materilas kept on edge

* Note: Agency is the object or substance which is most closely associated with the accident causing the injury like machines, equipments, vehicles, hand tools, ladders, scaffolds, explosive, dust, gases, chemical, radiations, fire, water, floor, roof, animals, insects etc.

Name:Arghawan Saha PERSON COMPLETING FORM Location :KEIIP

Signature Position :Sr. Engineer Date :30.11.2016

Package SD 07

SNET - SSG JV - KEIIP - ANALYSIS OF ACCIDENT

SITE NAME - KEIIP & NO. [illegible] MONTH OF Aug 2016

SL NO	Date	NAME OF PERSON	SEX	AGE	TIME	DESIGNATION	COMPANY / SUB-CONTRACTOR	AGENCY	TYPE OF ACCIDENT	UNSAFE CONDITION / ACT	NATURE OF INJURY	LOCATION OF INJURY	ROOT CAUSE
1	01-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	02-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	03-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	04-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	05-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	06-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	08-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8	09-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	10-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10	11-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	12-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	13-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	16-08-16	Gopal Das	Male	29	11-45 am	Fitter	Sub contractor [illegible]	[illegible]	First Aid	unsafe act	Sprain of right hand	Right hand	Shear bar cut without hand gloves
14	17-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15	18-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
16	19-08-16	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

SL NO	DATE	NAME OF PERSON	SEX	AGE	TIME	DESIGNATION	COMPANY/ SUB CONTRACTOR	AGENCY	TYPE OF ACCIDENT	UNSAFE CONDITION/ ACT	AGENCY	NATURE OF INJURY	LOCATION OF INJURY	ROOT CAUSE
17	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21	25-9-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
22	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
23	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
25	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
26	[illegible]	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27														
28														
29														
30														
31														

Note:- Agency is the object or substance which is most closely associated with the accident causing the injury like machine, equipment, vehicles, hand tools, ladders, scaffolds, explosive, dust, gases, chemical, radiation, fire, water, floor, roof, animals & insects etc.

Name ______________________ Person completing from Mrinmoy Datta Location - KEIIP.

Signature ______________________ Position Safety Officer/SD-07 Date ______________________

SNET – SSG JV –KEIIP – ANALYSIS OF ACCIDENT REPORT

KEORAPUKUR, DHALIPARA, KOLKATA – 700104. KEIIP / ICB / TR -1 / SD - O7. MONTH OF ....

SL. NO.	Date	NAME OF PERSON	SEX	AGE	TIME	DESIGNATION	COMPANY/SUB CONTRACTOR	TYPE OF ACCIDENT	UNSAFE CONDITION/ ACT	NATURE OF INJURY	LOCATION OF INJURY		ROOT CAUSE
1.	5/10/16	Noyan Ali	Male	37	2.40Pm	Helper	M/S- P.K. Datta	First Aid	Unsafe Act	cut on right thumb	Labour Camp area		Don't use proper gloves.
2.	18/10/16	SK. Megha	Male	25	5.35Pm	Helper	M/S- P. K. Datta	First Aid	Unsafe Act.	cut on left leg	"		Without Footwear on working time
3.	20/10/16	Rehasan Mirja	Male	42	4.10Pm	Helper	"	"	"	cut on left leg near foot.	"		"
4.	26/10/16	SK. Martuja	"	34	4.25Am	"	"	"	"	Injured on right leg near foot.	"		"
5.	28/10/16	Sridhar Pramanik	"	29	9.35Am	"	"	"	"	Injury on right [illegible]	Site office near labour Camp		Don't Properly use Ladder at work time

NOTE: Agency is the object or substance which is most closely associated with the accident causing the injury like machine, equipment, vehicles, hand tools, ladders, scaffolds, explosive, dust, gasses, chemical, radiation, fire, water, floor, roof, animals & insects – etc.

Name Mrinmoy Datta. Person completing from Mrinmoy Datta ......Location – KEIIP.

Signature ...Datta.... Position Safety Officer Date ....

S. Misra Infradev Pvt. Ltd.

ANALYSIS OF INCIDENT for the site of KEIIP office building (Contract Package no. KEIIP/NCB/TR-01/BR-08A/2015-2016.)

sl no.	Date	Name of Person	sex	age	time	designation	company/ subcontractor	*Agency	type of accident	nature of injury	location of injury	Root Cause
1	07-06-2016	Sayeed Gazi	M	40	11:00 AM	Labour	Laksman Sahani	Tiles	Finger cutting	Minor	4th floor	sharp edge of tiles
2	21-06-2016	Sayeed Gazi	M	40	12:45 PM	Labour	Laksman Sahani	sharp Glass	leg, feet cutting	Minor	4th floor	sharp edge of broken glass
3	24-06-2016	Kashem Mondal	M	30	4:15 PM	Labour	Laksman Sahani	sharp Glass	middle fingure cutting	Minor	4th floor	sharp edge of broken glass
4	30-06-2016	Sayeed Gazi	M	40	2:00 PM	Labour	Laksman Sahani	sharp steel	Finger cutting	Minor	4th floor	sharp edge of steel plate
5	22-07-2016	Faruk Hossain	M	45	3:30 PM	Labour	Md. Ali	Tiles	Leg injury	Minor	2nd Floor	unfortunate tiles falling from his own hand
6	29-08-2016	Faruk Hossain	M	45	12:00 PM	Labour	Md. Ali	Almirah	Leg injury	Minor	3rd floor	Packed Almirah shifting
7	13-09-2016	SK. Azad	M	30	2:30 PM	Labour	Md. Ali	Almirah	Leg injury	Minor	3rd floor	Packed Almirah shifting
8	19-10-2016	Surajit Sarkar	M	40	3:00 PM	Aluminium worker	Dibyendu Mahanta	aluminium channel	finger injury	Minor	5th	sharp edge of aluminium channel

associated with the accident.

Engineer/Supervisor (SMIPL)

Safety Officer (DSC/KEIIP)

APPENDIX 11: SUMMARY OF LABORERS PER PACKAGE

Package No.	Contractor	Total Number of Employees	No of Female Employees	No. of Local Employees
Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach **(KEIIP/ICB/ Tr-1/WS02/2013-14)**	M/s ITD- CEM India JV	45	Nil	35
Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method**(KEIIP/ICB/ Tr-1/WS & SD 04/2013-14)**	M/s ITD- ITD CEM Jv	Staff: 49 Workers: 317 Total- 366	3	329
Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/ Tr-1/SD-05/13-14)**	M/s Tantia –MPPL (WILO) Jv	Staff: 94 Workers: 109 Total- 203	Nil	124
Rehabilitation and Replacement of GAP sewer and Allied Works **(KEIIP/ICB/Tr-1/SD-07/2015-16)**	SNet-SSG JV	Total No. of workers: 105	Nil	35
Interior renovation of KEIIP office at Business Towers, including electrical & Air conditioning works **(KEIIP/NCB/ Tr-1/BR-08A/2015-16)**	S. Misra Infradev Pvt. Ltd.	Total No. of workers: 60	Nil	32

APPENDIX 12: TRAFFIC MANAGEMENT PLAN

ITD-ITD Cem Joint Venture

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

Traffic Management Plan (TMP)

LOCATION (AS ON 1ST DECEMBER-2016)

Traffic Diversion: Western Franken of Diamond harbour Road approximate 4000 Meters from Shoker Bazar to Churial Cannel, Joka.

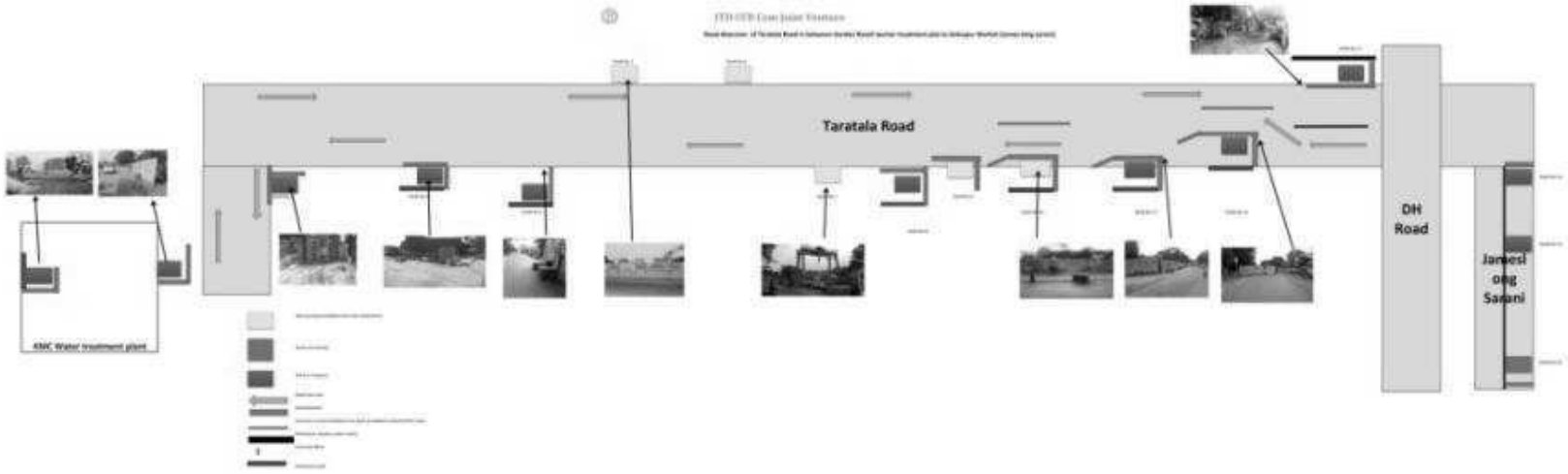
&

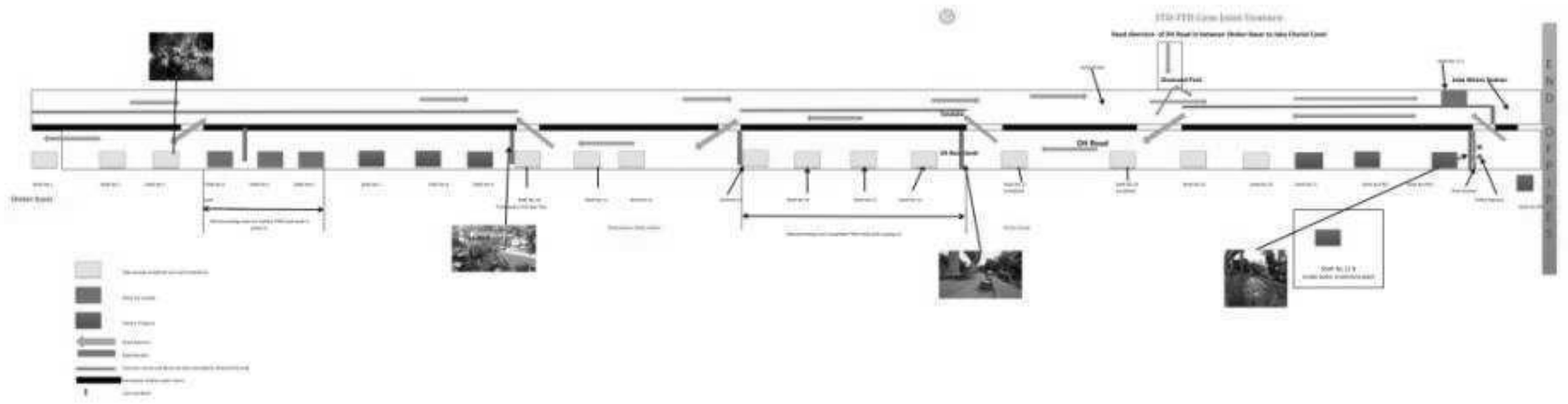
Taratala road approximate 5700 Meters from Garden Reach Water treatment plant to Golsapur Market (James long sarani) through microtunnelling.

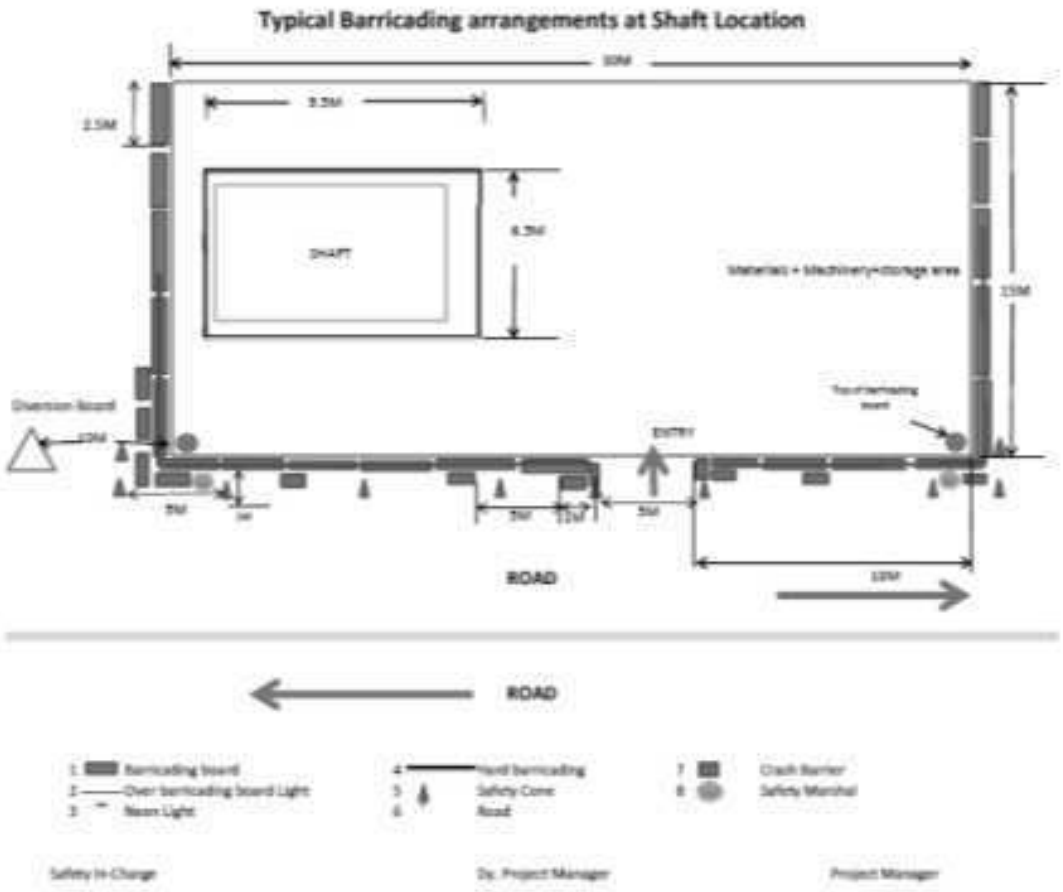
▪ 1.0	▪ **PURPOSE**
	To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
▪ 2.0	▪ **SCOPE**
	The procedure is applicable to ITD-ITD CEM JV sites and depots.
▪ 3.0	▪ **RESPONSIBILITY**
	It is the responsibility of the Project In charge and Depot Head to implement this procedure and ensure that delegated staff under their supervision carries it out.
▪ 4.0	▪ **DEFINITIONS**
	Project In charge: Person responsible for the execution of the project.
▪ 5.0	▪ **LEGAL REQUIREMENT**
	The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule 48, 88 and 95, Motor Vehicle Act 1988
▪ 6.0	▪ **REQUIREMENTS**
6.1	General
	☞ All road works create inconvenience and are a potential hazard to the safety of all road users and those employed in carrying out the work. ☞ All the effects should be mitigated or reduced to the minimum, and to ensure that the works are properly guarded, lighted and signed. ☞ A clear and early warning of any obstruction to all road users should be provided. ☞ All areas where work is going on should be clearly demarcated by barricading and entry into these areas should be restricted to only

	authorized personnel.
6.2	Planning stage
	☞ The client and DSC's Engineer should be consulted as regards the execution of the works and the safety measures which would be put in place. ☞ Particular attention should be given to : o traffic signs; o cones; o barriers; o road hazard warning lights; o information boards; and o site lighting ☞ Consider necessity of traffic control systems such as temporary traffic lights or Stop/Go boards. ☞ Access should be planned to eliminate dangerous movements of site traffic (e.g. reversing of vehicles) and personnel (e.g. crossing dual carriageways). ☞ Provision of adequate lighting. ☞ All persons working on or near the road shall wear high visibility jackets or a cross belt.
6.3	On site
	☞ The working area in the live road/footway shall be defined. ☞ The working space shall be defined – this includes the area of storage of tools and equipment and space to move around the job. ☞ Provision of safety zone- it shall be kept clear of all work, material storage and people and shall be clear of working radius of all plant.
6.4	**Operators / Drivers** • Experienced operators and drivers with valid licensed has been appointed. • One copy of license has been collected by Safety Department.
6.5	**Equipment**
	• Drivers are made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, tyres and windshield wipers. • Safety Department along with Plant department has been checking the vehicles monthly basis • All vehicles have reverse horns and it is in working properly. • All vehicles, periodical maintenance has conducted.
6.6	**Roads**
	For safe operation we are following the bellow safety measure: • Safe width has been provided. • One-way traffic roads have been used. • Speed limit is not greater than 15km/hr within the site. • Safe walkway with proper guard has been provided. • 24 nos., round the clock Traffic marshal has been appointed for safe road diversion. • Caution board has been placed in every location within the site. • During night alert light has been provided. • Workers are working with reflective jacket as well as required PPE's. • Conducting Toolbox training as regular basis.

	• Road has been closed with proper permission. • Reflective type Diversion board has been placed in required places. • Road diversion drawing has been submitted (Ref. Attached drawing)
6.7	**Loading and unloading** • Only authorised persons were engage for loading / unloading. • Materials loaded within the permitted safe weigh limit for the truck, • Dimensions of loads carried on a vehicle in strict accordance with relevant provisions. • A red flag is being used at the rear extremity of an overhanging load. • During the hours of darkness or in poor visibility conditions, a white light showing ahead at each side of the front extremity and a red light showing to the rear extremity of the hanging load are has been provided. • During Toolbox talks Intimation has been delivered to all drivers/operators that when the driver leaves the driving seat, the engine of the truck shall be switched off, the gear engaged and parking brakes applied. On slopes, wheel blocks shall be applied. • Helper has been provided with all vehicles.
6.8	**Working Area** ☞ The working area in the live road/footway has defined and barricaded. ☞ The working area has been restricted from unauthorized entry. ☞ The working space has been defined – this includes the area of storage of tools and equipment and space to move around the job. ☞ Particular attention has been taken in working area : o traffic signs; o cones; o barriers; o road hazard warning lights; o information boards; and o site lighting ☞ Adequate lighting has been provided. ☞ All persons wear high visibility jackets.


Taratala Road
DH Road




Typical Barricading arrangements at Shaft Location
SHAFT
ROAD
ROAD

Traffic Management Plan

November 2016

PROJECT: **CONSTRUCTION OF PUMPING STATION IN BEGOREKHAL AND IN JOKA TRAM DEPOT AND CONSTRUCTION OF SEWERAGE AND DRAINAGE NETWORK WITHIN DIAMOND HARBOUR ROAD CATCHMENT**

Contract No: KEIIP/ICB/TR-1/SD05/2013-14

PROGRAM: KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)

EMPLOYER: KOLKATA MUNICIPAL CORPORATION (KMC)

CONTRACTOR: TANTIA-MPPL (WILO) JV

Prepared by

TANTIA-MPPL (WILO) JV

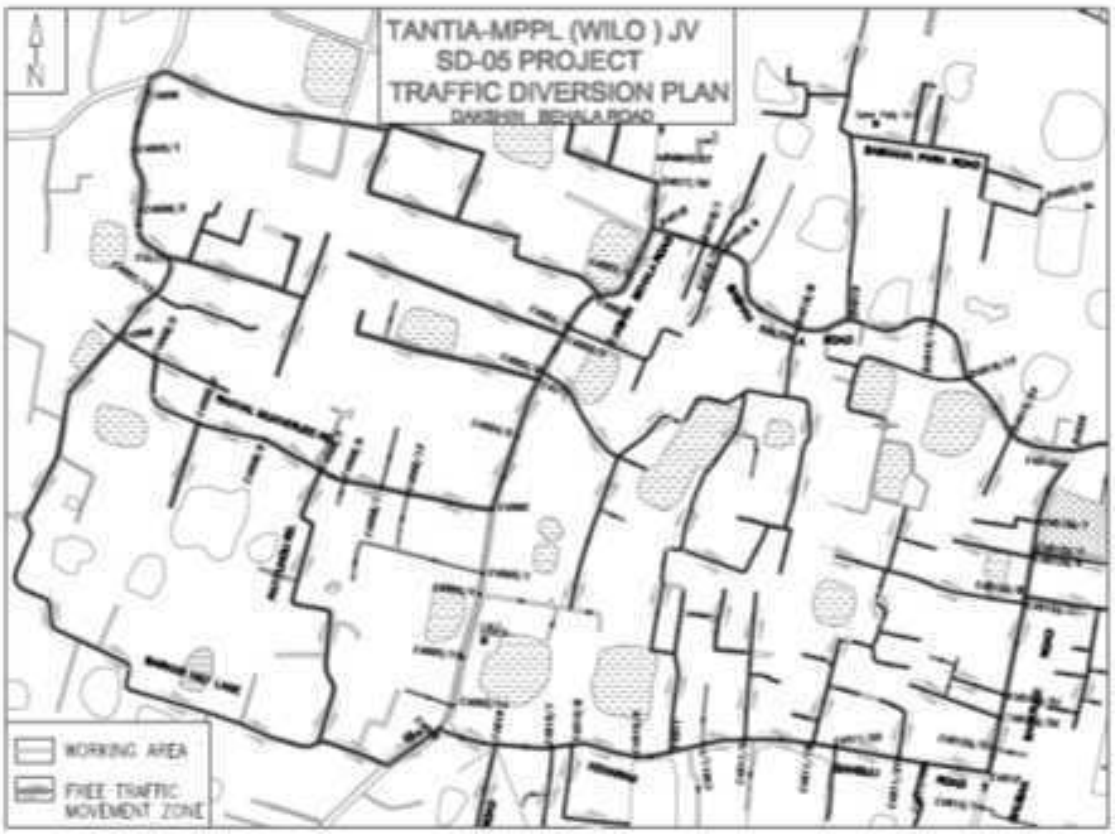
LOCATION (AS ON 14TH NOVEMBER 2016)

Traffic Diversion: 2 nos front at Dakshin Behala Road of Ward no-126 and 3 nos. front at Jaigir Ghat Road of Ward no-125 for RCC NP3 Pipe Laying Work

▪ 1.0	▪ **PURPOSE**
	To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
▪ 2.0	▪ **SCOPE**
	The procedure is applicable to TANTIA MPPL (WILO) JV sites and depots.
▪ 3.0	▪ **RESPONSIBILITY**
	It is the responsibility of the Project In charge and Depot Head to implement this procedure and ensure that delegated staff under their supervision carries it out.
▪ 4.0	▪ **DEFINITIONS**
	Project In charge: Person responsible for the execution of the project.
▪ 5.0	▪ **LEGAL REQUIREMENT**
	The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule 48, 88 and 95, Motor Vehicle Act 1988
▪ 6.0	▪ **REQUIREMENTS**
6.1	General
	• All road works create inconvenience and are a potential hazard to the safety of all road users and those employed in carrying out the work. • All the effects should be mitigated or reduced to the minimum, and to ensure that the works are properly guarded, lighted and signed. • A clear and early warning of any obstruction to all road users should be provided. • All areas where work is going on should be clearly demarcated by barricading and entry into these areas should be restricted to only authorized personnel.
6.2	Planning stage
	• The client and DSC's Engineer should be consulted as regards the execution of the works and the safety measures which would be put in place. • Particular attention should be given to : o traffic signs; o cones; o barriers; o road hazard warning lights;

	○ information boards; and ○ site lighting • Consider necessity of traffic control systems such as temporary Stop/Go boards. • Access should be planned to eliminate dangerous movements of site traffic (e.g. reversing of vehicles) and personnel (e.g. crossing dual carriageways). • Provision of adequate lighting.
6.3	On site
	• The working area in the live road/footway is defined. • The working space is defined – this includes the area of storage of tools and equipment and space to move around the job. • Provision of safety zone- it is kept clear of all work, material storage and people and is clear of working radius of all plant.
6.4	**Operators / Drivers**
	• Experienced operators and drivers with valid licensed has been appointed. • One copy of license has been collected by Safety Department.
6.5	**Equipment**
	• Drivers are made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, tyres and windshield wipers. • Safety Department along with Plant department has been checking the vehicles monthly basis • All vehicles have reverse horns and it is in working properly. • All vehicles, periodical maintenance has conducted.
6.6	**Roads**
	For safe operation we are following the bellow safety measure: • Safe width has been provided. • Speed limit is varied as per the site. • Safe walkway with proper guard has been provided. • Caution board has been placed in every location within the site. • During night alert light has been provided. • Conducting Toolbox training as regular basis. • Road will be closed with proper permission (if required). • Reflective type Diversion board has been placed in required places. • Road diversion drawing has been submitted (Ref. Attached drawing)
6.7	**Loading and unloading**
	• Only authorised persons were engage for loading / unloading. • Materials loaded within the permitted safe weigh limit for the truck, • Dimensions of loads carried on a vehicle in strict accordance with relevant provisions. • A red flag is being used at the rear extremity of an overhanging load. • During the hours of darkness or in poor visibility conditions, a white light showing ahead at each side of the front extremity and a red light showing to the rear extremity of the hanging load are has been provided. • During Toolbox talks Intimation has been delivered to all drivers/operators that when the driver leaves the driving seat, the engine of the truck shall be switched off, the gear engaged and parking brakes applied. On slopes, wheel blocks shall be applied. • Helper has been provided with all vehicles.

6.8	**Working Area** • The working area in the live road/footway has defined and barricaded. • The working area has been restricted from unauthorized entry. • The working space has been defined – this includes the area of storage of tools and equipment and space to move around the job. • Particular attention has been taken in working area : o traffic signs; o cones; o barriers; o road hazard warning lights; o information boards; and o site lighting • Adequate lighting has been provided.




TANTIA-MPPL (WILD) JV
SD-05 PROJECT
TRAFFIC DIVERSION PLAN
DAKSHIN BIHALA ROAD
N
WORKING AREA
FREE TRAFFIC MOVEMENT ZONE


TANTIA-MPPL (WLO) JV
SD-08 PROJECT
TRAFFIC DIVERSION PLAN
JAGIR GHAT ROAD
N

Traffic Management Plan

Package: Rehabilitation of GAP sewer and Allied Works

SNET – SSG JOINT VENT
SAFETY & HEALTH OPERATION CONTROL PROCEDURES

LOCATION: SANTOSHPUR KARBALA ROAD

1.0	PURPOSE
	To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
2.0	SCOPE
	The procedure is applicable to SNET – SSG JV sites and depots.
3.0	RESPONSIBILITY
	Is the responsibility of the project In Charge and Depot Head to implement this procedure and ensure that delegated staff under their supervision carries it out.
4.0	Definitions
	Project In Charge: Person responsible for the execution of the project.
5.0	LEGAL REQUIREMENT
	The Building and Other Construction Workers (Regulation of employment and Conditions of Service) Act.1996 and Central Rule 1998 Rule 48, 88, and 95, Motor Vehicle Act 1998.
6.0	REQUIREMENTS
6.1	General
	➢ All road works create inconvenience and are a potential hazard to the safety of all road users and those employed in carrying out the work. ➢ All the effects should be mitigated or reduced to the minimum, and to ensure that the works are properly guarded, lighted and signed. ➢ A clear and early warning of any obstruction to all road users should be provided. ➢ All areas where work is going on should be clearly demarcated by barricading and entry into these areas should be restricted to only authorize personnel.
6.2	Planning Stage
	➢ The client and DSC's Engineer should be consulted as regards the execution of the works and the safety measures which would be put in place. ➢ Particular attention should be given to: ❖ Traffic signs; ❖ Safety Cones ❖ Road Barriers; ❖ Road hazard warning lights; ❖ Caution board and ❖ Site lighting ➢ Consider necessary of traffic control systems such as temporary traffic lights or Stop/Go boards. ➢ Access should be planned to eliminate dangerous movements of site traffic and personnel. ➢ Provision of adequate lighting. ➢ All persons working on or near the road shall wear high visibility jackets or a cross belt.

6.3	On Site
	➢ The working area the live road/foot way shall be defined. ➢ The working space shall be defined – this includes the area of storage of tools and equipment and space to move around the job. ➢ Provision of safety zone – it shall be kept clear of all work, material storage and people and shall be clear of working radius of all plant.
6.4	Operators/ Drivers
	❖ Experienced operators and drivers with valid licensed has been appointed. ❖ One copy if license has will be collected by safety department.
6.5	Equipment
	❖ Drivers will be made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, and windshield wipers, etc. ❖ Safety Department along with plant department will be checking the vehicles monthly basis. ❖ All vehicles will be reverse horn and it is in working properly. ❖ All vehicles, periodical maintenance will be conducted.
6.6	Roads
	For safe operation we shall be following the below safety measure: ❖ Safe width shall be provided. ❖ One-way traffic roads will be used. ❖ Speed limit is not greater than 15Km/hr within the site. ❖ Safe walkway with proper guard will be provided. ❖ Caution board has will be provided. ❖ Workers are working with reflected jackets as well as required PPE's. ❖ Conducting Toolbox training as regular basis. ❖ Road diversion drawing has been submitted.
6.7	Loading and unloading
	❖ Only authorized persons were engage for loading/unloading. ❖ Materials loaded within the permitted safe weigh limit for the truck. ❖ Dimensions of loads carried on a vehicle in strict accordance with relevant provisions. ❖ During Toolbox talks intimation has been delivered to all drivers/ operators that when the driver leaves the driving seat, the engine of the truck shall be switched off, the gear engaged and parking brakes applied. On slopes, wheel blocks shall be applied. ❖ Helper has been provided with all vehicles.

APPENDIX 13: ENVIRONMENT, HEALTH AND SAFETY BUDGET

Package: Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach (KEIIP/ICB/ Tr-1/WS02/2013-14)

ITD Cemindia Joint Venture

Environment, Health and Safety Management Plan

KEIIP Water works project at Palta and Garden Reach ,

HSE budgets for the year of 2016-17

Sl. No.	Contents		Ramarks
		Amt.	
1.0	**Contractor SHE Organisation**		
	SHE In-Charge	150000	
2.0	Other purpose	200000	
3.0	Personal Protective Equipments (PPEs)	450000	
		800000	
Gross total (Rs.)		**800000.0**	

NOTE: Other purpose for Air, Noise & Water Quality Monitoring

Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method

ITD-ITD Cem Joint Venture

Environment, Health and Safety Management Plan
KEIIP Micro tunneling Project, Kolkata

HSE budgets for the year of 2016-17

Sl. No.	Contents	Requirement and Cost			Ramarks
		Items			
		Qty.	Rate	Amt.	
1.0	**Contractor SHE Organisation**	**No**	**Yr**		
	SHE In-Charge	1	700000	700000	
	Sr. SHE Engineer	1	500000	500000	
	Safety Steward	10	240000	2400000	
	Medical Support Staff - First Aider	1	300000	300000	
	Traffic Marshals	150	120000	18000000	
	Watch man / Security Guard	40	120000	4800000	
	Housekeeping workers	10	120000	1200000	
	Labour welfare officer	1	480000	480000	
	Welfare support staff - clerk	4	180000	720000	
				0	
2.0	Sound Level Monitorring	8	1000	8000	
	Alir quality monitoring	16	2500	40000	
	Stack gas monitoring of DGs	16	2000	32000	
	Round the clock Ambulance	1	480000	480000	
	ID card and first day at work, SHE orientation training	1000	10	10000	
	SHE handbook (pocketbook)	300	70.0	21000	
	SHE training	24	1000.0	24000	
	Half yearly inspection of lifting machinery, lifting appliances, equipment and gears by Govt. approved comopetent person	500	2000	1000000	
	Celebration - Safety / Environment / other days -14, Safety / earth weeks-2, red cross month-1	1	50000	50000	
	Posters	200	50	10000	
	Signages-metallic boards	700	5000	3500000	
				0	
3.0	Working at Height			0	
	Full body harness	50	2500	125000	

	40 NB MS Pipe for railing / barricades	500	300	150000	
	6" wide, 1" thk wooden plank / sheet for toe board	1000	75	75000	
				0	
4.0	Site electricity			0	
	30 mA sensitivity ELCB / RCCB	300	3000	900000	
	Earthing pits	30	1500	45000	
	Lightning arrestors	10	4000	40000	
	Distribution board with Industrial socket and connectors	200	5000	1000000	
5.0	Welding, gouging and cutting				
	Cylinder trolleys	100	2500	250000	
	Flash back arrestor - set	200	2500	500000	
	Non-return valve	200	2500	500000	
6.0	Fire prevention, protection and fighting system				
	Fire extinguishers - 2 Kg, ABC (dry powder)	10	2000	20000	
	Fire extinguishers - 10 Kg, ABC (dry powder)	20	3500	70000	
	Fire extinguishers - 9 Kg, CO2	6	3500	21000	
	Fire extinguishers - 5 Kg, Foam	5	4000	20000	
	Fire buckets	200	300	60000	
	Refilling of fire extinguishers	0	L.S.	200000	
7.0	Traffice management				
	Traffic warning signs	100	1250	125000	
	Other traffic signs	150	1250	187500	
	Delineators	500	350	175000	
	Other traffic signs	300	700	210000	
	Safety ribbon	50000	4	200000	
	Electric blinkers	100	1700	170000	
	Illuminated traffic control beacons	100	1500	150000	
	Tow away vehicle (50 months)	1	70000	70000	
8.0	Personal Protective Equipments (PPEs)				
	Safety helmets	10000	90	900000	
	Safety footwear, gumboots	10000	450	4500000	
	High visibility clothing (jacket)	4000	200	800000	
	Fall arrestor	10000	1800	18000000	
	Full body harness	500	1250	625000	

	Goggles	1000	1555	1555000	
	Hand gloves	10000	35	350000	
	Nose mask	5000	25	125000	
	Ear plugs	5000	15	75000	
	Ear muffs	500	125	62500	
	Welder's apron	100	700	70000	
	Electrician's rubber hand gloves	100	250	25000	
9.0	Medical examination of all workers	1500	200	300000	
	Medical Facilities				
	Occupational Health Centre	1	L.S.	100000	
	Ambulance van and room (tie-up with local hospitals)	-	-	650000	
	First aid boxes	15	1250	18750	
	Fumigation,/spraying of insecticides for mosquitoes	28	2500	70000	
10.0	Reuses of Waste water	4	40000	160000	
Gross total (Rs.)		**67924750.0**			

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment (KEIIP/ICB/ Tr-1/SD-05/13-14)

TANTIA-MPPL(WILO)JV

SD-05 (PROJECTS)

To whom it may concern

I do hereby declare that an amount of Rs. 11,40,000/- are budgets for implement mitigation measures and monitoring program per year.

The details are given below.

Sl. No.	Description	Amount (Yearly)
1.	Safety Officers	Rs. 4,20,000/-
2.	Safety Assistant	Rs. 2,60,000/-
3.	Red Danger Tape	Rs. 30,000/-
4.	Barricading Board	Rs. 30,000/-
5.	Diversion Board	Rs. 20,000/-
6.	Safety Shoe, Jacket, Helmet, Gumboot, etc. for staff and labour	Rs. 2,80,000/-
7.	Ambient Air and Noise pollution testing	Rs.1,00,000/-
	Total =	**Rs. 11,40,000/-**

SNET -SSG JV

PROJECT (PACKAGE): KEIIP / ICB / TR-I / SD -07 /2016-17

Budget of implementation mitigation and monitoring programme (Annual Budget).

1)	Cost of Safety Officer Annual (CTC)	3.00Lakh
2)	Monitoring Charges (Noise,Air,Hydrocarbon , Water, Pollution)	1.50Lakh
3)	Safety and PPE's Equipments for working site & Office Campus (Helmet, Gumboot, Safety Jacket, Nose Musk, Safety Belt, Barricading Board, Volunteer, Oxygen, Hand Gloves, Sunglass, Safety Divider / Barrier & Safety Cone. First Aid Box with Medicine, Barricading Tape, Safety Signs, Safety Net, Safety light, Fire Extinguishers, Rubbish Bin, Fire Alarm, Fire hose roll, Bio-Toilet, Insect Killer liquid & Silent DG Set.)	6.75Lakh

Total – 11.25Lakh

Prepared by: Mrinmoy Datta
(Safety Officer)
Date: 12th November 2016.

Package -Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works

EHS Budget 2016-2017

Ceritificate monitoring Data for KEIIP site				
purpose	**cost per month**		**annual cost**	
Overhead	₹	60,000.00	₹	720,000.00
PPE	₹	3,000.00	₹	36,000.00
First aid	₹	500.00	₹	6,000.00
Medicine	₹	1,000.00	₹	12,000.00
safety poster	₹	300.00	₹	3,600.00
goods Vehicle	₹	8,000.00	₹	96,000.00
house keeping	₹	18,000.00	₹	216,000.00
testing	₹	4,000.00	₹	48,000.00
Misc	₹	1,000.00	₹	12,000.00
Total	**₹**	**95,800.00**	**₹**	**1,149,600.00**

APPENDIX 14: PUBLIC CONSULTATION ON ENVIRONMENTAL ISSUES DURING CONSTRUCTION/ IMPLEMENTATION – Sample filled format

Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method

Public Consultation during construction

Package - KEIIP/ICB/TR-1/SD-04/2013-14 Month: October'16

Area – DH Road / Taratala Road

Sr. No.	Road/ Lane No.	Date	PHE Connection Restoration- (in case affected) Remarks	Overburden soil removal - Remarks	Road Restoration- Remarks	Dust and noise problem- Remarks	Social safety arrangement- Caution tape/ barricade etc. by contractor - Remarks	Problem of local movements due to project activity - Remarks	Other Problem faced if any	Name of the person with address/ contact No.	Signature
1	Taratala manual Shaft no 13	20.10.16	Satisfactory	no issue	Satisfactory	no issue	Satisfactory	no issue	no issue	Brijanka Guha	
2	Taratala manual Shaft no 9	27.10.16	Satisfactory	no issue	Satisfactory	no issue	Satisfactory	no issue	no issue	Sanjay Chakraborty	
3	DH Road Shaft no 8/1	25.10.16	Satisfactory	no issue	Satisfactory	no issue	Satisfactory	no issue	no issue		
4	DH Road Shaft no-6	18.10.16	Satisfactory	no issue	Satisfactory	no issue	Satisfactory	no issue	no issue	Raja Roy	

Verified by Construction Supervisor- / Environment Spl DBC–
(Date & Signature)

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

Public Consultation during construction

Package-

Area-

Sl. No.	Road/ Lane No.	Date	PHE Connection Restoration- (in case affected)/ Remarks	Overburden soil removal- Remarks	Road Restoration- Remarks	Dust and noise problem- Remarks	Social safety arrangement- Caution tape/ barricade etc by contractor- Remarks	Problem of local movements due to project activity- Remarks	Other Problem faced if any	Name of the person with address/ contact No.	Signature
1.	Upper Banerjee Road	14/6/16	No problem found	Removed from site	in progress	No problem found	done at site	bypass Road arranged	–	Sukanta Halder Upper Banerjee Road	Sukanta Halder
2.	Ranganath Pur Road (PB bus Road)	19/6/16	No problem found	Removed from site	done.	No problem found	done at site	bypass Road arranged	–	Sojol Sikdar Ranganath Pur Road	SOJOL Sikder
3.	Upper Banerjee Road	25/6/16	No problem found	in progress	in progress	No problem found	done at site	bypass Road arranged	–	Sayantan Pramanik Upper Banerjee Road	Sayantan Pramanik
4.	Brojomani Devya Road	16/7/16	No problem found	in progress	in progress	No problem found	done at site	bypass Road arranged	–	Bijoy Naskar Brojomani Devya Road	B. Naskar 16.07.16
5.	Dakshin Behala Road.	26/7/16	No problem found	in progress	in progress	No problem found	done at site.	bypass Road arranged	–	Puja Roy Dakshin Behala Road	[illegible]

Verified by Construction Supervisor / Environment Spl DSC

(Date & Singature)

Public Consultation during construction

Package -
Area -

Sl. No.	Road/ Lane No	Date	PHE Connection Restoration (in case affected) Remarks	Overburden soil removal- Remarks	Road Restoration- Remarks	Dust and noise problem Remarks	Social safety arrangement Caution tape/ barricade etc. by contractor- Remarks	Problem of local movements due to project activity- Remarks	Other Problem faced if any	Name of the person with address/ contact No.	Signature
6.	Dakshin Behala Road	4/8/16	No problem found	Removed from site	In progress	No problem found	done at site	bypass Road arranged	-	Rajat Roy Dakshin Behala Road	Rajat Roy
7.	Brajamoni Devya Road	12/8/16	No problem found	Removed from site	In progress	No problem found	done at site	bypass Road arranged	-	Mita Das Brajamoni Devya Road	Mita Das
8.	Naren Sarkar Road-2	25/8/16	No problem found	In progress	In progress	No problem found	done at site	bypass Road arranged	-	Sonat Sapui Naren Sarkar Road-2	
9.	Naren Sarkar Road-2	4/9/16	No problem found	Removed from site	done	No problem found	done at site	bypass Road arranged	-	Sikha Dey Naren Sarkar Road-2	Sikha Dey
10.	Rakhal Mukherjee Road	23/10/16	No problem found	Removed from site	done.	No problem found	done at site	bypass Road arranged	-	Abhijit Nasker Rakhal mukherjee Road	Abhijit Naskar

Verified by Construction Supervisor / Environment Spl DSC
(Date & Singature)

Package: Replacement of GAP sewer and Allied Works

SNET – SSG JOINT VENTURE

Public Consultation during construction

Package – KEIIP/ICB/TR-1/SD-07/2015-2016.

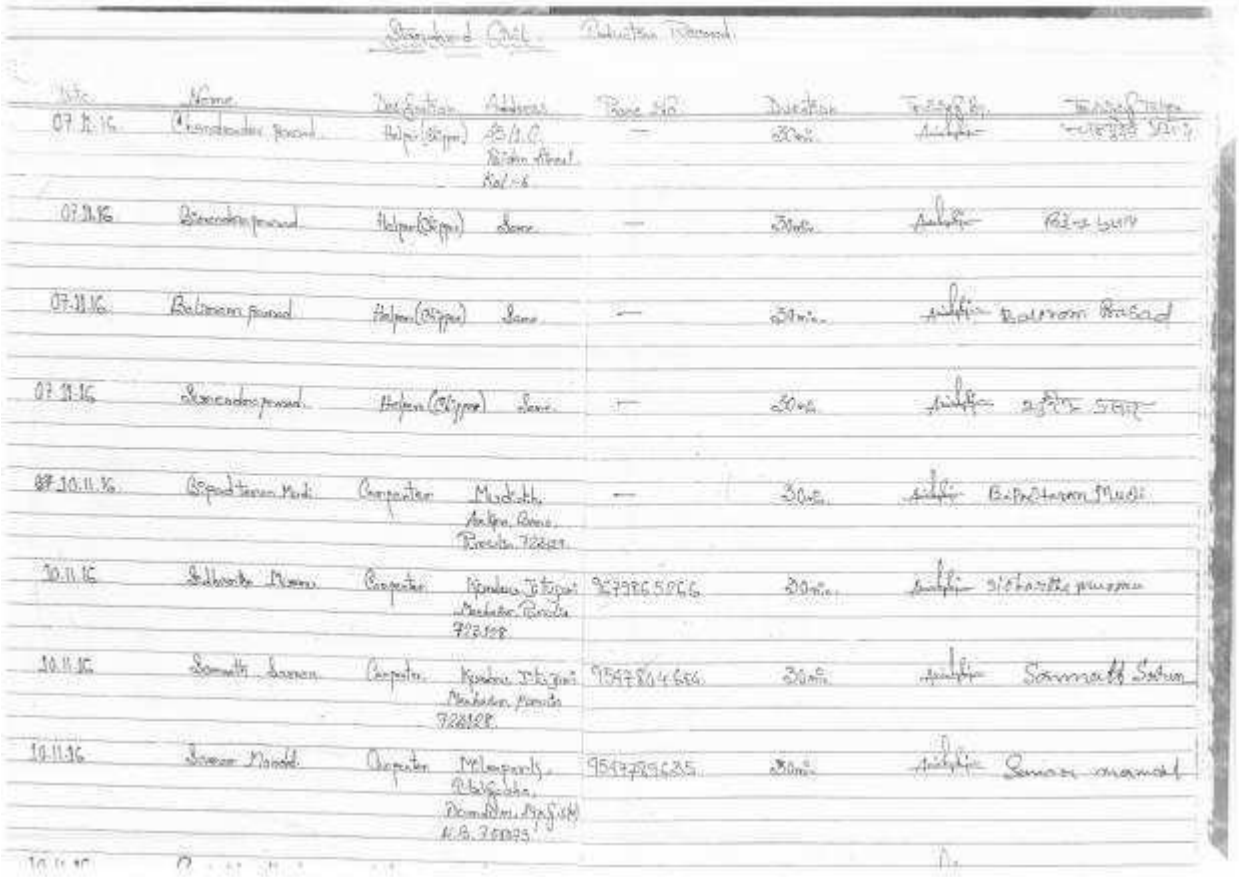
Area- Santoshpur Karbala road. Month: November 2016.

Sl. NO.	Road/Lane No.	Date	PHE Connection Restoration-(in case affected)Remarks	Overburden soil removal Remarks	Road Resturation Remarks	Dust and noise problem remarks	Social safety arrangement Caution tape/barricade etc. by contractor-Remarks	Problem of local movements due to project activity - Remarks	Other Problem faced if any	Name of the person with address/ contact No.	Signature
1	Karbala Road	07/11/16	No ISSUE	No ISSUE	No ISSUE	No ISSUE	Satisfactory	NO	NO	Md. Ajij Sk.	
2	Karbala Road	14/11/16	NO ISSUE	No ISSUE	No ISSUE	No ISSUE	Satisfactory	NO	NO	Md. Mijanur Sk.	
3	Karbala Road	21/11/16	NO ISSUE	No ISSUE	No ISSUE	No ISSUE	Satisfactory	NO	NO	Md.Mustakin Sk.	
4	Karbala Road	28/11/16	NO ISSUE	No ISSUE	No ISSUE	No ISSUE	Satisfactory	NO	NO	Md. Kalam Sk.	

Name & Signature of Safety Officer: Mrinmoy Datta.

APPENDIX 15 FIELD LEVELTRAININGS CONDUCTED DURING REPORTING PERIOD

Package: Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach



Package: Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method

ITD Cementation India Ltd

INTEGRATED MANAGEMENT SYSTEM PROCEDURES

PROCEDURE: P.15

RECORD: R – I/15: TRAINING RECORD

Training Conducted by	Corporate	Division		Project Level	
Project Name : KEIIP			Contract No. : A111447		
Location of Training : DH Road Container office area					
Training Topic: Safe Lifting Operation / Working with and in and Around Plants, Equipments and Vehicles					
Date of Training : 10.11.2016	Time: From : 2 PM – 4PM		Duration: 2 Hrs. (Hrs./Mins.)		

Sr. No.	Name of Employee	ERP / Code No.	Designation	Signature
1	Ajijul Rahaman		Gantry Crane Operator	[illegible]
2	Pappu Das		Gantry Crane Operator	[illegible]
3	Md Akhtar		Gantry Crane Operator	[illegible]
4	Biswajit Das		Gantry Crane Operator	[illegible]
5	Pintu Das		Gantry Crane Operator	[illegible]
6	Afjal Hossain		Gantry Crane Operator	[illegible]
7	Rajesh Kumar		Truck Crane Operator	[illegible]
8	Ranjit Singh		Truck Crane Operator	[illegible]
9	Prasyat Shah		Crane Operator	[illegible]
10	Javed Alam		Crane Operator	[illegible]
11	Majar Khan		Crane Operator	[illegible]
12	Tarick Khan		Crane Operator	[illegible]
13	Sarfaraj Ahmad Siddique		Crane Operator	[illegible]
14	Amit Kumar Singh		Crane Operator	[illegible]
15	Tajuddin Ahmed		Crane Operator	[illegible]
16	Fatean Khan		Crane Operator	[illegible]
17	Sahdjad Alam		Driver	[illegible]

Name of Instructor : Anup Bhattacharya	Sign:	[illegible]
Name of Project In-charge: Soumo Das	Sign:	[illegible]

Issued on September 2005
Revision: 4.8

Revised On: March 2016
Page 1 of 1

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

Tantia – MPPL (Wilo) JV / SD – 05

Tool Box and Induction Training Programme

Date: 16.11.2016

Location: Joka Pumping Station Campus

Conducted By: Mr. Akhilanand Singh, Safety Officer and Mr. Arup Goswami, Asst. Safety Officer

Topics:

a) Use of PPE

b) Necessity of First Aid Box at Site

c) Material Handling

d) House Keeping

e) Placing of Display Board, No Entry Board etc.

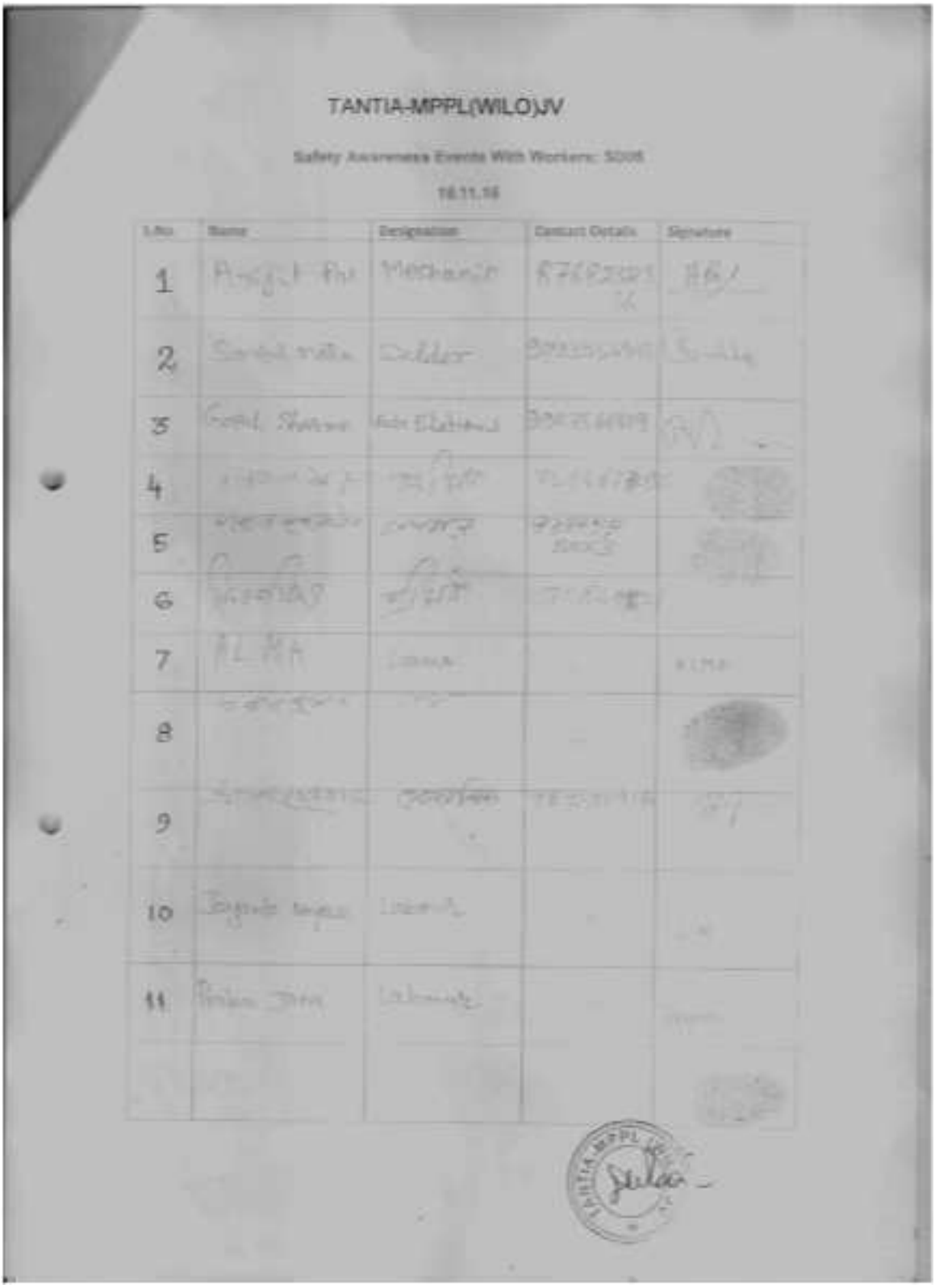
f) Necessity of Approach Road for Public Movement

Total No. of Workers attends the meeting: 35 (Thirty Five) Heads.

Attendance Record: Attached separate sheets

Signature of Safety Officer

Signature of Asst. Safety Officer

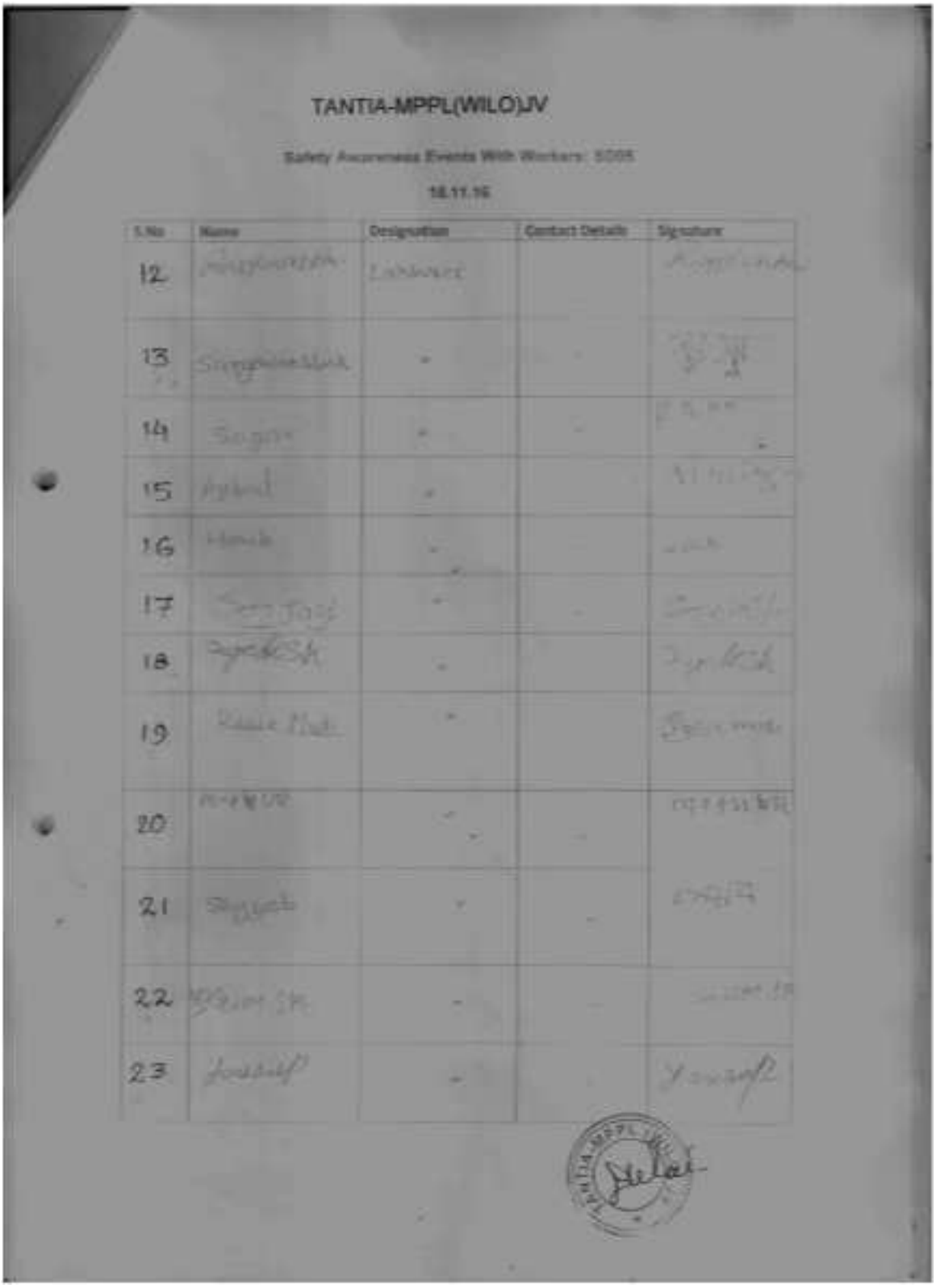


TANTIA-MPPL(WILO)JV

Safety Awareness Events With Workers: 2006

16.11.16

S.No	Name	Designation	Contact Details	Signature
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

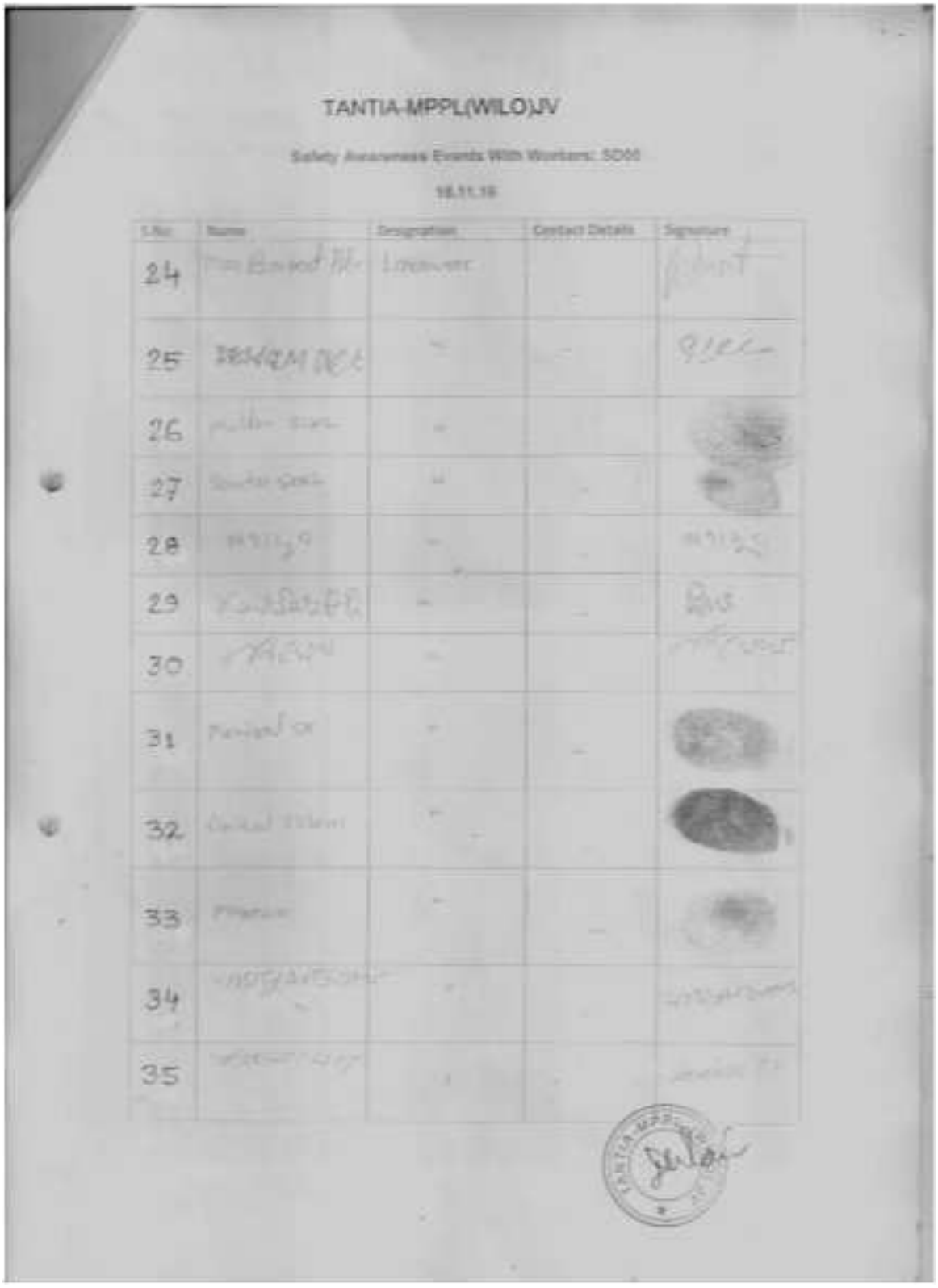


TANTIA-MPPL(WILO)JV

Safety Awareness Events With Workers: 5006

18.11.16

S.No	Name	Designation	Contact Details	Signature
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				



TANTIA-MPPL(WILO)JV

Safety Awareness Events With Workers: SD66

16.11.16

S.No	Name	Designation	Contact Details	Signature
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				


TANTIA MPPL (WILO) JV (SD-05)
Tool Box and Induction Training Programme at Joka Pumping Station

Package: Replacement of GAP sewer and allied works

SN ENVIRO-TECH(P) LTD.

TOOL BOX MEETING

Location : Inside STP (1600 Dia) near Labour camp, Keorapukur-S.S.C
Subject : Material Shifting, House keeping, discussed on Gas Cutting & welding etc
Conducted By: Mrinmoy Datta & Mr. Madhusudan Mandal.
Site Engineer : Mr. Madhusudan Mandal.
Contractor : M/S P. K. Dutta Date:-12-10-16

UNDERTAKING

Declare that I have taken the Safety Training from Tool Box Meeting, today before starting of the job and known fully the nature of job and their Safety Precaution. If the above Safety measure is not fulfilled by me, I am alone responsible for violation of Safety norms.

SL. NO.	NAME	DESIGNATION	SIGNATURE
01	ABDUL HAI	Khatali	Abdul Hai
02	SAMSUL	Khatali	[illegible]
03	FARUK	Kodali	[illegible]
04	MOTI	Labour	[illegible]
05	CHASAN	Labour	[illegible]
06	TANJIL	~~Khatali~~ Kodali	[illegible]
07	JISAN	"	[illegible]
08	RAJEKIN	"	[illegible]
09	MUNSUR ALI	Munsi	Munsur Ali
10	APAIL	labour	[illegible]
11	JAMJAM	Khatali	[illegible]
12	AYNAL	oilder	[illegible]
13	KURBAN	Mistri	[illegible]
14	NABI	Khatali	[illegible]
15	NAYON	Labour	Nayan Ali
16	SAKIL	Labour	[illegible]
17	MEHABUL	Kodali	[illegible]
18	MAGHO	Mistri	Magho
19	ABDUL KALAM	Khatali	[illegible]
20	MURTUJA	"	[illegible]

Total No. of workers are attended: Nos.- 20 heads.

Sig of Safety Officer: Datta 12/10/16 Sig of Engineer: Madhusudan Mandal.

Package: Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works

S. Misra Infradev Pvt. Ltd

Tool Box Meeting

Date: 18/10/16

Location : Site office, KEIIP Building
Subject : Discussed on shifting material, House keeping etc.
Conducted By : Sourav Hazra & Rahas Mandal
Site Engineer :
Contractor : S. Misra Infradev pvt. ltd

UNDERTAKING

Declare that I have taken the Safety Training from Tool Box Meeting, Today Before starting of the job and known fully the nature of job and their Safety precaution. If above Safety measure is not fulfilled by me, I am alone responsible for violation of Safety norms.

SL. NO.	NAME	DESIGNATION	SIGNATURE
1.	Gajen Mandal	Labour	
2.	MD: Ali	Labour	
3.	Jahiruddin Molla.	Labour	Jahiruddin Molla
4.	SK Arjul	Labour	SK ARJUL
5.	Rabi Ahamed	Labour	
6.	SK Rajibal	Labour	
7.	SK Mahidul	Labour	
8.	Sukhen Das	Labour	Sukhen Das
9.	Chandan Biswas	electric labour	
10.	Minal Saha	"	
11.	Joshi Saha.	"	

Total No. of workers are attended: No – 11

Signature of Safety officer: Signature of Engineer:

APPENDIX 16: Sample Grievance Registration Form

(To be available in Hindi and English or local language - Bengalee)

The **Kolkata Environmental Improvement Investment Program (KEIIP)** welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date	**Place of registration**
Contact Information/Personal Details	
Name	**Gender** **Male** **Female** **Age**
Home Address	
Village / Town	
District	
Phone no.	
E-mail	
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below: **If included as attachment/note/letter, please tick here:**	
How do you want us to reach you for feedback or update on your comment/grievance?	

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)	
If – then mode: • **Note/Letter** • **E-mail** • **Verbal/Telephonic**	
Reviewed by: (Names/Positions of Official(s) reviewing grievance)	
Action Taken:	
Whether Action Taken Disclosed:	• **Yes** • **No**
Means of Disclosure:	

GRIVENCE REDRESS REGISTAR
GRIVENCES RECORD AND ACTION TAKEN

Sr. No.	Date	Name and Contact No. of Complainer	Type of Complain	Place	Status of Redress	Remarks

APPENDIX 17: Filled Grievance Redressal format

Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

TANTIA -MPPL(WILO)JV

Grievance Redressal Register

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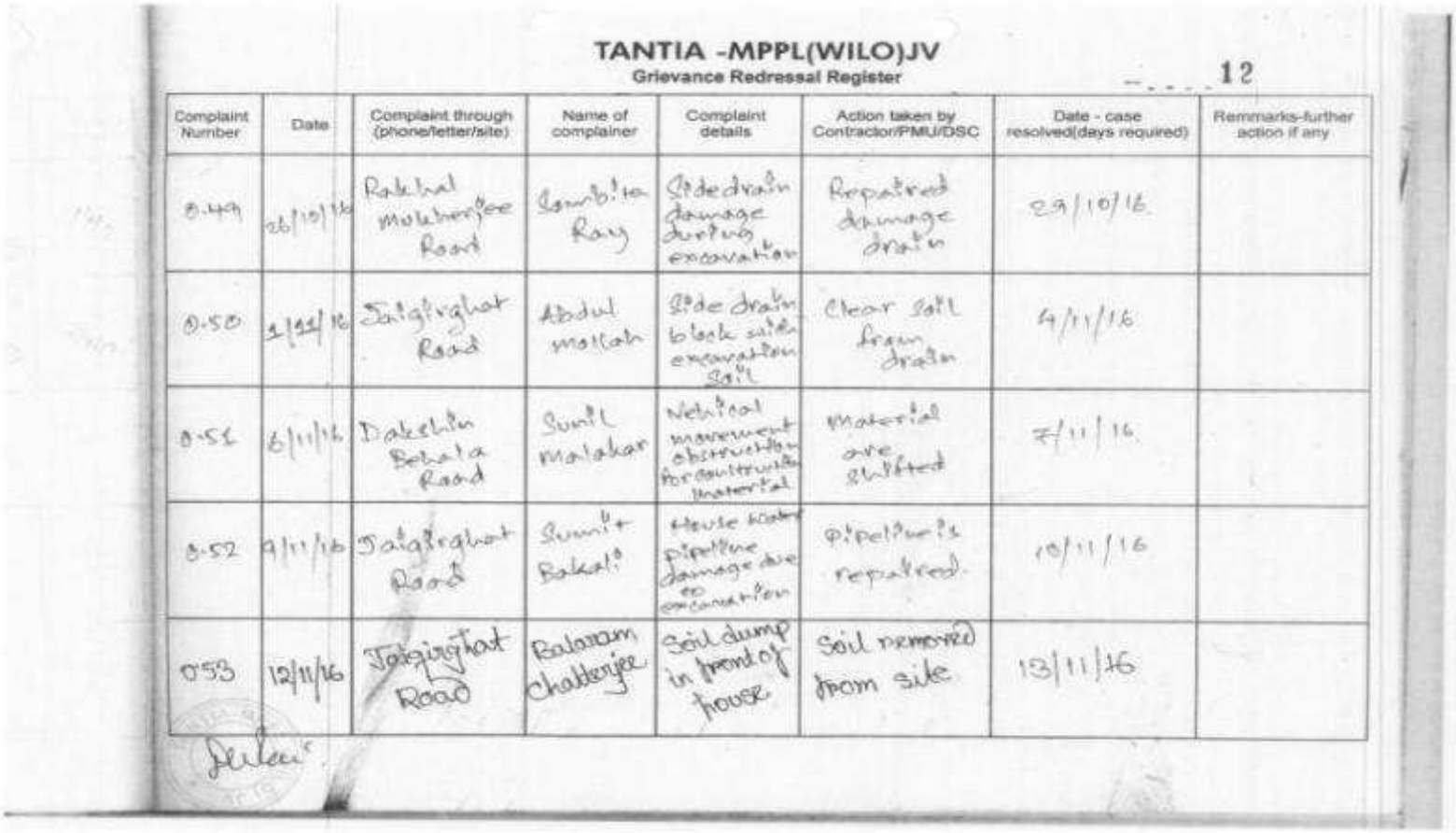
Complaint Number	Date	Complaint through (phone/letter/site)	Name of complainer	Complaint details	Action taken by Contractor/PMU/DSC	Date - case resolved(days required)	Remmarks-further action if any
044.	03.09.16	Upper Banerjee Road	Mondira Halder	Soil dump in Road	Soil Removing from Site.	05.09.16.	
045.	15.09.16	Dakshin Behala Road	Arbind Sharma.	Side drain are not clean	Clean drain and Remove Soil.	16.09.16	
046	21/9/16	Dakshin Behala Road	Abhijit Sipui	mud for approach road	cleaning mud and spreading sand.	23/9/16.	
047.	28/9/16	Brojomani Debya Road	Goutam Sarkar	Road restoration work not complete	B.M work done	2/10/16.	
048.	19/10/16	Jatinghat Road	Balaram Chatterjee	Soil dump infront of entrance of house	Soil removed from site	20/10/16	

[signature]



TANTIA -MPPL(WILO)JV

Grievance Redressal Register 12

Complaint Number	Date	Complaint through (phone/letter/site)	Name of complainer	Complaint details	Action taken by Contractor/PMU/DSC	Date - case resolved(days required)	Remmarks-further action if any
0.49	26/10/16	Rakhal Mukherjee Road	Sambhu Ray	Side drain damage during excavation	Repaired damage drain	29/10/16	
0.50	1/11/16	Jaigirghat Road	Abdul mollah	Side drain block with excavation soil	Clear soil from drain	4/11/16	
0.51	6/11/16	Dakshin Behala Road	Sunil malakar	Vehical movement obstruction for construction material	material are shifted	7/11/16	
0.52	9/11/16	Jaigirghat Road	Sunil Bakali	House water pipeline damage due to excavation	Pipeline is repaired	10/11/16	
053	12/11/16	Jaigirghat Road	Balaram Chatterjee	Soil dump in front of house	Soil removed from site	13/11/16	

Package: Replacement of GAP sewer and allied works

GRIEVANCE REDRESSAL REGISTER

COMPLAINT NUMBER	DATE	COMPLAINT THROUGH (PHONE/ LETTER/VISIT)	NAME OF COMPLAINER	COMPLAINT DETAILS	ACTION TAKEN BY CONTRACTOR/PIAU/DSC	DATE CASE RESOLVED/STATE REQUIRED	REMARKS FURTHER ACTION IF ANY
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A
[illegible]	25-7-16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ACTION TAKEN Problem Solved [illegible]
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A
NIL	–	N.A	N.A	N.A	N.A		N.A
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A
NIL	–	N.A	N.A	N.A	N.A	N.A	N.A

APPENDIX 18: Grievance and Redessal Matrix – Direct compliant to ADB (September – October 2016)

Sr. No.	Compliant	Reply from PMU	Action Taken
1	Compliant from General Public "Please look at the attached photo. This was taken from a site under your same KEIIP project. This is a typical example of health and safety standards maintained in a typical project sites with workers sleeping inside an under-construction structure. It goes without say that this happens despite ADB's stringent policy of social safe guards. Kindly address this complaint separately. I think as an institution, ADB can't afford to overlook this gross compromise with human/ workers' lives. " 	It is not understood where from and when the photograph was taken because no landmark and date have been furnished. Concerned personnel are investigating whether the photograph is anyway related to on-going KEIIP project, if so, they would take necessary remedial and/or preventive measures immediately. However, all works contract has a built in safety measures including provision of a safety manager. The project has a dedicated unit including DSC who continuously monitors safety and other measures. Such incident if found to be true will be strongly dealt for non-occurrence in future. At the same time all contractors have been asked to be more cautious and alert for ensuring safety measures at the sites.	Instruction has been given to all contractors for compliance of health and safety requirement for the projects. Shortly separate health and safety training will be arranged for all health safety environment officers of the contractors
2	Compliant from "Under the project, a main pumping station was constructed at Santoshpur to discharge sewage to Garden Reach wastewater treatment plant. The transmission main was done using trenchless technology as suggested by the Consultants and approved by KMC. like in all other cases. As per the design submitted by the Consultants, to convey a 600 mm diameter plastic pipe to actually convey wastewater, a 2,000 mm diameter mild steel pipe was used as "sleeve-pipe".	The only viable solution found for transmission of waste water from Santoshpur Pumping Station (New) to Garden Reach STP was by laying a pumping pressure main by micro-tunnelling method. Due to presence of Main Road, Railway tracks and ponds over the area, no intermediate pit could be constructed; hence, the work has been accomplished by a single drive of 540 metres. 1800 mm	Project has been completed. As explained in earlier column that due to project safety - easy crossing by micro tunneling trough main road, under railway tracks and ponds design has been developed considering techno economic

Sr. No.	Compliant	Reply from PMU	Action Taken
	I ask the following questions, Is the technical information provided above correct? If not, please clearly mention the actual arrangement for transfer of sewage. Why was it required to use the sleeve-pipe which escalated the project cost by 3-4 times, if not more? Please refer to the technical reasons for it. Can the design consultants refer to any other project (in other country) where such a costly proposition has been used? Was the sleeve pipe required to maintain the inside 600 mm diameter pipe.? If so, why this was not done in other cases of laying smaller diameter pipes in the same project? In case this was done for poor ground condition, get me the geo-technical reports justifying such an arrangements	dia RCC pipe has been laid by micro-tunnelling method and 750 mm MS sewage pumping main has been passed through the casing pipe. Use of casing pipe was required as the same is mandatory for crossing below railway line and for future maintenance purpose of the pumping main whenever required. In the above context we do not find any negligence or ignorance from the part of the Consultants and the cost incurred for this work stands justified.	viability