Semi-Annual Environmental Monitoring Report

Project Number: 42266-023
December 2015

Period: January-June 2015

IND: Kolkata Environmental Improvement Investment Program – (Tranche 1)

KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP) – PROJECT 1

PROJECT MANAGEMENT UNIT

2nd

SEMI ANNUAL ENVIRONMENT MONITORING REPORT

TRANCHE 1

ADB Loan 3053-IND

(Period January to June 2015)

July 2015

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
MoEF	-	Ministry of Environment and Forest, 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
SEMR	-	Semi Annual Environment Monitoring Report
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 & 3. 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-I 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 the 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 outdates 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** is shown in **Figure 2.**

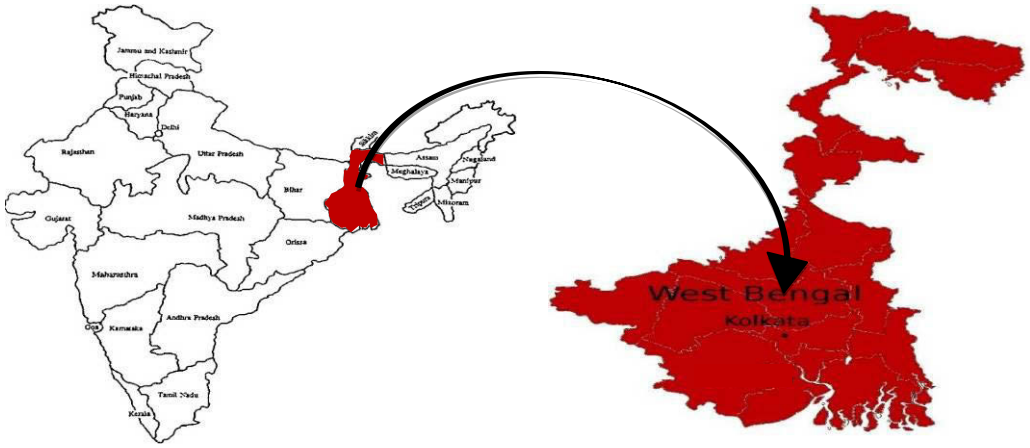


Figure 1: Map showing the location of Kolkata City in West Bengal

B. Project & Report Purpose

5. Sub projects under **Tranche 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 January to June 2015 and describes the implementation of the environmental management plan (EMP) in respect of each subproject as laid down in the approved IEE.

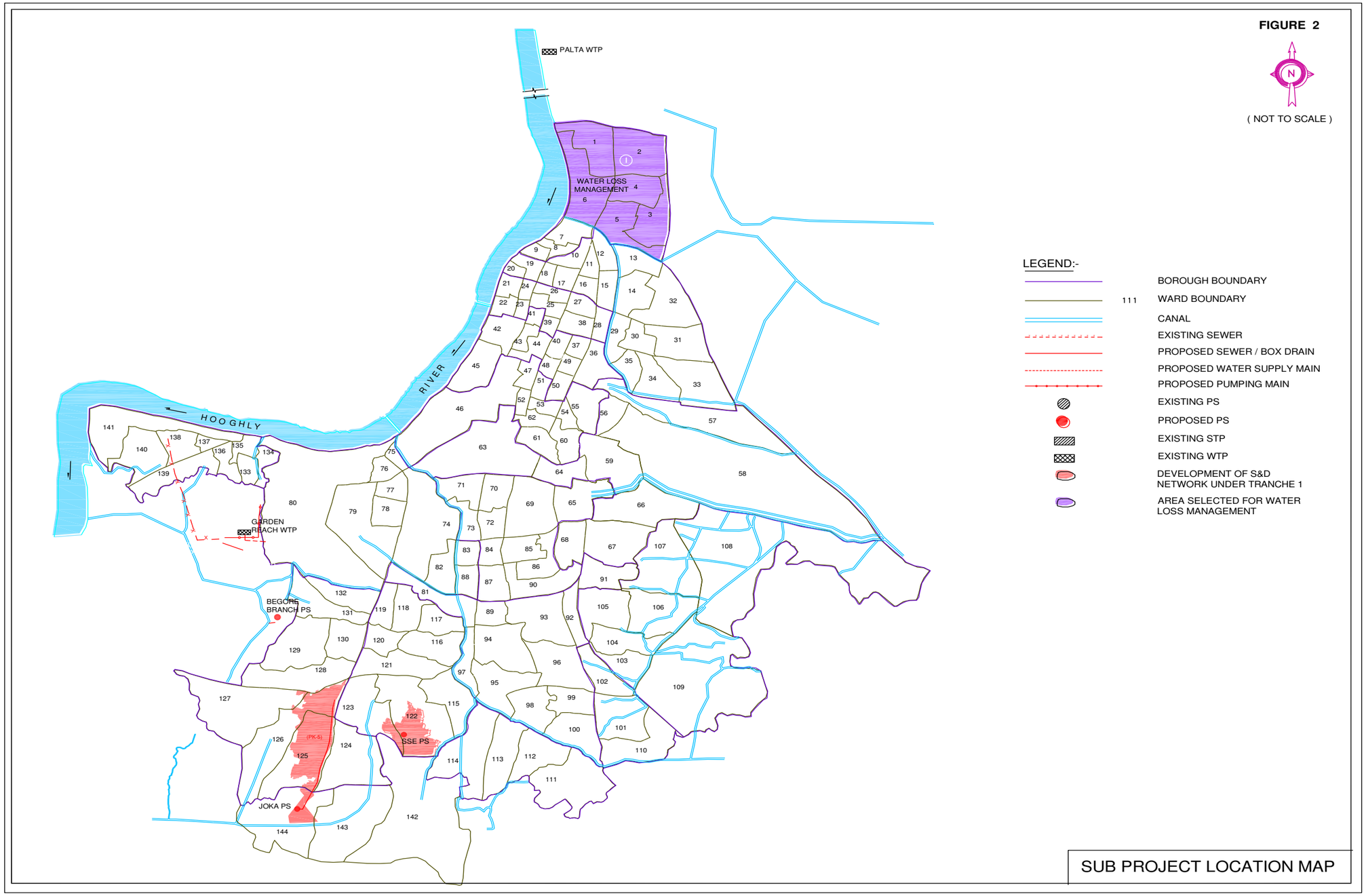


Figure 2: Sub Project location map- Project 1(Tranche 1)

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, 1 package related to building renovation, 1 package related to administrative component, 1 package for water supply, 1 package for supply and installation of pumps and motors for water works, 3 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 June 2015. The contract agreements for 5 packages have been signed and project implementation is continued for all the 5 awarded packages.

Table 1: Summary of Subprojects under KEIIP Tranche 1 (on 30th June 2015)

Sr. No.	Package No.	Components	Status
1	**KEIIP/ICB/Tr-1/ WS01/R/2015-16**	Performance Based Water Loss Management Works at Cossipore Service Zone, Ward no. 01 to 06	Package under re-design
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 14 October 2014, Implementation started on 7th November 2014 **Physical work under progress-1.0%**
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 16 January 2014, Implementation started on 19th May 2014 **Physical work under progress-62.53 %**
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	Procurement process completed. LoA issued on 4

Sr. No.	Package No.	Components	Status
		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.) ***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	March 2014, Implementation started on 19th May 2014 **Physical work under progress- 23.37 %**
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 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	Procurement process completed. LoA issued on 1st September 2014, Implementation started on 27th October 2014 **Physical work under progress- 12.50 %**
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 **Physical work under progress- 23.0 %**
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	Detailed project report and BID document prepared and submitted to ADB for approval
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	Tendering to be done
9	**KEIIP/NCB/TR-1/BR-08B/2015-16**	Implementation of Proposed Project Accounting System for Kolkata Environment Improvement Investment Program	Under design stage

Sr. No.	Package No.	Components	Status
	Environment non –sensitive package		

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 are mobilized and works are running in different stages. It is expected that all works will be completed within stipulated time period except package KEIIP/NCB/Tr-1/SD-06/13-14. Completion of that package is likely to be delayed by 1-2 months due to late starting/mobilization of contractors' staff. **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 Sub-project Under KEIIP Tranche 1 (As of 30th June 2015)

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2015	Works Completed as of 30th June 2015
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	07.11.2014	48 months	06.11.2018	1.0	**No work components completed. All running.** Status as follows, 1. Preliminary investigations completed. 2. WTP process design and layout approved. 3. Temporary access road for Palta jetty under construction. 4. Dismantling activity for old Alum room, LT Panel room and Switch gear room completed. 5. Excavation work of Alum room started. 6. Preparation of final drawing and approval under process
KEIIP/ICB/ Tr-1/WS03/2013-14	**Water supply**- Supply and Installation of Pumps & Motors at,	19.05.2014	24 months	18.05.2016	62.53	**No work components completed. All running.**

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2015	Works Completed as of 30th June 2015
Environment non – sensitive package	• Tallah- Palta System • Garden Reach System					Status as follows, Supply, design, inspection of pumps, motors and other accessories under progress
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.) ***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	19.05.2014	36 months	18.05.2017	23.37	**No work components completed. All running.** Status as follows, A. **Taratala Road (Water Main)** 1. Shaft No 2:- Trial trenches completed. Utility drawing has not yet been submitted by contractor. 2. Shaft No 4:- Sheet piling completed. Excavation and bracing work at 4thlayer in progress. 3. Shaft No 5:- Shaft completed. 4. Shaft No 6:- Shaft completed. 5. Shaft No 8:- Shaft Completed. 6. Shaft No 10:- Road diversion work completed. Barricading, utility shifting & other activities are in progress. 7. Shaft No 11:- Road diversion work in progress. 8. Shaft No 0 &1:- Inspection has done by Water Supply Department to finalize shaft location. Trial pit will start very soon. 9. M. S. Pipe Cutting: - 1824m 10. R. C.C. Jacketing :- 1123m (326Nos) 11. C. M. Lining :-1813.5m (529Nos) 12. Total Supply of M. S. Pipe :- 1912.17m (174 Pieces)

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2015	Works Completed as of 30th June 2015
						B. **D. H. Road (Sewerage)** 1. Shaft No 1:- Water main 400mm dia shifting work completed. Casting of soft eye completed. Manhole work in progress. 2. Shaft No 2:- Excavation, bracing, P. C. C. work completed. 1600mm dia R.C.C. pipe laying by micro tunnelling method completed. Shaft No.2 to 1 & Shaft No 2 to 3(Total length 477.0m) Manhole of Shaft No 2 has not yet been started. 3. Shaft No 10:- Road restoration work completed. 4. Shaft No 11:- Inspection has done with Police authority. 5. Shaft No 12:- Diversion work in progress. 6. Shaft No 15: -Utility to be shifted. 7. Shaft No 16:-Sheet pile work in progress. 8. Shaft No 17:-Shaft completed. Gantry erected 9. Shaft No 18 :- Shaft completed
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 Harbour Road catchment area including house drainage	27.10.2014	42 months	26.04.2018	12.5	**No work components completed. All running.** Status as follows, (A) **S& D network** :- **Survey submitted**: - survey work for S & D pipe laying work completed for 47.5Km. **Design approval: -** (i) Drawings for substation building &

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2015	Works Completed as of 30th June 2015
	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 • Desilting and re-sectioning of Bagore branch canal for the portion downstream of box drain upto its outfall at Bagore canal					pile foundation issued to the agency. (ii) Drawings for Begore Branch Canal Rehabilitation issued to the agency. **Pipe laying**: - Pipe laying work continued at several fronts and 3230m completed. **Manhole construction:** 14 Nos. under progress & 175 Nos. completed. **Road Restoration** :- Up to jhama level 89 7 m completed **Drain Restoration** :- 172m completed (B) **Joka P. S.**:- Concreting for well sump (Kerb) & 1st lift staining portion done. (C**) Begore P. S.** :- (i) P. C. C. Block casting for Begore Branch Canal Rehabilitation work continued and 5250 Block casting done. (ii) Kerb concrete up to 2.15m done. **Substation**: - Bored pile work at Begore P.S. substation Site 40 Nos. completed. Load test (2 No.s) for substation building No.1 completed. **Piling: -** (i) Pile load test at Begore box drain done and 12 Nos. completed. (ii) Dismantling of earlier piling work

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2015	Works Completed as of 30th June 2015
						at Begore box drain completed. (iii) Bored Pile work completed at Begore box drain site (37 Nos. completed). **Other Works**: - (i) Deck slab, raft and vertical wall casting done for 30m length at Begore box drain site. Concreting for another 30m raft completed. (ii) Begore Branch Canal Block pitching done for 95m at slope portion of the bank (iii) Land filling work at Begore P. S. completed.
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	19.05.2014	18 months	18.11.2015	23.0	**No work components completed. All running.** Status as follows, 1. Surveying, soil boring, trial trenches completed. 2. 10th lift (14/15m) of RP wall has been completed. 3. 8 th lift (10.7/15m) of JP wall concreting done. 4. Excavation of JP well is in progress using crane & grab arrangement.

B. Compliance of Safeguard Loan Covenants

10. The loan agreement for KEIIP Project 1 was signed on 3rd March 2014 and 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. Same will be followed for subsequent Tranches. 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 already disclosed in ADB website on January 2015. IEE will be revised in case of any change of scope and location. All measures and requirements as prescribed in IEE/EIA and EMP will be considered during implementation. Corrective or preventive action plans will be reflected in Environment Monitoring Report and project implementation authority will be taken care.
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 sub project Environment Specialist has been placed in Project Management Unit Human resource (project consultant, i.e Environmental Specialist of DSC) for implementation of EMPs is in place for regular compliance.
Safeguards – Related Provisions in Bidding Documents and Works Contracts		

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
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: (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; (b) make available a budget for all such environmental measures; (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; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	**Under compliance** (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, EMPs will be prepared and corrective measures will be disclosed to 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 already disclosed in ADB website on January 2015 (b) IEE indicates budgetary provisions for implementation of EMP. (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) Haul roads will be marked properly (by avoiding residences and agricultural land) before commencement of transportation of materials. (e) Pathways, land which are likely to be affected for a short period 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 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	**Under compliance** (a) This is 2nd Semi-annual safeguard monitoring report on Environment for the period January to June 2015. The next report will be due on December 2015. (b) During implementation of any sub project if additional impacts/risks arise due to change in scope/area, that will be reflected in revised IEEs, EMPs and accordingly Executing Agency (EA) will inform the ADB along with corrective

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
	(c) report any breach of compliance with the measures and requirements set forth in the EMPs, promptly after becoming aware of the breach.	action plan which will be reflected in the Monitoring Report. (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.
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. 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 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;

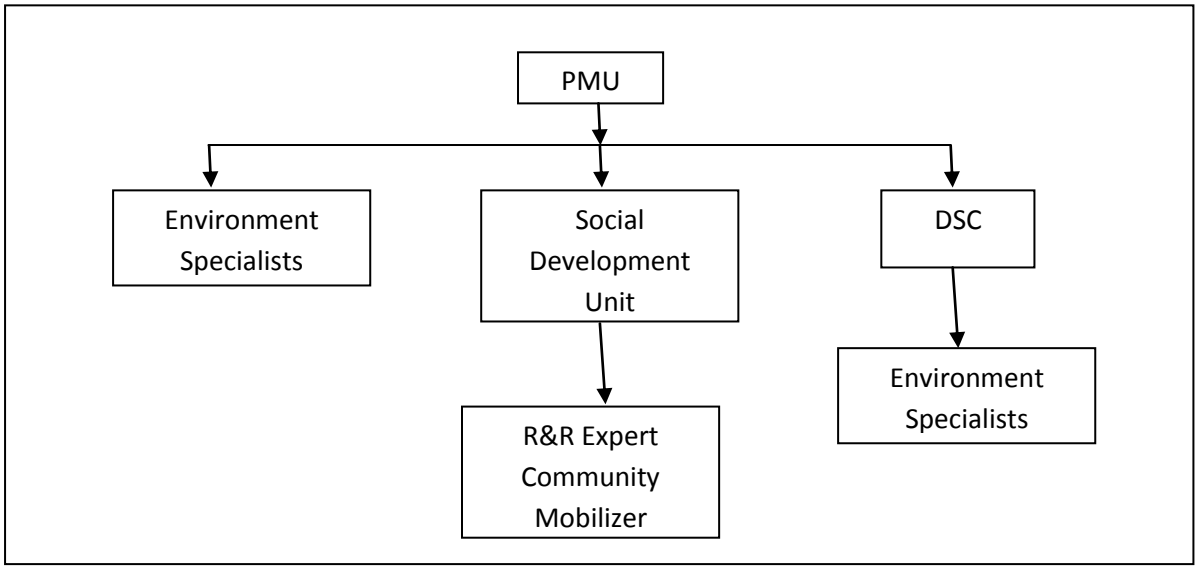
(viii). Conducting all activities in a manner that minimizes disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

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

14. Environment Specialist of DSC generally visited all construction sites every month and arranged training program for contractors and supervisory staff and instructed to contractor 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	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 Email: ardhendumitra@gmail.com , dsckeip@gmail.com



Notes: PMU = Project Management Unit; DSC = Design and Supervision Consultants;
R & R = Relocation and Rehabilitation

Figure 3: Institutional Arrangement – Safeguards

III. Environmental Procedure Review

A. Environmental Legal Requirement

15. **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 and Forests (MoEF), 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	Based on the performance

Component	Applicable Legislation	Compliance	Action Required
		during operation of surface Water Treatment Plant (WTP) and Sewage Treatment Plant (STP)	of the WTP/STP and its compliance with the disposal standards CTO to be renewed every year.

B. Compliance with Environmental Legal Requirements

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

17. 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 (upto 30th June 2015)

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 Forest (Conservation) Act 1980; West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006 for felling of trees 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. Also for setting up hot mix plant, batching plant and use of diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	Online application has been submitted to WBPCB on 30th June for CTE for Rehabilitation of Water Treatment Plant at Palta Water Works Still number of tree felling not finalized. Application will be send after finalization of pipeline alignment and no. of tree to be felled During implementation of project, compliance with Air Act , Noise Rules and Water Act will be required Not required now as per present work	Till waiting for Consent Not applicable till date
KEIIP/ICB/	Laying of water	West Bengal Trees	Tree felling-	Till date 15 nos.

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
Tr-1/WS & SD-04/13-14	trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method	(Protection and Conservation in Non-Forest Areas) Act, 2006- Tree felling permission Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	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 water main. Compensatory afforestation of 75 trees is recommended in clearance certificate. **(NOC attached as Appendix 11)** During implementation of project compliance against Air Act , Noise Rules and Water Act will be required Not required for acoustic type of Generator	tree cut Compensatory afforestation at non forest land- Action has already been taken
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 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	During implementation of project compliance with Air Act , Noise Rules and Water Act will be required Not required now For acoustic type of Generator- not required	
KEIIP/NCB/ Tr-1/SD-06/13-14	Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981,	During implementation of project compliance against Air Act , Noise Rules and Water Act will be required	

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
	Sewage Treatment Plant	as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010		

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

18. There are 4 sub-projects under implementation. Site Environment plan including site specific EMP was submitted by the contractor before starting of the each construction packages. These EMPs are generally revised semi annually as per progress of construction work. **Appendix 4** shows Site Specific EMP for the 4 packages. One package on "Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach" has just been started and procurement of materials is in progress.

19. 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 7 to 10.** It may be noted, though most of the sites are environmentally well managed, in a few cases packages like KEIIP/ICB/ Tr-1/SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14 there are some shortfall in site management measures as mentioned below,

- Materials storage and lay-down area of equipment in some places needs more satisfactory management;
- Water sprinkling in some places is not done according to the site conditions
- More comprehensive Tool box training for labourers is required
- Housekeeping at some parts of the camps and working sites needs attention
- Use of PPE by contractors' site workers is not always maintained
- Barricading of some of the working locations needs due attention and improvement

Table 7: 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	Under compliance Tree felling will be required as per pipeline alignment plan. Waiting for final design.
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
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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
			implemented						
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	Labour camp constructed as per specification
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 storage facilities • Proper storage facilities for the storage of oils,	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	Proper storage of fuels, lubricants planned. 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
		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 will be arranged after complete mobilization of workers
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 quarry sites for procurement of materials • Verify suitability of all	• 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	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. Visit by Environment Specialist and Construction Manager on 17.02.2015 09.04.2015 09.05.2015 02.06.2015	Complied Approval obtained from PMU and DSC. Procurement to be start shortly

[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
		material sources and obtain approval of Investment from PMU/DSC	documentation						
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 Established within Palta Water Treatment Plant campus. Drinking water and toilet facility available. Housekeeping maintained. 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 • 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	To be Comply Utilization of excess earth to be done. Material storage not yet started Spoil management plan will be applied as per EMP (Attached as **Appendix 5**)
12	Dust and Air Pollution[4]	• 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	Do	Complied Location of stockpiles selected.

[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
		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	sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials			inspection of sites	PMU		Covering of materials will be considered Water sprinkling to be done. Base line Air quality monitoring done as per EMP. (Result certificate shown in **Appendix 6).** Pollution under Control Certificate of vehicles collected
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	• 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 such noise producing machinery mobilized at site PPE will be utilizing as per requirement. Base line monitoring done. During construction monitoring will be done after monsoon Results are attached as **Appendix 6**.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		machinery.							
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	To be complied as per requirement and following EMP.
15	Water Quality[5]	• Contractor to ensure run-off from vehicle or plant washing does not enter Hooghly river • Contractor to ensure	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	To be comply during construction. Water quality monitoring for River Hooghly

[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
		every effort is made that any chemicals or hazardous substances do not contaminate the soil, Hooghly river, or groundwater on site.							done. Results enclosed in **Appendix 6.**
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 comply Tree cutting requirement will be finalize after finalization of alignment design
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 is 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	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for workers	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 Attached as **Appendix 7**. H & S training

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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 than8hoursper day without hearing protection.	• 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						arranged for the labourer on regular basis. Schedule and records of trainings conducted attached as **Appendix 8.** Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as **Appendix 9.** No accident reported till date Overall compliance is satisfactory
19	Social Impacts[6]- Community Health &	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or	• Traffic Management Strategy • Complaints from	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Caution tape placed at excavated area

[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
	safety, accessibility	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	sensitive receptors • Number of signages placed at subproject location						No permanent barricade arranged by the contractor but instruction is given to the contractor for arrangement of the same as per requirement. Photo attached as **Appendix 3**.
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
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate	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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject							attached as **Appendix 10**

Table 8: 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. NOC attached as **Appendix 11.** Till date 15 trees cut but compensatory afforestation done with 75 trees
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages 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. Access

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure							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. Discussion continued with utility dept.
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 dept. **Appendix 12** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage	• 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. Site photo attached as **Appendix 3.**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	areas, and disposal areas.	• 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. Visit by Environment Specialist and Construction Manager on 17.02.2015 09.04.2015 09.05.2015 02.06.2015	Complied Approval obtained from PMU and DSC.
10	Maintenance of	• Establishment of	• Complaints from	Camp site	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
	Construction 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 will be applied as per EMP (Attached as **Appendix 5**)
12	Dust and Air Pollution[10]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspectio	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected. Covering of

[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
		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	• Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials			n of sites			materials considered for storage Water sprinkling done as per requirement Base line and during construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 6).** 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 nearby the project location. PPE utilize by labourer as per requirement. Base line and during construction monitoring done. Monitoring will be continued after monsoon Results are attached as **Appendix 6**.

	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.							
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 nearby 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	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
		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.							
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 is 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	• 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	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 Attached as **Appendix 7**. H & S training arranged for the labourer on regular basis. Schedule and records of trainings conducted attached as

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• 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, appropriate • Disallow worker exposure to noise level greater than85 dBA for a duration of more than8hoursper day without hearing protection.	• Sign boards for hazardous areas such as energized electrical devices and lines, service rooms						**Appendix 8.** Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as **Appendix 9.** No accident happens during the report period **Overall compliance is satisfactory**
19	Social Impacts[12]- Community Health & safety, accessibilit	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and	• Traffic Management Strategy • Complaints from sensitive receptors	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Caution tape placed at excavated area Permanent 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
	y	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	• Number of signages placed at subproject location						arranged by the contractor 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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
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 10**

Table 9: 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 closed near pipe laying area Access to site maintained after due consultation with local councilor
3	Affected	Shifting of affected utilities	• List of affected	Specific	DSC/PMU	Observation	Environment	Do	Complied as

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	utilities	like electric and telephone poles, pipe lines	utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	project location		and document checking	Specialist of DSC and PMU		per requirement. Discussion continued with utility dept.
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 comply 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 from traffic dept. **Appendix 12** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal	• 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	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	Camp has been established within Joka PS campus. Sufficient drinking water, toilet

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	areas.	location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water							facility noted
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 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	Partially Complied. Improvement required. Proper storage of fuels, lubricants done after necessary instruction. Equipment lay-down area demarcated Fire prevention facilities to be arrange

[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
		their potential impacts and follow the appropriate safety measures							
8	Education of site staff on general and Environmental Conduct[14]	• 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 to be arrange on regular basis
Construction									
9	Materials Management – Sourcing[15]	• 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. Visit by Environment Specialist and Construction Manager on 17.02.2015 09.04.2015 09.05.2015 02.06.2015	Complied Approval obtained from PMU and DSC.
10	Maintenance of	• Establishment of temporary camps with	• Complaints from sensitive	Camp site	Contractor	• Visual inspecti	Environment Specialist of	Do	Complied Camp has

[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
	Construction Camp	drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste			on of sites	DSC and PMU		been established within Joka PS campus. Sufficient drinking water, toilet facility noted **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 partially Excess earth disposed at designated/ approved location. Regular removal is required without accumulation at site. Spoil management plan will be applied as per EMP (Attached as **Appendix 5)** Fencing of storage areas done partly
12	Dust and Air	• Selection of materials	• Location of	Project	Contractor	• Checkin	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
	Pollution[16]	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 monitoring	stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials	Locations		g of records • Visual inspecti on of sites	Specialist of DSC and PMU		Location of stockpiles selected. Covering of materials considered for storage Water sprinkling not done on regular basis During construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 6).** 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	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checkin g of records • Visual inspecti on of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise generating problem nearby the project location. PPE utilize

[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
		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.							by labourer as per requirement. During construction monitoring done. Monitoring will be continued after monsoon Results are attached as **Appendix 6**.
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[17]	• 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	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	No water source nearby the construction location

[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
		soil, Hooghly river, or groundwater on site.							
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
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	Stockpile not obstructed 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	• Site-specific Health and Safety (H&S) Plan • Equipped first-aid stations; • Medical insurance coverage for workers • Number of	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 Attached as **Appendix 7**.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• 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, appropriate • Disallow worker exposure to noise level greater than85 dBA for a duration of more than8hoursper day without hearing protection.	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 not on regular basis. Schedule and records of trainings conducted attached as **Appendix 8.** Use of PPE – partially complied Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as **Appendix 9.** No accident recorded till date **Overall compliance is Partially satisfactory**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
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 fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours	• 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 at excavated area Permanent barricade not arranged Traffic Management Plan under implementation Photo attached as **Appendix 12.**
20	Socio cultural resources	• Strictly follow the protocol for chance finds	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of	Do	Not required till date

[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
		in any excavation work • Stop work immediately to allow further investigation if any finds are suspected					DSC and PMU		
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 10**

Table 10: Compliance to EMP of for the Package - Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant (KEIIP/NCB/ Tr-1/SD-06/13-14)

	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
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	• 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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure							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 chance to impact any utility services 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 comply 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	Not required as per nature of work. Location pits at fixed area
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	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	Camp has been established within Santoshpur Pumping station. . Sufficient drinking water, toilet facility noted. Improvement of camp environment done after suggestion

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• No disposal of waste in water							
7	Establishing Equipment Lay-down and Storage Area[19]	• 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 their potential impacts and follow the appropriate safety measures	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 to be arrange
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 undergo	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Partially complied Site Safety training and awareness program not

[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
		safety training and wear the necessary protective clothing							arranged regularly
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. Visit by Environment Specialist and Construction Manager on 17.02.2015 09.04.2015 09.05.2015 02.06.2015	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 Camp has been established within Santoshpur PS campus. Sufficient drinking water, toilet facility noted **Appendix 3** shows camp site photo
11	Landscape and Aesthetics	• Removal of overburden and excavated material from	• Waste Management	Project Locations	Contractor	• Checking of records	Environment Specialist of	Do	Complied partially

[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
		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	List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done			• Visual inspection of sites	DSC and PMU		Excess earth needs to be dispose on regular basis from construction sites Spoil management plan applied as per EMP (Attached as **Appendix 5)** Fencing of storage areas not done
12	Dust and Air Pollution[22]	• 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 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 not done properly Water sprinkling not required Base line and during construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 6).** Pollution under Control Certificate of vehicles and equipment obtained

[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
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 utilize by labourer as per requirement, but not always Base line and during construction monitoring done. Monitoring will be continued after monsoon Results are attached as **Appendix 6**.
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 partially Arrangement of drainage of waste water from construction locations done partly

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
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	No water source nearby 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
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	Stockpile not obstructed natural flow of water

[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
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 electrical devices and lines, appropriate • Disallow worker exposure to noise level greater than85 dBA for a duration of more than8hoursper day without hearing protection.	• 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 Attached as **Appendix 7**. H & S training arranged for the labourer – not on regular basis. Schedule and records of trainings conducted attached as **Appendix 8.** Use of PPE – partially complied Drinking water and first aid box available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as **Appendix 9.** No accident recorded till date **Overall compliance is partially satisfactory**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
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 • 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	• 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 at excavated area Permanent barricade not arranged. Traffic Management Plan not required 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

[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
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 local laboures less than 50%. List of laborers are attached as **Appendix 10**

V. ENVIRONMENTAL MONITORING AND EVALUATION

20. 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.

21. During year 2014 baseline air and noise quality monitoring has been carried out for only one sub project, KEIIP/ICB/ Tr-1/SD-05/13-14. The results have been reported in SEMR covering period June to December 2014 and submitted to ADB for disclosure in the month of January. During construction air quality monitoring has been done for the said project within January to June 2015. During January to June 2015 both base line and during construction monitoring has been carried for the packages, KEIIP/ICB/ Tr-1/WS & SD-04/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14. Only Base line monitoring has been carried out for the package KEIIP/ICB/Tr-1/WS-02/2013-14 during this report period. Construction work has just started for the said package and accordingly "during construction" monitoring will be carried out shortly after monsoon season. Monitoring and health safety budget of contractor is shown in **Appendix 13.**

22. Base line and during construction air quality monitoring results shown in **Table 11** below. All test certificates from monitoring agency is disclosed in **Appendix 6.**

23. Findings from air quality monitoring are,

- In all cases concentration of SO_2 is within the prescribed standard. 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_2 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 more movement of traffic at construction site for transportation of workers and materials. No increasing or decreasing trend is noted for other packages.
- In all cases concentration of $PM_{2.5}$ is within the prescribed standard. Only at Joka Tram depot (Pumping station) location under package KEIIP/ICB/ Tr-1/SD-05/13-14 $PM_{2.5}$ increased during construction, but at other construction locations there is no definite deceasing and increasing trend for $PM_{2.5}$ level.
- Base line concentration of PM_{10} is above the standard for all the locations of the packages KEIIP/ICB/ Tr-1/WS02/2013-14 and KEIIP/ICB/ Tr-1/WS & SD-04/13-14. For the package KEIIP/ICB/ Tr-1/SD-05/13-14 base line and during construction monitoring results are above the standard in few cases. Increase in PM_{10} concentration was noted at Joka Tram depot and Begore box drain location. To mitigate this impact, the contractors were reminded of the EMP measures on dust suppression and control of vehicle emission at working sites.
- In most of the cases concentration of Hydro carbon is below the detection limit

Table 11: Base line Ambient Air Quality Monitoring Data at working sites

Package	Monitoring location	Monitoring stage	Date of monitoring	Parameters				
				SO_2 $\mu g/m^3$	NO_2 $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	PM_{10} $\mu g/m^3$	HC $\mu g/m^3$
Rehabilitation and Refurbishment of	Proposed Water Treatment Plant – Palta at	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	$PM_{2.5}$ µg/m^3	PM_{10} µg/m^3	HC µg/m^3
Water Works at Palta and Garden Reach **KEIIP/ICB/ Tr-1/WS02/2013-14**	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
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	8.50	35.0	-	123.82	
	6 no. shaft Taratala Road Jhinjira Bazar	Base line	03.01.2015	8.20	36.54	-	126.80	-
	DH Road Shaft no. 2 at Sakherbazar near office Container	During construction	08.04.2015	15.08	38.94	28.68	76.97	ND
	Taratala Road Shaft no. 9 near Deep Bhawan	During construction	08.04.2015	16.02	40.84	31.21	71.85	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 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	**-**
	Near Joka Tram Depot. Pumping station	Base line*	27.12.2014	22.22	48.60	37.41	84.24	-
	Begore Khal Pumping station (PS) – near PS	During construction	09.06.2015	21.68	40.41	42.45	93.0	ND

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
	Near Joka Tram Depot. Pumping station	During construction	09.06.2015	27.34	59.84	59.85	139.96	ND
	Kadamtala Govt. Housing road	During construction	09.06.2015	22.62	41.79	32.5	85.47	ND
	Kalicharan Dutta Road	During construction	09.06.2015	23.57	43.22	37.41	91.84	ND
	Box drain location- near Behala Airport	During construction	09.06.2015	26.39	55.09	57.36	129.67	ND
Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **KEIIP/NCB/ Tr-1/SD-06/13-14**	Near receiving shaft area	Base line	05.01.2015	8.2	59.5	-	173.1	-
	Jacking shaft area	Base line	05.01.2015	9.7	49.7	-	26.4	-
	Near receiving shaft area	During construction	26.03.2015	-	-	34.16	68.36	ND
	Jacking shaft area	During construction	26.03.2015	-	-	28.8	64.0	ND
	Railway line at Solabigha	Base line	20.06.2015	11.29	46.98	32.47	75.22	ND
	Near receiving shaft area	During construction	20.06.2015	13.60	56.27	31.25	72.71	ND
	Jacking shaft area	During construction	20.06.2015	12.5	53.43	27.48	65.86	ND
Standard				**80.0**	**80.0**	**60.0**	**100.0**	

* Base line monitoring done during period June to December 2014

24. Base line ambient noise level data is presented in **Table 12.** In most of the cases Leq value is above the standard for residential and commercial area. There is no increasing and decreasing trend for noise level for "during construction" as compared to "base line/before construction".

Table 12: Base Line 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

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
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	-
	DH Road Shaft no. 2 at Sakherbazar near office Container	During construction	08.04.2015	80.12	-
	Taratala Road Shaft no. 9 near Deep Bhawan	During construction	08.04.2015	65.17	-
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
	Near Begore Khal Pumping station (PS)	During construction	09.06.2015	59.13	56.36
	Near Joka Tram Depot. Pumping station	During construction	09.06.2015	58.62	55.03
	Kadamtala Govt. Housing road	During construction	09.06.2015	62.42	57.0
	Kalicharan Dutta Road	During construction	09.06.2015	57.20	54.36
	Box drain location- near Behala Airport	During construction	09.06.2015	54.40	51.81
Micro-tunneling works on pressure main from	Near receiving shaft area	Base line	02.01.2015	57.83	**-**
	Jacking shaft	Base line	02.01.2015	74.70	-

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **KEIIP/NCB/ Tr-1/SD-06/13-14**	area				
	Intermediate location between Jacking shaft and receiving shaft	Base line	02.01.2015	64.70	-
	Santoshpur pumping station receiving shaft	During construction	20.06.2015	63.3	57.49
	Jacking shaft area- Garden reach Treatment plant	During construction	20.06.2015	59.19	54.15
	Railway line at Solabigha	During construction	20.06.2015	62.78	61.92
Standard		**Day time:** Industrial area:75 Commercial: 65 Residential area: 55 **Night time:** Industrial area:70 Commercial: 55 Residential area: 45			

* Base line monitoring done during period June to December 2014

25. 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 of iron is above the limit for all the samples. Concentrations of heavy metals are below the detection limit. Total Suspended Solids level was much below the standard.

Table 13: Water quality monitoring data for Package KEIIP/ICB/ Tr-1/WS02/2013-14- Base line monitoring

Sl. No.	Parameters	SW1	SW2	SW3	SW4	Limit
	Date of sampling	**04.03.2015**	**04.03.2015**	**07.03.2015**	**07.03.2015**	
1	pH	7.27	7.42	7.24	7.20	6.5 – 8.5**
2	Total Hardness as CaCO3 (mg/l)	104.0	112.0	116.0	116.0	600.0
3	Calcium as Mg(mg/l)	33.67	33.67	123.06	30.46	200.0
4	Magnesium as Mg (mg/l)	4.8	6.72	8.64	9.6	100.0
5	Chloride as Cl (mg/l)	23.96	23.96	18.43	18.43	1000.0
6	Iron as Fe (mg/l)	2.5	2.72	1.59	2.13	1.0
7	Arsenic (mg/l)	<0.01	<0.01	<0.01	<0.01	0.05**
8	Cadmium (mg/l)	<0.01	<0.01	<0.01	<0.01	0.01**
9	Hexavalent Chromium (mg/l)	<0.05	<0.05	<0.05	<0.05	0.05**
10	Copper as Cu (mg/l)	<0.04	<0.04	<0.04	<0.04	1.5
11	Cyanide(mg/l)	<0.05	<0.05	<0.05	<0.05	0.05
12	Lead (mg/l)	<0.05	<0.05	<0.05	<0.05	0.05**
13	Mercury (mg/l)	<0.001	<0.001	<0.001	<0.001	0.001**
14	Nitrate as NO_3 (mg/l)	6.50	8.50	12.50	11.20	100.0
15	Total Dissolved Solid (mg/l)	295.0	313.0	1075.0	1139.0	2000.0
16	Phenolic Compounds as Phenol(mg/l)	<0.002	<0.002	<0.002	<0.002	0.002
17	Zinc as Zn (mg/l)	0.05	0.03	0.04	0.04	15.0
18	Sulphate as SO4 (mg/l)	31.0	29.0	32.0	24.75	400.0
19	Turbidity (NTU)	6.0	7.0	2.0	2.0	10.0

Sl. No.	Parameters	SW1	SW2	SW3	SW4	Limit
20	Residual Free Chloride (mg/l)	<0.04	<0.04	<0.04	<0.04	0.2**
21	Fluoride (mg/l)	<0.1	<0.1	<0.1	<0.01	1.5
22	Manganese (mg/l)	<0.1	<0.1	0.13	0.15	0.3
23	COD (mg/l)	40.0	50.0	30.0	35.0	250.0
24	BOD (mg/l)	12.0	14.0	8.0	8.0	30.0
25	Alkalinity (mg/l)	140.0	140.0	136.0	136.0	600.0
26	Aluminium (mg/l)	<0.02	<0.02	<0.02	<0.02	0.2
27	Boron (mg/l)	<0.1	<0.1	<0.1	<0.1	5.0
28	Total Suspended Solids (mg/l)	37.0	42.0	12.0	16.0	100.0

**Desirable limit and permissible limit are same due to no relaxation for permissible limit as per BIS 10500, 1991 (Revised)

Locations: SW1: Ganges river water at Palta intake- upstream, SW2: Ganges river water at Palta intake- downstream, SW3: Ganges river water at Gardenreach intake- upstream, SW4: Ganges river water at Gardenreach intake- downstream

26. “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).**

27. A performance monitoring fact sheet has been prepared to facilitate tracking and quick reference on environmental monitoring of Tranche 1 subproject packages **(Tables 14 and 15).**

Table 14: 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. Will be required after design of pipeline alignment	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained
2	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 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
4	Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **(KEIIP/NCB/ Tr-1/SD-06/13-14)**	M/s Siimplex Krita 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

Table 15: 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)	n/a	n/a	2	2	2	n/a	n/a	n/a	2	2	n/a	n/a	2
2	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 ITD- ITD CEM Jv	Yes	Nominated	Complied (2)	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	1	1	2	2	2	n/a	2	n/a	1	2	2	2
4	Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **(KEIIP/NCB/ Tr-1/SD-06/13-14)**	M/s Siimplex Krita JV	Yes	Nominated	Complied (2)	2	2	1	2	2	n/a	n/a	2	n/a	1	2	n/a	1

VI. CONSULTATIONS AND DISCLOSURES CONDUCTED

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

29. The indicative schedule for consultations and disclosure is presented in **Table 16. Appendix 14** provides the form to summarize and record the consultations.

Table 16: 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	By 31st August 2015	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

30. Induction training program has been arranged for contractors, supervisors by DSC's Environment Specialist on safety and environment. Minutes of the meeting is attached as **Appendix 8.**

VII. GRIEVANCE REDRESSAL

31. A common grievance redress mechanism (GRM) in placed for social, environmental or any other subproject related grievances.

32. PMU maintained a Complaint Cell headed by a designated Grievance Officer at its office. The Grievance Registration/Suggestion Form (**Appendix 15)** will be available at the Complaints Cell.

33. 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. The Complaint Cell will also serve as Public Information Centers, where, apart from grievance registration, information on the Project, subprojects, social and environmental safeguards can be provided.

34. The Grievance Officer will resolve simple issues and in case of complicated issues, consult/seek the assistance of the Environment/Social Coordinator of the PMU. Grievances not redressed through this process within one month of registration will be brought to the notice of the Project Director, KEIIP.

35. 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.

36. Grievance Redressal Committee (GRC): An apex GRC will be considered, if required, to address grievances pertaining to broader concerns related to the program/subproject. The membership of the Committee will be decided by Commissioner, KMC.

37. Records will be kept by PMU of all grievances received including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the effective date and final outcome.

38. Grievances received and responses provided will be documented and reported back to the affected persons. 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.

39. 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.

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

VIII. FINDINGS AND RECOMMENDATIONS

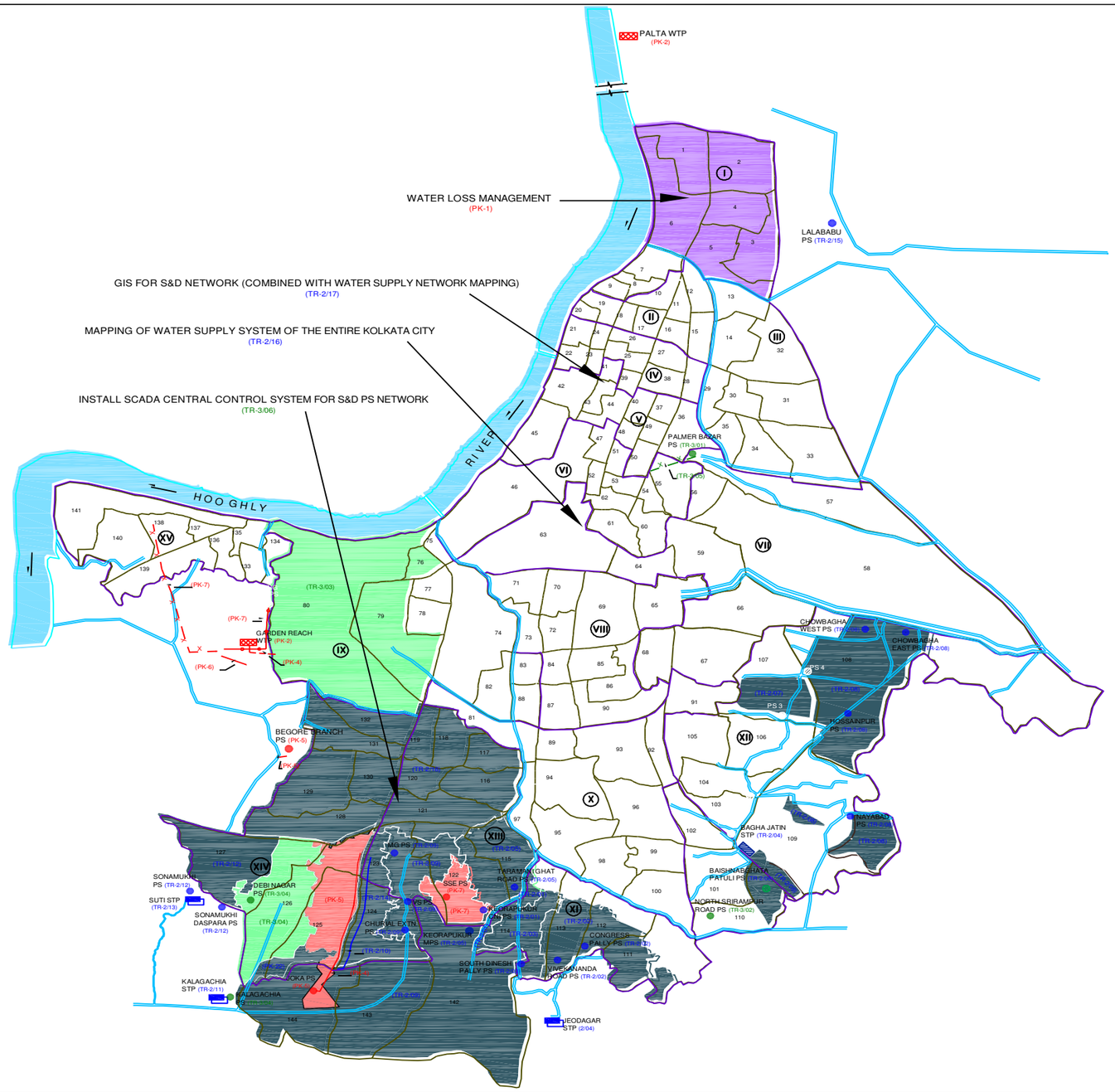
41. Based on the foregoing observations, findings and environmental monitoring carried out from January to June 2015, it may be concluded that KEIIP Tranche 1 sub projects have been implemented in almost full compliance of the required environmental safeguards. Minor, localised and short duration non-compliances in a few packages of works during this period have been listed in paragraph 19.

42. **Table 17** 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.

Table 17: Corrective Action Plan

	Non-compliance	Action Required	Responsible	Target Date	Indicator of Compliance
1	Materials storage and lay-down area of equipment in some places needs more satisfactory management	Improvement of materials storage and lay-down area of equipment	Contractor	15th August 2015	Site observation and record
2	Water sprinkling in some places is not done according to the site conditions	Regular water sprinkling as per site condition	Contractor	Continue process	Site observation and reaction from local community
3	More comprehensive Tool box training for labourers is required	Induction and tool box training on regular basis	Contractor	15th August 2015	Training document, photographs
4	Housekeeping at some parts of the camps and working sites needs attention	Improvement of housekeeping	Contractor	15th August 2015	Site observation and record
5	Use of PPE by contractors' site workers is not always maintained	Use of PPE should be at all times as per site condition and work type.	Contractor	7th August 2015	Availability and use of PPE
6	Barricading of some of the working locations needs due for attention and improvement	Complete barricading and complete use of caution tape at all working sites	Contractor	15th August 2015	Site observation

APPENDIX 1: LOCATION MAP PROJECT AREA



(NOT TO SCALE)

PACKAGE NO.	DESCRIPTION
TRANCHE 1	
PK-1	WATER LOSS MANAGEMENT IN THE COSSIPORE SERVICE ZONE
PK-2	REHABILITATION OF PALTA WATER TREATMENT PLANT AND GARDEN REACH WATER TREATMENT PLANT + CLEANING OF PRE-SETTLING TANKS (PSTs) AT PALTA WTP
PK-3	SUPPLY AND INSTALLATION OF PUMPS AND MOTORS AT TALLAH, PALTA AND GARDEN REACH SYSTEMS
PK-4	MICRO TUNNELLING WORK ON WATER TRUNK MAIN BETWEEN GARDEN REACH AND TARATALA AND SEWER ALONG DIAMOND HARBOUR ROAD
PK-5	CONSTRUCTION OF PUMPING STATION AT BEGORE KHAL AND IN JOKA TRAM DEPOT + CONSTRUCTION OF S&D NETWORK WITHIN DIAMOND HARBOUR ROAD CATCHMENT
PK-6	MICRO TUNNELLING WORKS ON PRESSURE MAIN BETWEEN SANTOSHPUR MPS AND GARDEN REACH STP
PK-7	CONSTRUCTION OF S&D NETWORK AND 1 NO. PUMPING STATION IN SSE CATCHMENT UNDER BOROUGH XIII (WARD 122 & 123) AND REPLACEMENT OF GAP LINE IN BOROUGH XV AND LAYING OF NEW PUMPING MAIN FROM TRENCHING GROUND PS TO SANTOSHPUR PS
PK-8	RENOVATION OF KEIP BUILDING
TRANCHE 2	
TR-2/01	S & D MAINS (DIAMETER >= 600 MM) AND 1 PUMPING STATION IN KEORAPUKUR CANAL SUB BASIN UNDER BOROUGH XI (WARD - 114 & 122)
TR-2/02	S&D MAINS (DIAMETER >= 600 MM) AND 2 PUMPING STATION IN RANIA CANAL SUB BASIN UNDER BOROUGH XI (WARD 111, 112 & 113)
TR-2/03	S & D MAINS, (DIAMETER<600 MM) AND 1 NO. PUMPING STATION IN WESTERN CHANNEL SUB BASIN UNDER XI (WARD 113 & 114)
TR-2/04	CONSTRUCTION OF JEODAGAR STP AND RENOVATION OF EXISTING BAGHAJATIN STP
TR-2/05	S&D MAINS (DIAMETER > = 600 MM) AND 2 PUMPING STATION IN TOLLY'S NALLA / KEORAPUKUR SUB BASIN UNDER BOROUGH XIII, WARD 115 & 122 (1 NEW + 1 AUGMENTATION)
TR-2/06	CONSTRUCTION OF STP FOR BOROUGH XII
TR-2/07	RAJDANGA SEWER MAIN AT BOROUGH XII
TR-2/08	CONSTRUCTION OF S & D MAINS (DIA>= 600 MM) AND 5 PUMPING STATIONS IN BOROUGH XII (4 NEW + 1 AUGMENTATION)
TR-2/09	S & D MAINS, (DIAMETER<600 MM) AND 3 NOS. PUMPING STATION IN CHURIAL EXTENSION CATCHMENTS UNDER BOROUGH XIII, INCLUDING JOKA II AREA
TR-2/10	TRUNK SEWER (MICRO TUNNELING METHOD) ALONG JAMES LONG SARANI
TR-2/11	CONSTRUCTION OF KALAGACHI STP UNDER BOROUGH XIV
TR-2/12	S&D MAINS (DIA >600 MM) AND 2 NOS PUMPING STATION IN SUTI SUB BASIN UNDER BOROUGH XIV
TR-2/13	CONSTRUCTION OF SUTI STP UNDER BOROUGH XIV
TR-2/14	S&D MAINS (DIA >600 MM) IN CHURIAL SUB BASIN UNDER BOROUGH XIV BALANCE AREA
TR-2/15	CONSTRUCTION OF NEW PUMPING STATION AT LALABABU NIKASHI / BAGJOLA CANAL
TR-2/16	MAPPING OF WATER SUPPLY SYSTEM OF THE ENTIRE KOLKATA CITY
TR-2/17	GIS FOR S&D NETWORK (COMBINED WITH WATER SUPPLY NETWORK MAPPING)
TR-2/18	LATERAL S & D NETWORK REMAINING FROM KEIP PHASE 1 UNDER BOROUGH XIII & XIV
TRANCHE 3	
TR-3/01	CONSTRUCTION OF A NEW PUMPING STATION WITH DEEPER SUMP AT PALMER BAZAR PUMPING STATION
TR-3/02	1NO PUMPING STATION AT NORTH SIRAMPORE ROAD UNDER BOROUGH XII
TR-3/03	RENOVATION OF EXISTING S&D NETWORK IN KIDDERPORE UNDER BOROUGH IX
TR-3/04	S&D MAINS (DIA >600 MM) AND 2 NOS PUMPING STATION IN KALAGACHI SUB BASIN UNDER BOROUGH XIV
TR-3/05	REHABILITATION OF TRUNK SEWER BETWEEN MAULALI & PALMER BAZAR PUMPING STATION
TR-3/06	INSTALL SCADA CENTRAL CONTROL SYSTEM FOR S& D PUMPING STATION NETWORK

1. RED COLOUR INDICATES WORKS TO BE IMPLEMENTED UNDER TRANCHE 1
2. BLUE COLOUR INDICATES WORKS TO BE IMPLEMENTED UNDER TRANCHE 2
3. GREEN COLOUR INDICATES WORKS TO BE IMPLEMENTED UNDER TRANCHE 3

LEGEND:-

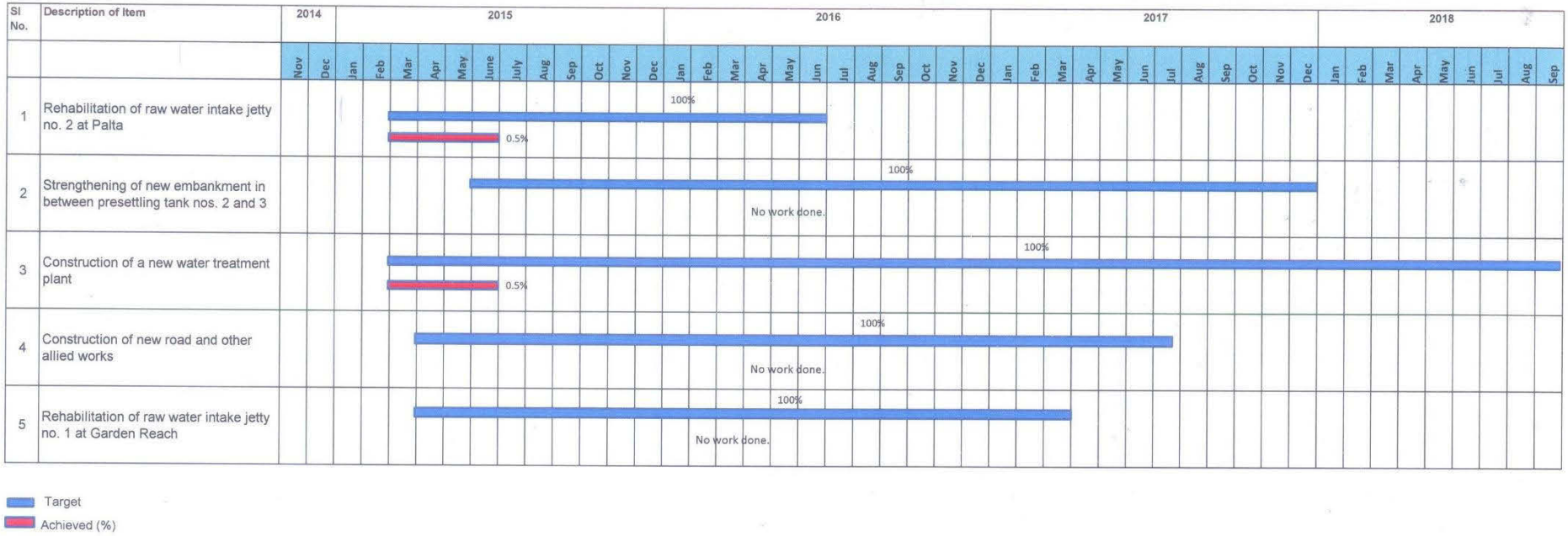
- BOROUGH BOUNDARY
- 111 WARD BOUNDARY
- CANAL
- EXISTING SEWER
- PROPOSED SEWER / BOX DRAIN
- PROPOSED WATER SUPPLY MAIN
- PROPOSED PUMPING MAIN
- EXISTING PS
- PROPOSED PS
- EXISTING STP
- PROPOSED STP
- EXISTING WTP
- DEVELOPMENT OF S&D NETWORK UNDER TRANCHE 1
- DEVELOPMENT OF S&D NETWORK UNDER TRANCHE 3
- PACKAGE BOUNDARY

PROPOSED WORKS CONSIDERED TO BE TAKEN UNDER TRANCHE 1, 2 & 3

APPENDIX 2: IMPLEMENTATION SCHEDULE

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

PACKAGE - WS 02



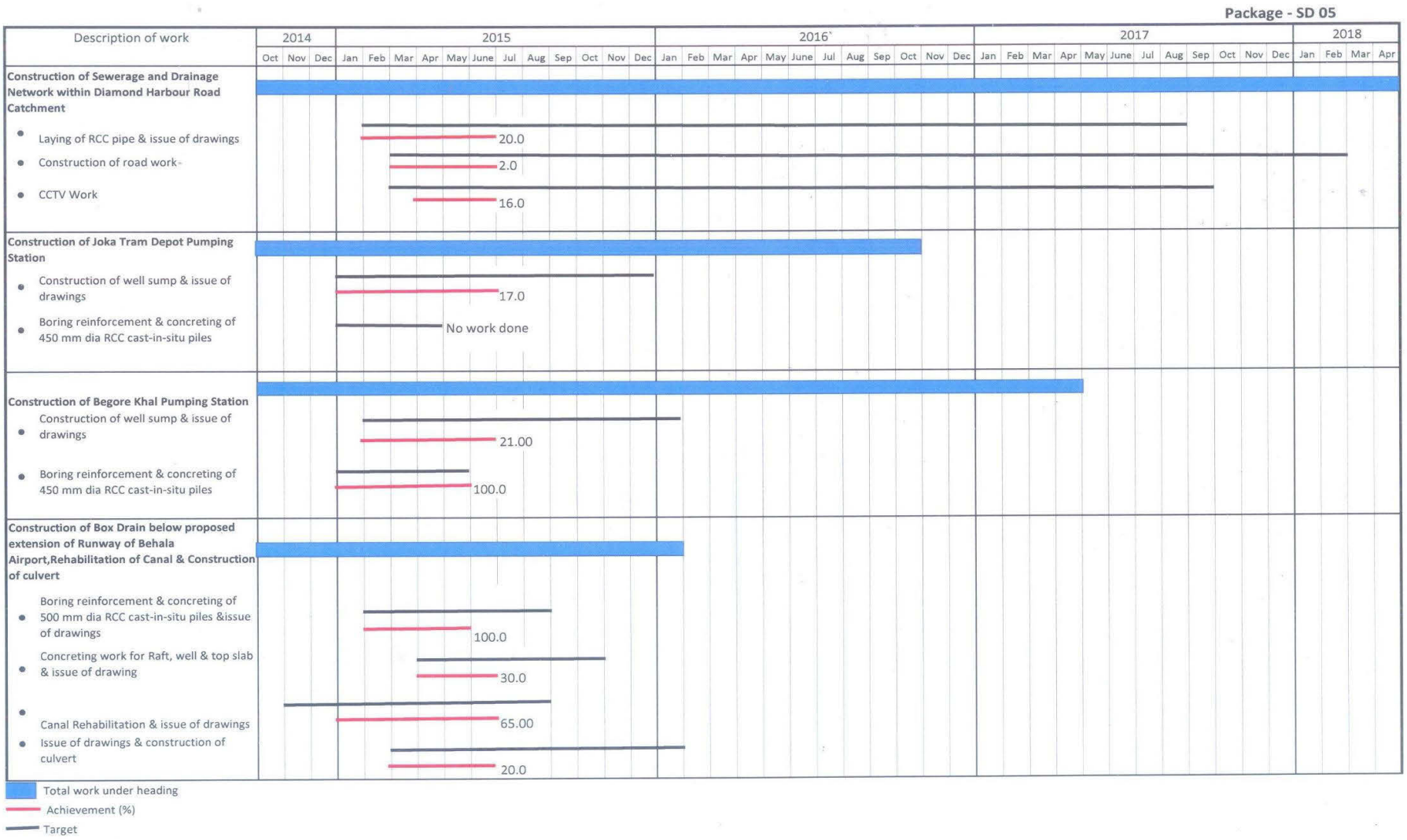
Package- Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method KEIIP/ICB/ Tr-1/WS & SD-04/13-14

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/RT-1/WS &SDO4/2013-14

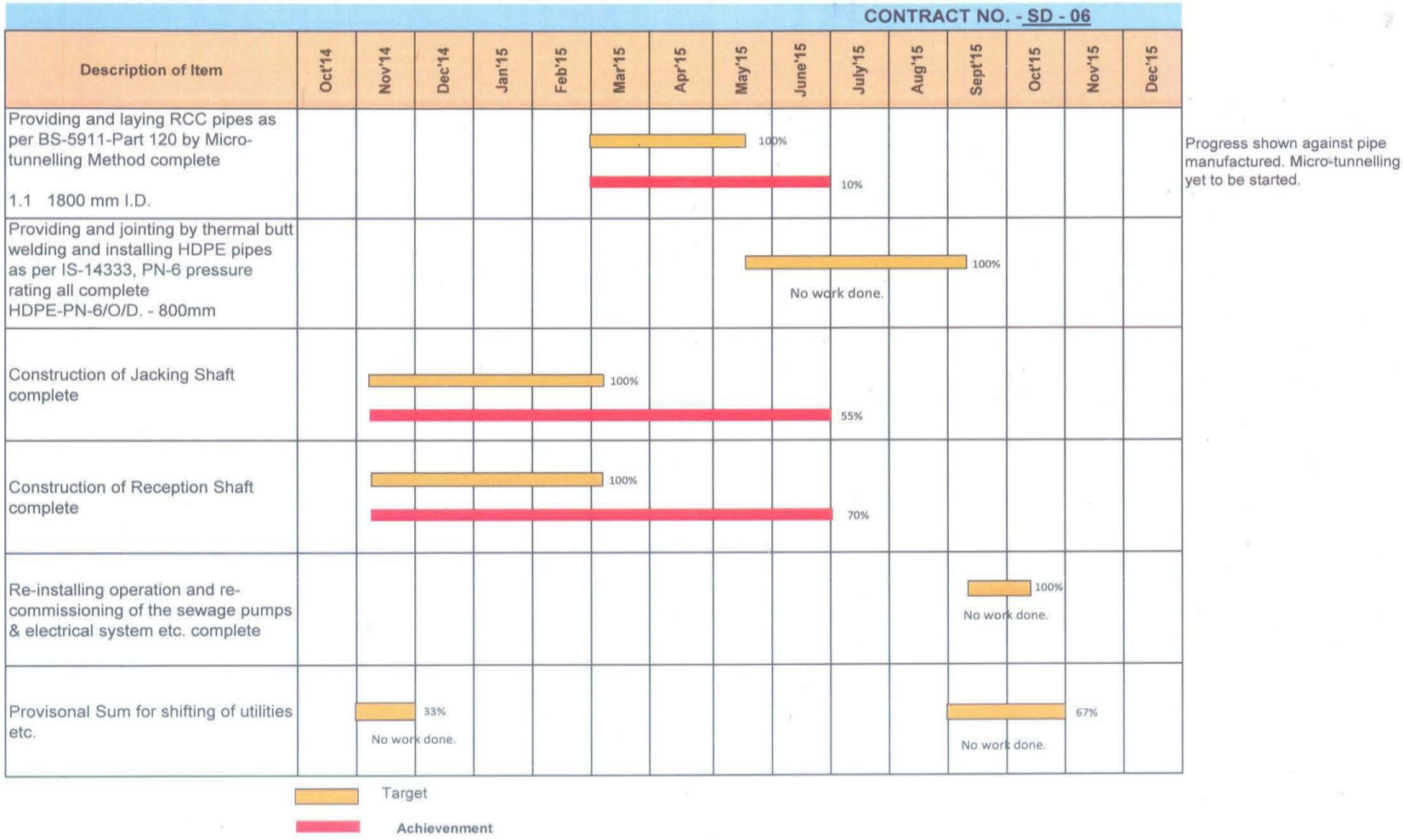
	Activity	Quantity	Year 2014								Year 2015												Year 2016												Year 2017				Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
			May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
1	Issue of LOA																																						
2	Receipt of Mobilisation Advance																																						
3	Site Survey & Layout fixing																																						
4	Soil Investigation																																						
5	Approval of Allignment by KEIIP																																						
6	Degign for shaftTunnel 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	36 Nos								0.6250	1.00	0.6250	1.00	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.88	0.88	0.6250	0.6250	0.6250	0.6250												12.50
	Achievement									33%																														
Water Trunk main along Taratala Road																																							
14	Supply of 1829 mm. dia MS Pipe	4050 Mtrs.					2.00	2.00	2.00	2.00	2.00	2.50																												12.50
	Procument						47%																																	
14 (I)	Cement Mortar Lining	4050 Mtrs.						1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.25	1.13																						12.50
	Procument							47%																																
14 (ii)	Microtunnelling work	4050 Mtrs.											0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.75	0.6250	0.6250	0.6250	0.6250	0.75	0.6250	0.75	0.6250	0.6250	0.75								12.38
14 (iii)	Testing & Commissioning	4050 Mtrs.																										2.00	2.00	2.00	2.00	2.00	2.50						12.50
SEWER Line along Sakher Bazar to Zoka D.H. Road.																																							
15	R.C.C. Pipe Procurement with laying																																						
15 (I)	1600 mm. dia pipe	485.7 Mtrs.																			0.88	0.88																		1.75
	Completed	477.0M											100%																											
15 (ii)	2200 mm. dia pipe	1058.9 Mtrs.												0.50	0.50	0.50	0.50	0.63	0.63																					3.25
15 (iii)	2400 mm. dia piep	2524.1 Mtrs.																					0.50	0.50	0.50	0.63	0.50	0.63	0.50	0.50	0.50	0.63	0.50	0.50	0.50	0.63			7.50
	Procument													7%																										
15 (iv)	Testing & Commissioning	4068.7 Mtrs.																													2.50	2.50	2.50	2.50	2.50				12.50
16	Road Restoration																																2.50	2.50	2.50	2.50	2.62	12.62
							2.47	3.60	3.13	4.08	4.13	4.25	3.75	2.95	2.88	2.88	3.00	3.00	1.88	1.25	2.25	2.38	2.00	1.75	1.75	2.00	1.75	3.38	3.13	3.13	3.25	5.13	5.50	5.50	5.50	5.63	2.50	2.62	100.00

Progress

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- Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant KEIIP/NCB/ Tr-1/SD-06/13-14



APPENDIX 3: PHOTO ILLUSTRATION

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

Labour camp within Palta WTP

Toilet arrangement at camp

First Aid box arranged

Barricading around Trial Pit

Caution Board at site

Arrangement of drinking water

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

Hard barricading at D H road

DH road shaft no 9- barricade with work detail display

Taratala Road shaft 9 – Diversion board with hard barricade

Display of emergency number at working location

Caution Board

Labour hutment – rented house

Availability of First aid box

Toilet facility for worker

Drinking water/ filter facility for worker

National Safety day/ week celebration

Training program for worker

Use of PPE by workers noted

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

Labour camp within Joka PS site

Arrangement of drinking water

Toilet facility for worker

Display board at working site

First aid box available at working site

Road closure by work display board

Use of PPE and temporary caution tape

Begore PS area. Improvement of housekeeping is required

Partial use of PPE by worker

Storage of fuel and lubricant over platform - noted

Temporary wooden platform provided for crossing over excavated area

Improvement of housekeeping is required

Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant

Work display board at working site

Water storage tank at labour camp

Labour camp within Santoshpur pumping station

Inside labour camp

Drinking water arrangement

Excess earth needs to dispose

Partial use of PPE

Available toilet used by Labourer

First aid box available at site

Separate storage of Fules and lubricants

Improvement of housekeep needed

Use of PPE by worker noted

APPENDIX 4: SITE SPECIFIC EMP

Site Specific Environmental Management Plan

April 2015

PROJECT: REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDENREACH

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

PROGRAM: KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP)

EMPLOYER: THE KOLKATA MUNICIPAL CORPORATION (KMC)

CONTRACTOR: ITD –CEMINDIA (JOINT VENTURE)

Prepared by

ITD-CEMINDIA (JOINT VENTURE)

Table 1: Anticipated Impacts and Mitigation Measures – Pre-construction Environmental Mitigation Plan

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Infrastructure and Services	Telephone lines, electric poles and wires, water lines within proposed project area of IGWTPs, sewer line, etc.	No such type of issue found till date. Keep construction related disturbance to a minimum.	Not yet started it's to be done.
Climate	The nature and intensity of rainfall events in an area, has implications for surface water management.	Seasonal climatic variations during scheduling of construction in the area will be followed. Any excavation work will be done during dry season and surface water will be controlled as per method approved by PMU. As per company Health Safety & Environment policy no open fires will be allowed.	HSE work permit system of the company will be followed
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	No major extraction has been observed till now It is expected that extraction of materials can not disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	

Table 2: Anticipated Impacts and Mitigation Measures – Construction Environmental Mitigation Plan

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Material procurement	Extraction of rocks and material may cause ground instability	No major extraction has been done till date.	
Air Quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulphur dioxides, particulate matter, nitrogen oxides, and hydrocarbons	Already baseline monitoring has been conducted Pollution Under Control Certificates to be collected for the vehicles presently engaged in project activity Materials carrying vehicle will be suitably cover. Covering or damp down sand/ earth stockpiled at site will be maintained as per site condition	Air quality Monitoring data included in Environmental Monitoring Report.
Drainage and hydrology	The proposed development is situated within an existing	The site surface has been engineered and shaped in such a way that rapid and efficient evacuation of runoff is achieved.	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	Palta water works. Due to the nature and locality of the projects there is unlikely any significant impacts on water resources within the immediate area.	Waste management practices will be maintained. No major ground disturbance observed till now. Transport, storage, handling and disposal of hazardous substances will be done as per prevailing laws and approval of concerned authority.	
River/Surface water quality	Mobilization of settled silt materials, run-off from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate nearby surface water quality.	There is river water source nearby the project locations. Therefore surface water quality monitoring is required. Baseline monitoring has been conducted (i) Stockpiling of earth fill especially during the monsoon season would beavoided unless covered by tarpaulins or plastic sheets; (ii) Prioritization of re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with KEIIP / DSC on designated disposal areas; (iii) Storage areas for fuels and lubricants will be selected away from any drainage leading to water bodies; (iv) Any wastes generated by construction activities will be disposed in designated sites; and (vi) Surface quality inspection will be conducted according to the Environmental Management Plan (EMP).	Surface water monitoring have been conducted. Results shown in Environmental Monitoring Report..
Establishing equipment lay-down and storage area	After social life, public and transport movement	Equipment lay-down and storage areas to be designated and fenced if necessary. Choice of location for equipment lay-down and storage areas will be taken into account as per site topography. Proper storage facilities for the storage of oils, paints, grease, fuels, and any hazardous materials to be used would be provided to prevent the migration of spillage.	
Biodiversity Fauna and Flora	Due to the nature and locality of the project there is unlikely to any significant impacts on bio-diversity within the area.	No faunal activity within the impact zone till date. Within the river faunal impact will be protected. There may be requirement of felling of trees. Landscaping will be undertaken with locally indigenous species and low maintenance requirements.	Estimation of tree felling will be done after finalization of road alignment within Palta water works
Noise Levels	Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials and people	(i) Monitoring already contacted (ii) Also follow the mitigation measures as mentioned in bid documents as mentioned below, (iii) Require horns not be used unless it is necessary to warn other road users; (iii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact to surrounding sensitive receptor; and (iv) Maintain maximum sound levels not exceeding 75 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s.	Noise level data included in Environmental Monitoring report.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Landscape and Aesthetics character, and sense of place	Solid wastes as well as excess construction materials	Excavated soil used for new road filling purpose. Maintaining company's policy for Waste Management & also follow up the requirements of bid documents. Removal of all wreckage, rubbish from the sites at earliest	Solid waste is utilized for filling purpose Company's policy for waste management & also follow up the requirements of bid document.
Accessibility/Traffic	Traffic problems and conflicts near project locations and haul road	(i) Transportation routes will be plan so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites; (ii) Schedule transport and hauling activities will be plan during non-peak hours; (iii) All work sites are properly barricaded.	Activity yet to start. Action will be taken up with advancement of project activity.
Social Impacts	Impede the access of residents and local social environment	Safe as well as proper access has been provided for traffic. Restrict activities and movement of staff to designated construction areas.	Company policy will be followed
Employment Generation	Generation of contractual employment and increase in local revenue.	• Local Workers are mostly working at site • Construction materials will be procured from local market.	
Occupational Health and Safety	Occupational hazards which can arise during work	Having OHSRA of organisation and follow the points mentioned in the bid documents • All workers will be provided with and use Personal Protective Equipment like helmet, gumboot, safety belt, gloves, nose mask and ear plugs; • H and S Training for all site personnel will be arranged • Documented procedures to be followed for all site activities; • Work-related accidents will be recorded; • First Aid box already arranged at working sites; • Medical insurance coverage for workers have been arranged; • Potable drinking water arranged at site; • H and S orientation training will be provided to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; • Worker will be disallowed of exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.	Company's health and safety guidelines will be followed
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and construction waste	Having OHSRA of organisation and follow the below mentioned mitigation measures. (i) Plan routes to avoid times of peak-pedestrian activities. (ii) 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
	transportation		
Construction Camps	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants	(i) Before locating project offices, sheds, and construction plants discussion will be done with KEIIP / DSC; (ii) Till date no trees have been cut. (iii) Employees will be trained for storage and handling of materials which can potentially cause soil contamination; (iv) Solid waste will be manage according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (v) All wreckage, rubbish, or temporary structures will be disposed	Company policy will be followed
Archaeological and Cultural characteristics	Risk of archaeological chance finds	Strictly follow the protocol for chance finds in any excavation work;	Excavation not yet started. Action will be taken up as per requirement.

DSC: Design Supervision Consultant, KEIIP: Kolkata Environment Improvement Investment Program

Site Specific Environmental Management Plan (Revised)

JUNE 2015

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 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 and during construction monitoring 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 and equipment 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 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 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	Maintaining company's policy for Waste Management & also follow up the requirements of bid documents.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		designated areas. If oil spills occur, contaminated soil will be dispose at a disposal site in consultation with WBPCB. 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 be taken into account as per site topography and water erosion potential of the soil. Impervious surfaces would be provided where necessary Storage areas 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	
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	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. Till date 15 nos. trees have been cut & 75 nos. tree plantation	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	impacts on biodiversity within the area The pipe laying for the transmission mains may however affect existing roadside trees.	done. 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 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.	Project executing agency and consultant have consulted with various organizations, departments, etc within the area and will be continued during 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 consulted regarding operating hours and factoring this in work schedules.	
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 for new site 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 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	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
	Traffic flow within the vicinity will be affected. The temporary road closure will result in a decrease in overall 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.	access to adjoining properties; and (iv) issues that may delay the subproject works. Schedule transport and hauling activities 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 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 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	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	Company's health and safety guidelines followed

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	risks. Road safety may be affected during construction, especially when traffic is detoured.	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.	
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. 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 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.
Construction camps	Affect local environment – soil, air, noise and impact on vegetation	Rented house has been provided as labour camp.	
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 fixed as per rules Littering at project sites is being avoided	Company policy will be followed
Employment	The subproject will provide employment	Local Workers/labourers are mostly engaged at site	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Generation	opportunities for local people during construction. Expectations regarding new employment will be high especially among the unemployed individuals in the area. Labor 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.	

Site Specific Environmental Management Plan

June 2015

PROJECT: CONSTRUCTION OF PUMPING STATION IN BEGORE KHAL 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

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.	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 Odours 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 submitted. Compliance with emission standards have been conducted and report submitted to DSC. Air quality monitoring report for base line environment and during construction period is already submitted to DSC. Which will be continued during entire construction period Covering or damp down sand/ earth stockpiled at site will be maintained as per site condition Materials carrying vehicle suitably cover. Covering of materials carrying vehicles-reducing dust hazard Construction equipment and vehicles will be maintained regularly. Pollution Under Control Certificates have been collected and submitted to DSC for the vehicles presently engaged in project activity Open fires will be fully avoided at working sites Maintaining toilet in a clean state.	Air quality Monitoring data has been 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.	That drainage system shall be check regularly to control runoff from the 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 requirement of bid documents.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		Stockpile subsoil and overburden in all construction and lay down areas.	
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. Pipe line is at a depth of 1.5m to 6.0m 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	
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.	Permission will be obtained from the Division Forest Office for the cutting/ felling of trees if required 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 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.	Project executing agency and consultant have consulted with various organizations, departments, etc within the area and will be continued during the construction phase. Caution board has been display at all site location to aware people Walkways and metal sheets 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 consulted regarding operating hours and factoring this in work schedules. Sign boards 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,	Utility shifting will be done by utility agency prior to commencing pipe laying at new location. Keep construction-related disturbances to a minimum. Affected service providers will be consulted regarding impacts on access to infrastructure and services and alternatives.	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	telecommunication lines, power lines and various pipelines within the vicinity of the subproject.	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 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.	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 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	Before starting of any particular project site on the road TMP needs to be approved from DSC/ KMC and Traffic Police Dept.
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	Implement good housekeeping practices at the site office, working area. Strictly implemented health and safety measures and audit on a regular basis.	Company's health and safety guidelines will be followed

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	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.	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.	
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, 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 and during construction noise level monitoring has been conducted near project sites	Noise level Monitoring have been done
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 done at earliest Waste dispose at suitable location after taken permission from DSC/ KMC Except few cases mature trees on and around the site remain untouched	Excavated soils are utilized for filling purpose.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		Unwanted material and litter will be remove at certain intervals	
Construction camps	Affect local environment – soil, air, noise and impact on vegetation	Labour camp established at Joka Tram depot area nearby Joka PS site. Toilet, drinking water facility arranged	
Workers Conduct	Construction workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering.	Ensured strict control of labourers Working hours fixed as per rules Littering at project sites is being avoided Overnight accommodation will be provided as per requirement.	Company policy followed
Employment Generation	The subproject will provide employment opportunities for local people during construction. Expectations regarding new employment will be high especially among the unemployed individuals in the area. Labor 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.	Local Workers/labourers are mostly engaged at site 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.	
Social Impacts	Impact on local social environment	Restrict activities and movement of staff to designated construction areas. Company 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 be stable and well secured to avoid collapse and possible injury to site workers / local residents. Flammable materials stored as far as possible from adjacent residents / businesses.	

Site Specific Environmental Management Plan

June 2015

PROJECT: **Micro Tunneling Works on sewage Pressure Main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant, SIMPLEX-KRITA JV/SD 06**

Contract No: KEIIP/NCB/TR-1/ SD-06/2013-14

PROGRAM: KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)

EMPLOYER: KOLKATA MUNICIPAL CORPORATION (KMC)

CONTRACTOR: M/S SIMPLEX-KRITA JV

Prepared by

SIMPLEX-KRITA JV

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	Health safety & Environment work permit system of the company is 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 and during construction 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 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. Stockpile subsoil and overburden in all construction and lay down	Maintaining company's policy for Waste Management & also follow up the requirements of bid documents.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		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 06 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 areas 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.	No tree cutting is required as per present site condition. Only jungles and shrubs was cleaned and removed. No faunal activity within the impact zone	
Land Uses	Due to the location and nature of the subproject, there will be interference with access Existing public transport facilities and operations will be affected by the road closure and detours. Shops and establishments are located along the	Project executing agency and consultant have consulted with various organizations, departments, etc within the area and will be continued during the construction phase. HSE caution board has been display at site location to aware people Walkways and metal sheets will be provided if required to maintain	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	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.	access across for people and vehicles. 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 if required. Keep construction-related disturbances to a minimum. Affected service providers will be consulted regarding impacts on access to infrastructure and services and alternatives. 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 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.	Traffic Management Plan is not needed as per present nature of site as the project area is inside the boundary area. 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 Clear roads signs has been arranged and to be maintained for the full length of the construction period. Local volunteers 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	Project area is inside the closed premises, so that there is no TMP is required, if any required then TMP to be approved from DSC/ KMC and Traffic Police Dept and local representative.
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.	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	Company's health and safety guidelines will be followed

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	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.	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.	
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 and during construction noise level monitoring has been conducted near project sites	Noise level Monitoring data 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 will not be utilized for any filling purpose and that should be removed from site time to time. Company's policy for Waste Management & also follow up the requirements of bid documents.

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Construction camps	Affect local environment – soil, air, noise and impact on vegetation	Camp established within Santoshpur main pumping station with drinking water and toilet facility. Site office has been established	
Workers Conduct	Construction workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering.	Ensured strict control of labourers Labourers covered under group insurance Working hours fixed as per rules Littering at project sites is being avoided	Company policy will be followed
Employment Generation	The subproject will provide employment opportunities for local people during construction. Expectations regarding new employment will be high especially among the unemployed individuals in the area. Labor 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.	Local Workers/labourers are mostly engaged at site Construction materials 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. Simplex-krita 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 5: Spoil Management

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 Water Works.**

▪ 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 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 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.
7	▪ Spoil Volumes, Characteristics and Minimization
	• Volumes 40,000 Cu.M approx • Characteristics

<table>
<tr><td></td><td>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>• All quantity of spoils will be re used for new road.
• Balance spoils will be removed and disposed after approval</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>

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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 Microtunneling 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 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 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 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>
	☞ 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.
7	▪ Spoil Volumes, Characteristics and Minimization
	• 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.
8	**Spoil Reuses Opportunities, Identification and Assessment**

<table>
<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>
<tr><td>12</td><td>References
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<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>
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</table></td></tr>
</table>

Spoil Management Plan

JUNE 2015

PROJECT: **CONSTRUCTION OF PUMPING STATION IN BEGORE KHAL 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.

SPOIL MANAGEMENT PLAN
M/S –SIMPLEX-KRITA JV
KEIIP SD-06 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 this project, there is no legal litigation at site for land and working area or site. Disposal of spoil will confirming the Environmental Protection Rules and Regulations of Govt. of India and The state Govt.

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 the garden reach STP and Santoshpur Main Pumping station 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.

5. SPOIL VOLUMES,CHARACTERISTICS AND MINIMIZATION

In this project, approx. generation of excavated earth will be 2750 cum. There is no plan to reuse the excess earth in the project. As per report from soil expert excavated earth is clayey in nature. Generation of excavated earth would be minimize as per design

6. SPOIL REUSES OPPORTUNITIES,IDENTIFICATION AND ASSESMENT

In this project, there is no opportunity to reuse of excavated earth; total excavated earth would be dispose as per plan. As required level and dressing to be done at the both work site (JP & RP) and balance excess to be dispose as planned.

7. ON SITE SPOIL MANAGEMENT APPROACH

In this project, the approach is ready where soils to be dispose

8. SPOIL TRANSPORTATION METHODOLOGY

Extra excavated earth will be shifted by truck from working site to disposal area if required after levelling of the land and dressing.

9. MONITORING,REPORTING,REVIEW,AND IMPROVEMENTS

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

APPENDIX 6 – AIR, NOISE, WATER QUALITY DATA

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

ENVIROCHECK

Environmental Laboratory
189 & 190, Rastraguru Avenue, Kolkata-700 028
Phone : 2579-2889 /2891, 2549-7490, Fax : 2529-9141
E-mail : envcheck@cal2.vsnl.net.in

AMBIENT AIR ANALYSIS REPORT

1.	Name of the Unit	:	ITD – CEM India (JV)
2.	Address	:	IGWTP, Monirampur, Barrackpur, 24 Pgs. (N)
3.	Date of sampling	:	04.03.2015
4.	Report No.	:	05/EC/March/TR(A)/I/14-15
5.	Analysis completed on	:	06.03.2015
6.	Reporting Date	:	13.03.2015
7.	Particular of unit	:	Water Treatment Plant (Proposed)
A]	GENERAL INFORMATION		
1.	Location of Sampling	:	Near Proposed Water Treatment Plant
2.	Duration of Sampling	:	8 hrs. (10:00 a.m. – 06:00 p.m.)
B]	METEOROLOGICAL INFORMATION		
1.	Average Temperature (°C)	:	31.5
2.	Average Relative Humidity (%)	:	66.0
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m³)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	52.63
2.	Concentration of PM_{10} (µg/m³)	IS 5182 (Part 23)	:	121.62
3.	Concentration of SO_2 (µg/m³)	IS 5182 (Part 2) & ASTM D 2914-01	:	8.17
4.	Concentration of NO_x (µg/m³)	IS 5182 (Part 6) & ASTM D 1607-91	:	34.8
5.	Concentration of H.C. (µg/m³)	--	:	3.50

Date : 13.03.2015

Authorised Signatory :

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AMBIENT AIR ANALYSIS REPORT

1.	Name of the Unit	: ITD – CEM India (JV)
2.	Address	: IGWTP, Monirampur, Barrackpur, 24 Pgs. (N)
3.	Date of sampling	: 04.03.2015
4.	Report No.	: 05/EC/March/TR(A)/II/14-15
5.	Analysis completed on	: 06.03.2015
6.	Reporting Date	: 13.03.2015
7.	Particular of unit	: Water Treatment Plant (Proposed)

A] GENERAL INFORMATION

1.	Location of Sampling	: Near Jetty (Intake – 2)
2.	Duration of Sampling	: 8 hrs. (09:00 a.m. – 05:00 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (°C)	: 31.5
2.	Average Relative Humidity (%)	: 66.0
3.	Barometric Pressure (mm of Hg)	: 757.0
4.	Smell or Odour	: No Remarkable Smell
5.	Weather Condition	: Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.	RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m³)	USEPA 1997a, 40 CFR Part 50, Appendix L :	48.62
2.	Concentration of PM_{10} (µg/m³)	IS 5182 (Part 23) :	112.81
3.	Concentration of SO_2 (µg/m³)	IS 5182 (Part 2) & ASTM D 2914-01 :	7.50
4.	Concentration of NO_x (µg/m³)	IS 5182 (Part 6) & ASTM D 1607-91 :	29.92
5.	Concentration of H.C. (µg/m³)	-- :	3.50

Date : 13.03.2015

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AMBIENT AIR ANALYSIS REPORT

1.	Name of the Unit	:	ITD – CEM India (JV)
2.	Address	:	CESC, Garden Reach Road, Kolkata – 24
3.	Date of sampling	:	07.03.2015
4.	Report No.	:	06/EC/March/TR(A)/I/14-15
5.	Analysis completed on	:	09.03.2015
6.	Reporting Date	:	13.03.2015
7.	Particular of unit	:	Water Treatment Plant (Proposed)

A] GENERAL INFORMATION

1.	Location of Sampling	:	Near Surinamghat
2.	Duration of Sampling	:	8 hrs. (09:00 a.m. – 05:00 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (°C)	:	32.0
2.	Average Relative Humidity (%)	:	58.0
3.	Barometric Pressure (mm of Hg)	:	758
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ ($\mu g/m^3$)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	52.36
2.	Concentration of PM_{10} ($\mu g/m^3$)	IS 5182 (Part 23)	:	121.89
3.	Concentration of SO_2 ($\mu g/m^3$)	IS 5182 (Part 2) & ASTM D 2914-01	:	7.49
4.	Concentration of NO_x ($\mu g/m^3$)	IS 5182 (Part 6) & ASTM D 1607-91	:	30.16
5.	Concentration of H.C. ($\mu g/m^3$)	--	:	3.20

Date : 13.03.2015

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No.: 381/EC/M/14-15

Date: 13.03.2015

NOISE LEVEL STUDY

Name of the Company	:	ITD-CEM-India (JV)
Address	:	IGWTP, Manirampur, Barrackpore North 24 PGS
Date of Study	:	04.03.2015
Method No.	:	IS:10988-1984
Height from Ground Level	:	4 ft.

1. Location: Proposed Water Treatment Plant (Day Time)

Time (A.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
11:30 – 11:50	:	48.5	48.5	56.9	53.63
		49.5			
		51.2			
		53.4			
		54.0			
		55.0			
		56.2			
		53.0			
		56.9			
		51.0			

2. Location: Proposed Water Treatment Plant (Night Time)

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
10:10 – 10:30	:	44.0	44.0	52.9	49.18
		45.1			
		45.6			
		47.2			
		48.1			
		48.6			
		49.3			
		50.8			
		51.6			
		52.9			

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3. Location: Jetty - Intake – 2 (Day Time)

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
1:10 – 1:30	:	50.1	46.2	56.3	52.19
		46.2			
		47.5			
		48.0			
		49.2			
		51.7			
		52.8			
		53.6			
		55.0			
		56.3			

4. Location: Jetty - Intake – 2 (Night Time)

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
10:40 – 11:00	:	45.7	45.2	53.0	49.10
		46.3			
		47.4			
		45.2			
		46.3			
		47.5			
		49.7			
		48.0			
		52.8			
		53.0			

** Mean of L_{eq}: Equivalent to Sound Energy

Signature & Seal

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No.: 383/EC/M/14-15

Date: 13.03.2015

NOISE LEVEL STUDY

Name of the Company	:	ITD-CEM-India (JV)
Address	:	C.E.S.C Garden Reach Road, Kolkata - 700024
Date of Study	:	07.03.2015
Method No.	:	IS:10988-1984
Height from Ground Level	:	4 ft.

1. Location: Near Surinam Ghat (Day Time)

Time (A.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
10:30 – 10:50	:	53.7	50.3	56.2	53.57
		52.6			
		54.6			
		55.0			
		56.2			
		51.6			
		52.1			
		50.3			
		52.8			
		53.0			

2. Location: Near Surinam Ghat (Night Time)

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
10:00 – 10:20	:	47.3	46.3	59.8	52.49
		48.5			
		49.6			
		46.3			
		47.0			
		48.9			
		59.8			
		50.1			
		52.6			
		51.8			

** Mean of L_{eq}: Equivalent to Sound Energy

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Page No. 1

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WATER ANALYSIS REPORT

1.	Name of the Project	:	ITD – CEM India (JV)
2.	Address	:	IGWTP, Monirampur, Barrackpur, 24 Pgs. (N)
3.	Report No.	:	ENV/512/S/M(i)/14-15
4.	Date of sampling	:	04.03.2015
5.	Reporting date	:	13.03.2015
6.	Type of sample	:	River Water
7.	Sampling location	:	Up Stream

	PARAMETERS		RESULTS	LIMIT
1.	pH	:	7.27	6.5 – 8.5**
2.	Total Hardness as $CaCO_3$ (mg./l)	:	104.0	600.0
3.	Calcium as Ca (mg./l)	:	33.67	200.0
4.	Magnesium as Mg (mg./l)	:	4.8	100.0
5.	Chloride as Cl (mg./l)	:	23.96	1000.0
6.	Iron as Fe (mg/l)	:	2.5	1.0
7.	Arsenic (mg./l)	:	<0.01	0.05**
8.	Cadmium (mg./l)	:	<0.01	0.01**
9.	Hexavalent Chromium (mg./l)	:	<0.05	0.05**
10.	Copper as Cu (mg./l)	:	<0.04	1.5
11.	Cyanide (mg./l)	:	<0.05	0.05
12.	Lead (mg./l)	:	<0.05	0.05**
13.	Mercury (mg./l)	:	<0.001	0.001**
14.	Nitrate as NO_3 (mg./l)	:	6.50	100.0
15.	Total Dissolved Solid (mg./l)	:	295.0	2000.0
16.	Phenolic Compounds as Phenol (mg./l)	:	<0.002	0.002
17.	Zinc as Zn (mg./l)	:	0.05	15.0
18.	Sulphate as SO_4 (mg./l)	:	31.0	400.0
19.	Turbidity (NTU)	:	6.0	10.0
20.	Residual Free Chlorine (mg./l)	:	<0.04	0.2**
21.	Fluoride (mg./l)	:	<0.1	1.5
22.	Manganese (mg./l)	:	<0.1	0.3
23.	COD (mg./l)	:	40.0	250.0
24.	BOD (mg./l)	:	12.0	30.0
25.	Alkalinity (mg./l)	:	140.0	600.0
26.	Aluminium (mg./l)	:	<0.02	0.2
27.	Boron (mg./l)	:	<0.1	5.0
28.	Total Suspended Solids (mg./l)	:	37.0	100.0
29.	Phosphate (mg./l)	:	18.50	<0.01

*CFU indicates Colony Forming Unit.
**Desirable limit and permissible limit are same due to no relaxation for permissible limit as per ISO 10500, 1991 (Revised)

Authorised Signatory :

Dr. SUMIT CHOWDHURY

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WATER ANALYSIS REPORT

1.	Name of the Project	:	ITD – CEM India (JV)
2.	Address	:	IGWTP, Monirampur, Barrackpur, 24 Pgs. (N)
3.	Report No.	:	ENV/512/S/M(ii)/14-15
4.	Date of sampling	:	04.03.2015
5.	Reporting date	:	13.03.2015
6.	Type of sample	:	River Water
7.	Sampling location	:	Down Stream

	PARAMETERS		RESULTS	LIMIT
1.	pH	:	7.42	6.5 – 8.5**
2.	Total Hardness as $CaCO_3$ (mg./l)	:	112.0	600.0
3.	Calcium as Ca (mg./l)	:	33.67	200.0
4.	Magnesium as Mg (mg./l)	:	6.72	100.0
5.	Chloride as Cl (mg./l)	:	23.96	1000.0
6.	Iron as Fe (mg/l)	:	2.72	1.0
7.	Arsenic (mg./l)	:	<0.01	0.05**
8.	Cadmium (mg./l)	:	<0.01	0.01**
9.	Hexavalent Chromium (mg./l)	:	<0.05	0.05**
10.	Copper as Cu (mg./l)	:	<0.04	1.5
11.	Cyanide (mg./l)	:	<0.05	0.05
12.	Lead (mg./l)	:	<0.05	0.05**
13.	Mercury (mg./l)	:	<0.001	0.001**
14.	Nitrate as NO_3 (mg./l)	:	8.50	100.0
15.	Total Dissolved Solid (mg/l)	:	313.0	2000.0
16.	Phenolic Compounds as Phenol (mg./l)	:	<0.002	0.002
17.	Zinc as Zn (mg./l)	:	0.03	15.0
18.	Sulphate as SO_4 (mg./l)	:	29.0	400.0
19.	Turbidity (NTU)	:	7.0	10.0
20.	Residual Free Chlorine (mg./l)	:	<0.04	0.2**
21.	Fluoride (mg./l)	:	<0.1	1.5
22.	Manganese (mg./l)	:	<0.1	0.3
23.	COD (mg./l)	:	50.0	250.0
24.	BOD (mg./l)	:	14.0	30.0
25.	Alkalinity (mg./l)	:	140.0	600.0
26.	Aluminium (mg./l)	:	<0.02	0.2
27.	Boron (mg./l)	:	<0.1	5.0
28.	Total Suspended Solids (mg./l)	:	42.0	100.0
29.	Phosphate (mg./l)	:	15.0	<0.01

*CFU indicates Colony Forming Unit.
**Desirable limit and permissible limit are same due to no relaxation for permissible limit as per ISO 10500, 1991 (Revised)

Authorised Signatory :

Dr. SUNIL CHOWDHURY
Scientist

JOINT VENTURE

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WATER ANALYSIS REPORT

1.	Name of the Project	:	ITD – CEM India (JV)
2.	Address	:	CESC, Garden Reach Road, Kolkata – 24
3.	Report No.	:	ENV/514/S/M(i)/14-15
4.	Date of sampling	:	07.03.2015
5.	Reporting date	:	13.03.2015
6.	Type of sample	:	River Water
7.	Sampling location	:	Up Stream

	PARAMETERS		RESULTS	LIMIT
1.	pH	:	7.24	6.5 – 8.5**
2.	Total Hardness as $CaCO_3$ (mg./l)	:	116.0	600.0
3.	Calcium as Ca (mg./l)	:	32.06	200.0
4.	Magnesium as Mg (mg./l)	:	8.64	100.0
5.	Chloride as Cl (mg./l)	:	18.43	1000.0
6.	Iron as Fe (mg/l)	:	1.59	1.0
7.	Arsenic (mg./l)	:	<0.01	0.05**
8.	Cadmium (mg./l)	:	<0.01	0.01**
9.	Hexavalent Chromium (mg./l)	:	<0.05	0.05**
10.	Copper as Cu (mg./l)	:	<0.04	1.5
11.	Cyanide (mg./l)	:	<0.05	0.05
12.	Lead (mg./l)	:	<0.05	0.05**
13.	Mercury (mg./l)	:	<0.001	0.001**
14.	Nitrate as NO_3 (mg./l)	:	12.50	100.0
15.	Total Dissolved Solid (mg/l)	:	1075.0	2000.0
16.	Phenolic Compounds as Phenol (mg./l)	:	<0.002	0.002
17.	Zinc as Zn (mg./l)	:	0.04	15.0
18.	Sulphate as SO_4 (mg./l)	:	32.0	400.0
19.	Turbidity (NTU)	:	2.0	10.0
20.	Residual Free Chlorine (mg./l)	:	<0.04	0.2**
21.	Fluoride (mg./l)	:	<0.1	1.5
22.	Manganese (mg./l)	:	0.13	0.3
23.	COD (mg./l)	:	30.0	250.0
24.	BOD (mg./l)	:	8.0	30.0
25.	Alkalinity (mg./l)	:	136.0	600.0
26.	Aluminium (mg./l)	:	<0.02	0.2
27.	Boron (mg./l)	:	<0.1	5.0
28.	Total Suspended Solids (mg./l)	:	12.0	100.0
29.	Phosphate (mg./l)	:	16.50	<0.01

*CFU indicates Colony Forming Unit.
**Desirable limit and permissible limit are same due to no relaxation for permissible limit as per ISO 10500, 1991 (Revised)

Authorised Signatory :

ITD-CEM INDIA JOINT VENTURE

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WATER ANALYSIS REPORT

1.	Name of the Project	:	ITD – CEM India (JV)
2.	Address	:	CESC, Garden Reach Road, Kolkata – 24
3.	Report No.	:	ENV/514/S/M(ii)/14-15
4.	Date of sampling	:	07.03.2015
5.	Reporting date	:	13.03.2015
6.	Type of sample	:	River Water
7.	Sampling location	:	Down Stream

	PARAMETERS		RESULTS	LIMIT
1.	pH	:	7.20	6.5 – 8.5**
2.	Total Hardness as $CaCO_3$ (mg./l)	:	116.0	600.0
3.	Calcium as Ca (mg./l)	:	30.46	200.0
4.	Magnesium as Mg (mg./l)	:	9.6	100.0
5.	Chloride as Cl (mg./l)	:	18.43	1000.0
6.	Iron as Fe (mg/l)	:	2.13	1.0
7.	Arsenic (mg./l)	:	<0.01	0.05**
8.	Cadmium (mg./l)	:	<0.01	0.01**
9.	Hexavalent Chromium (mg./l)	:	<0.05	0.05**
10.	Copper as Cu (mg./l)	:	<0.04	1.5
11.	Cyanide (mg./l)	:	<0.05	0.05
12.	Lead (mg./l)	:	<0.05	0.05**
13.	Mercury (mg./l)	:	<0.001	0.001**
14.	Nitrate as NO_3 (mg./l)	:	11.20	100.0
15.	Total Dissolved Solid (mg./l)	:	1139.0	2000.0
16.	Phenolic Compounds as Phenol (mg./l)	:	<0.002	0.002
17.	Zinc as Zn (mg./l)	:	0.04	15.0
18.	Sulphate as SO_4 (mg./l)	:	24.75	400.0
19.	Turbidity (NTU)	:	2.0	10.0
20.	Residual Free Chlorine (mg./l)	:	<0.04	0.2**
21.	Fluoride (mg./l)	:	<0.1	1.5
22.	Manganese (mg./l)	:	0.15	0.3
23.	COD (mg./l)	:	35.0	250.0
24.	BOD (mg./l)	:	8.0	30.0
25.	Alkalinity (mg./l)	:	136.0	600.0
26.	Aluminium (mg./l)	:	<0.02	0.2
27.	Boron (mg./l)	:	<0.1	5.0
28.	Total Suspended Solids (mg./l)	:	16.0	100.0
29.	Phosphate (mg./l)	:	15.0	<0.01

*CFU indicates Colony Forming Unit.
**Desirable limit and permissible limit are same due to no relaxation for permissible limit as per ISO 10500, 1991 (Revised)

Authorised Signatory :

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

ENVIROCHECK

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No.:321/EC/M/14-15

Date: 09.01.2015

NOISE LEVEL STUDY

Name of the Company	:	ITD-ITD Cem. Joint Venture (KEIP Project)
Address	:	Garden Reach, Sewerage Treatment Plant, Taratala Road, (Near Nature Park), Kolkata – 700088
Date of Study	:	03.01.2015
Method No.	:	IS:10988-1984
Height from Ground Level	:	5 ft.

1. Location: 6 Nos. Shaft Taratala Road, Jinjira Bazar

Time (A.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
11:20 - 11:40	:	64.5	64.5	79.8	74.44
		65.6			
		66.8			
		69.7			
		72.4			
		73.2			
		74.6			
		75.9			
		77.5			
		79.8			

2. Location: 2 Nos. Shaft Taratala Road, Sakher Bazar

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
3:00 – 3:20	:	79.4	79.4	88.5	84.50
		80.6			
		81.7			
		82.3			
		83.6			
		83.9			
		84.7			
		85.4			
		86.8			
		88.5			

** Mean of L_{eq}: Equivalent to Sound Energy

Signature & Seal

Page No. 1

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AMBIENT AIR ANALYSIS REPORT

1.	Name of the project	:	ITD – ITD Cem. Joint Venture (KEIP Project)
2.	Address	:	Garden Reach, Sewerage Treatment Plant, Taratala Road (Near Nature Park), Kolkata – 88
3.	Date of sampling	:	03.01.2015
4.	Report No.	:	320/EC/M/TR(A)/I/14-15
5.	Analysis completed on	:	05.01.2015
6.	Reporting Date	:	08.01.2015

A] GENERAL INFORMATION

1.	Location of Sampling	:	2 – shaft Taratala Road, Sakher Bazar
2.	Duration of Sampling	:	8 hrs. (10:30 a.m. – 06:30 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (°C)	:	20.0
2.	Average Relative Humidity (%)	:	61.0
3.	Barometric Pressure (mm of Hg)	:	752.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Cloudy

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of SPM ($\mu g/m^3$)	IS 5182 (Part 4) & ASTM D 4096-91	:	236.50
2.	Concentration of RPM ($\mu g/m^3$)	IS 5182 (PART 23) & ASTM D 4096-91	:	123.82
3.	Concentration of SO_2 ($\mu g/m^3$)	IS 5182 (Part 2) & ASTM D 2914-01	:	8.50
4.	Concentration of NO_x ($\mu g/m^3$)	IS 5182 (Part 6) & ASTM D 1607-91	:	35.0

Date : 08.01.2015

Authorised Signatory :

Dr. Ajoy Paul

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AMBIENT AIR ANALYSIS REPORT

1.	Name of the project	:	ITD - ITD Cem. Joint Venture (KEIP Project)
2.	Address	:	Garden Reach, Sewerage Treatment Plant, Taratala Road (Near Nature Park), Kolkata – 88
3.	Date of sampling	:	03.01.2015
4.	Report No.	:	320/EC/M/TR(A)/II/14-15
5.	Analysis completed on	:	05.01.2015
6.	Reporting Date	:	08.01.2015

A] GENERAL INFORMATION

1.	Location of Sampling	:	6 – Shaft Taratala Road, Jhinjira Bazar
2.	Duration of Sampling	:	8 hrs. (10:00 a.m. – 06:00 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (°C)	:	20.0
2.	Average Relative Humidity (%)	:	61.0
3.	Barometric Pressure (mm of Hg)	:	752.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Cloudy

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of SPM ($\mu g/m^3$)	IS 5182 (Part 4) & ASTM D 4096-91	:	238.50
2.	Concentration of RPM ($\mu g/m^3$)	IS 5182 (PART 23) & ASTM D 4096-91	:	126.80
3.	Concentration of SO_2 ($\mu g/m^3$)	IS 5182 (Part 2) & ASTM D 2914-01	:	8.20
4.	Concentration of NO_x ($\mu g/m^3$)	IS 5182 (Part 6) & ASTM D 1607-91	:	36.54

Date : 08.01.2015

Authorised Signatory :

Dr. Ajoy Paul

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/A/H/15-16/023	Sample Ref. No.	:	A/H/023
Issued To	:	M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant	Report Date	:	11.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	Date of Sampling	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	Stack Air	Analysis completed on	:	10.04.15
Location	:	D.G. Set (40 KVA) Deep Bhawan	Time of Sampling	:	02:40 PM
Sample Condition	:	In Glass Microfibre Thimble & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 11255 (Part -1), 1985, Reaffirmed 2003, IS: 11255 (Part -3), 2008, IS: 11255 (Part -2), 1985, Reaffirmed 2003, ORSAT Method.			

Towards Sustainable Growth

A.] GENERAL INFORMATION ABOUT STACK:

Particulars of the Plant					
Stack attached to	:	D.G. Set (40 KVA) Deep Bhawan	Shape of Duct	:	Circular
Emission due to	:	Burning of H.S.D	Material of Construction	:	M.S
Fuel Used	:	H.S.D	Stack ID at sampling point (M)	:	0.07
Rated Fuel Consumption	:	6 Lit/ Hr.	At Bottom (M)	:	-
Working Fuel Consumption	:	-	At Top (M)	:	-
Calorific Value(Kcal/kg)	:	-	*Height Details :*		
			a) Total Ht. Of stack from GL(M)	:	5.0
Sulpher Content (% by Wt)	:	-	b) Total Ht. Of stack from RL(M)	:	-
Ash Content (% by Wt.)	:	-	c) Ht. of sampling port from GL(M)	:	3.0
			d) Ht. of port from disturbance zone (M)	:	-

Pollution Control Device : Nil

Whether Stack is provided with permanent Platform / Ladder : Temporary

B.] PHYSICAL DATA:

Flue Gas Temperature (°C)	:	106	Steam Generation Capacity :		
Barometric Pressure,(mm Hg)	:	754	a) Rated	:	-
Velocity of Gas flow (m/s)	:	10.28	b) Running	:	-
Quantity of Gas flow (Nm^3/hr)	:	109.73	Load : a) Rated	:	40 KVA
Pressure	:	-	b) Running	:	-

C.] RESULT OF SAMPLING:

Sl. No.	Parameters		Result Obtained
01.	Particulate Matter (mg/Nm^3)	:	28.0
02.	Particulate Matter Normalized to 12% CO_2 (V/V) - (mg/Nm^3)	:	-
03.	Sulphur di-oxide (mg/ Nm^3)	:	32.67
04.	NOx (mg/m^3)	:	-
05.	CO % (V/V)	:	<0.2
06.	CO_2 % (V/V)	:	5.6

End of Report

Checked By

For, Indicative Consultant India

Parbati Gofui
(Manager Laboratory)
Signatory Authority

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

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4. All general informations of stack are provided by the party.

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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/H/15-16/024	Sample Ref. No.	:	A/H/024
Issued To	:	M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant	Report Date	:	11.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	Date of Sampling	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	Stack Air	Analysis completed on	:	10.04.15
Location	:	D.G. Set (62.5 KVA) STP Office	Time of Sampling	:	04:30 PM
Sample Condition	:	In Glass Microfibre Thimble & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 11255 (Part -1), 1985, Reaffirmed 2003, IS: 11255 (Part -3), 2008, IS: 11255 (Part -2), 1985, Reaffirmed 2003, ORSAT Method.			

Towards Sustainable Growth

A.] GENERAL INFORMATION ABOUT STACK:

Particulars of the Plant					
Stack attached to	:	D.G. Set (62.5 KVA) STP Office	Shape of Duct	:	Circular
Emission due to	:	Burning of H.S.D	Material of Construction	:	M.S
Fuel Used	:	H.S.D	Stack ID at sampling point (M)	:	0.10
Rated Fuel Consumption	:	8 Lit/ Hr.	At Bottom (M)	:	-
Working Fuel Consumption	:	-	At Top (M)	:	-
Calorific Value(Kcal/kg)	:	-	*Height Details :*		
			a) Total Ht. Of stack from GL(M)	:	5.0
Sulpher Content (% by Wt)	:	-	b) Total Ht. Of stack from RL(M)	:	-
Ash Content (% by Wt.)	:	-	c) Ht. of sampling port from GL(M)	:	3.0
			d) Ht. of port from disturbance zone (M)	:	-

Pollution Control Device : Nil

Whether Stack is provided with permanent Platform / Ladder : Temporary

B.] PHYSICAL DATA:

Flue Gas Temperature (°C)	:	94	Steam Generation Capacity :		
Barometric Pressure,(mm Hg)	:	754	a) Rated	:	-
Velocity of Gas flow (m/s)	:	9.38	b) Running	:	-
Quantity of Gas flow (Nm^3/hr)	:	209.48	Load : a) Rated	:	62.5 KVA
Pressure	:	-	b) Running	:	-

C.] RESULT OF SAMPLING:

Sl. No.	Parameters		Result Obtained
01.	Particulate Matter (mg/Nm^3)	:	30.0
02.	Particulate Matter Normalized to 12% CO_2 (V/V) - (mg/Nm^3)	:	-
03.	Sulphur di-oxide (mg/Nm^3)	:	38.12
04.	NOx (mg/m^3)	:	-
05.	CO % (V/V)	:	<0.2
06.	CO_2 % (V/V)	:	5.2

End of Report

For, Indicative Consultant India

Checked By

Parbati Golui
(Manager Laboratory)
Signatory Authority

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

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/H/15-16/025**	**Sample Ref. No.**	:	A/H/025
Issued To	:	**M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant**	**Report Date**	:	11.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	**Date of Sampling**	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	**Stack Air**	**Analysis completed on**	:	10.04.15
Location	:	**D.G. Set (500 KVA) Shapft No. - 2**	**Time of Sampling**	:	01:30 PM
Sample Condition	:	In Glass Microfibre Thimble & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 11255 (Part -1), 1985, Reaffirmed 2003, IS: 11255 (Part -3), 2008, IS: 11255 (Part -2), 1985, Reaffirmed 2003, ORSAT Method.			

Towards Sustainable Growth

A.] GENERAL INFORMATION ABOUT STACK:

Particulars of the Plant			Shape of Duct	:	Circular
Stack attached to	:	D.G. Set (500 KVA) Shapft No. - 2	Material of Construction	:	M.S
Emission due to	:	Burning of H.S.D	Stack ID at sampling point (M)	:	0.10
Fuel Used	:	H.S.D	At Bottom (M)	:	-
Rated Fuel Consumption	:	46 Lit/ Hr.	At Top (M)	:	-
Working Fuel Consumption	:	-	***Height Details :***		
Calorific Value(Kcal/kg)	:	-	a) Total Ht. Of stack from GL(M)	:	5.0
			b) Total Ht. Of stack from RL(M)	:	-
Sulpher Content (% by Wt)	:	-	c) Ht. of sampling port from GL(M)	:	3.0
Ash Content (% by Wt.)	:	-	d) Ht. of port from disturbance zone (M)	:	-

Pollution Control Device : Nil

Whether Stack is provided with permanent Platform / Ladder : Temporary

B.] PHYSICAL DATA:

Flue Gas Temperature (°C)	:	148	**Steam Generation Capacity :**		
Barometric Pressure,(mm Hg)	:	754	a) Rated	:	-
Velocity of Gas flow (m/s)	:	12.27	b) Running	:	-
Quantity of Gas flow (Nm^3/hr)	:	238.90	**Load :** a) Rated	:	500 KVA
Pressure	:	-	b) Running	:	-

C.] RESULT OF SAMPLING:

Sl. No.	Parameters		Result Obtained
01.	Particulate Matter (mg/Nm^3)	:	28.0
02.	Particulate Matter Normalized to 12% CO_2 (V/V) - (mg/Nm^3)	:	-
03.	Sulphur di-oxide (mg/ Nm^3)	:	102.10
04.	NOx (mg/m^3)	:	-
05.	CO % (V/V)	:	<0.2
06.	CO_2 % (V/V)	:	6.4

End of Report

For, **Indicative Consultant India**

Checked By

Parbati Golui
(Manager Laboratory)
Signatory Authority

Manager-lab, Env. Div.
Indicative Consultant India

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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/A/H/15-16/026	Sample Ref. No.	:	A/H/026
Issued To	:	M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant	Report Date	:	11.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	Date of Sampling	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	Stack Air	Analysis completed on	:	10.04.15
Location	:	D.G. Set (30 KVA) Shapft No. - 3	Time of Sampling	:	12:30 PM
Sample Condition	:	In Glass Microfibre Thimble & Plastic Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 11255 (Part -1), 1985, Reaffirmed 2003, IS: 11255 (Part -3), 2008, IS: 11255 (Part -2), 1985, Reaffirmed 2003, ORSAT Method.			

Towards Sustainable Growth

A.] GENERAL INFORMATION ABOUT STACK:

Particulars of the Plant					
Stack attached to	:	D.G. Set (30 KVA) Shapft No. - 3	Shape of Duct	:	Circular
Emission due to	:	Burning of H.S.D	Material of Construction	:	M.S
Fuel Used	:	H.S.D	Stack ID at sampling point (M)	:	0.05
Rated Fuel Consumption	:	4 Lit/ Hr.	At Bottom (M)	:	-
Working Fuel Consumption	:	-	At Top (M)	:	-
Calorific Value(Kcal/kg)	:	-	*Height Details :*		
			a) Total Ht. Of stack from GL(M)	:	4.0
			b) Total Ht. Of stack from RL(M)	:	-
Sulpher Content (% by Wt)	:	-	c) Ht. of sampling port from GL(M)	:	2.5
Ash Content (% by Wt.)	:	-	d) Ht. of port from disturbance zone (M)	:	-

Pollution Control Device : Nil

Whether Stack is provided with permanent Platform / Ladder : Temporary

B.] PHYSICAL DATA:

Flue Gas Temperature (°C)	:	82	**Steam Generation Capacity :**		
Barometric Pressure,(mm Hg)	:	754	a) Rated	:	-
Velocity of Gas flow (m/s)	:	8.43	b) Running	:	-
Quantity of Gas flow (Nm^3/hr)	:	47.41	**Load** : a) Rated	:	30 KVA
Pressure	:	-	b) Running	:	-

C.] RESULT OF SAMPLING:

Sl. No.	Parameters		Result Obtained
01.	Particulate Matter (mg/Nm^3)	:	20.0
02.	Particulate Matter Normalized to 12% CO_2 (V/V) - (mg/Nm^3)	:	-
03.	Sulphur di-oxide (mg/ Nm^3)	:	35.39
04.	NOx (mg/m^3)	:	-
05.	CO % (V/V)	:	<0.2
06.	CO_2 % (V/V)	:	4.6

---------- End of Report ----------

For, Indicative Consultant India

Checked By

Parbati Golui
(Manager Laboratory)
Signatory

Manager-lab, Env. Div.
Indicative Consultant India

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/ITDCJ/006**	**Sample Ref. No.**	:	**ITDCJ/006**
Issued To	:	**M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant**	**Report Date**	:	13.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	**Date of Sampling**	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	**Ambient Air**	**Analysis completed on**	:	10.04.15
Location	:	**Taratala Road, Shaft No. - 9, (In front of Deep Bhawan)**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.			
Ambient Temperature in °C (Average)	:	32.0			

Time of Sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:10 AM to 05:10 PM	71.25	31.21	16.02	40.84	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10– 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

Checked By

For, **Indicative Consultant India**

Parbati Gohil
(Manager-Laboratory)
Signatory Authority

Parbati Gohil
Manager-lab. Env. Div.
Indicative Consultant India

JOINT VENTURE ITD-ITD CEM

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/ITDCJ/007**	**Sample Ref. No.**	:	**ITDCJ/007**
Issued To	:	**M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant**	**Report Date**	:	13.04.15
Address	:	Near Nature Park, Taratala Road, Kolkata - 700 066	**Date of Sampling**	:	08.04.15
			Analysis Started on	:	10.04.15
Sample Description	:	**Ambient Air**	**Analysis completed on**	:	10.04.15
Location	:	**D.H. Road, Shaft No. - 2, Sakher Bazar (In front of Office Container)**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.			
Ambient Temperature in °C (Average)	:	32.0			

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:45 AM to 05:45 PM	76.97	28.68	15.08	38.94	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit.

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

Checked By

For, **Indicative Consultant India**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

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

ITD-ITD CEM JOINT VENTURE

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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/15-16/001**	**Sample Ref. No.**	**: SL/001**
Issued To	**: M/s. ITD-ITD CEM JV, KEIIP Micro Tunneling Project, Garden Reach Sewage Treatment Plant**	**Report Date**	**: 16.04.15**
		Date of Monitoring	**: 08.04.15**
Address	: Near Nature Park, Taratala Road, Kolkata - 700 066		
Sample Description	: **Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	: **Taratala Road, Shaft No. - 9, (In front of Deep Bhawan)**		
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	Starting Time	:	11:40 AM
Distance of Source	:	3.0 M	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	64.6	0.11111111	288403.150	3286845.120
2	64.2		263026.799	
3	63.8		239883.292	
4	63.7		234422.882	
5	64.5		281838.293	
6	65.3		338844.156	
7	65.6		363078.055	
8	65.8		380189.396	
9	66.1		407380.278	
10	66.9		489778.819	

*** The equivalent Noise Level Leq. 65.17 dB(A)**

Maximum dB(A): 66.9
Minimum dB (A): 63.7

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

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-Lab. Div.
Indicative Consultant India

Note : 1. Test results shown in this test report relate only to the item tested.
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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194
Durgapur Office : 4, Matangini Hazra Bithi, SAIL Co-operative, DGP-16, Burdwan, Mob : 9232395890, 7797506971
Paradeep Office: C/o. Dhuna Chandra Sethy Taninighara, Bijay Chandrapur, P.O.-Authara, Bankai, P.S.-Paradeep, Dist.-Jagatsingpur Odisha. Mob.: 8596950390, 9830964194

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/15-16/002**
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
Location : **D.H. Road, Shaft No. - 2, Sakher Bazar (In front of Office Container)**
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/002
Report Date : 16.04.15
Date of Monitoring : 08.04.15

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

Starting Time : 12:30 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	76.1	0.11111111	4073802.778	102732513.801
2	77.4		5495408.739	
3	80.1		10232929.923	
4	72.3		1698243.652	
5	80.7		11748975.549	
6	81.3		13489628.826	
7	82.6		18197008.586	
8	82.3		16982436.525	
9	79.7		9332543.008	
10	80.6		11481536.215	

*** The equivalent Noise Level Leq. 80.12 dB(A)**

Maximum dB(A): *82.6*
Minimum dB (A): *72.3*

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

Checked By

For, **INDICATIVE CONSULTANT INDIA**

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

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Paradeep Office: C/o. Dhuna Chandra Sethy Taninighara, Bijay Chandrapur, P.O.-Authara, Bankai, P.S.-Paradeep, Dist.-Jagatsingpur Odisha. Mob.: 8596950390, 9830964194

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.- 19019210010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/TMJ/055**	**Sample Ref. No.**	:	**TMJ/055**
Issued To	:	**M/s. Tantia-MPPL (WILO) JV**	**Report Date**	:	12.06.15
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	**Date of Sampling**	:	09.06.15
			Analysis Started on	:	11.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	11.06.15
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.			
Ambient Temperature in °C (Average)	:	35.0			

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:40 AM to 06:40 PM	93.0	42.45	21.68	40.41	N.D.

N.D= Not Detected

End of Report

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

For, **Indicative Consultant India**

Checked By

Parbati Golui
(Manager-Laboratory)
Signatory Authority

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

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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194

S.S.I. Reg. No.- 190192100010

INDICATIVE CONSULTANT INDIA

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TEST REPORT

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Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/TMJ/056**	**Sample Ref. No.**	: **TMJ/056**
Issued To	:	**M/s. Tantia-MPPL (WILO) JV**	**Report Date**	: 12.06.15
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	**Date of Sampling**	: 09.06.15
			Analysis Started on	: 11.06.15
			Analysis Completed on	: 11.06.15
Sample Description	:	**Ambient Air**		
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.		
Ambient Temperature in °C (Average)	:	36.0		

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
09:45 AM to 05:45 PM	139.96	59.85	27.34	59.84	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

For, **Indicative Consultant India**

Checked By

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-lab, Env. Div.
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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: **ICI/A/15-16/TMJ/057**		**Sample Ref. No.**	:	**TMJ/057**
Issued To	: **M/s. Tantia-MPPL (WILO) JV**		**Report Date**	:	12.06.15
Address	: Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.		**Date of Sampling**	:	09.06.15
			Analysis Started on	:	11.06.15
			Analysis Completed on	:	11.06.15

Sample Description : **Ambient Air**
Location : **Kadamtala Govt. Housing Road**
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.

Ambient Temperature in °C (Average) : 35.0

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:05 AM to 06:05 PM	85.47	32.50	22.62	41.79	N.D.

N.D= Not Detected

---------------------------- End of Report ----------------------------

Limit: ($\mu g/m^3$) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

For, Indicative Consultant India

Checked By

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

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/TMJ/058**	**Sample Ref. No.**	:	**TMJ/058**
Issued To	:	**M/s. Tantia-MPPL (WILO) JV**	**Report Date**	:	12.06.15
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	**Date of Sampling**	:	09.06.15
			Analysis Started on	:	11.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	11.06.15
Location	:	**Kali Charan Dutta Road**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.			
Ambient Temperature in °C (Average)	:	35.5			

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:20 AM to 06:20 PM	91.84	37.41	23.57	43.22	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: ($\mu g/m^3$) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

For, **Indicative Consultant India**

Checked By

Parbati Golui
(Manager-Laboratory)
Signatory Authority

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

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Durgapur Office : 4, Mahamaya Mazar Bithi, SAIL Co-operative, DGP-16, Burdwan, Mob : 9232395890, 7797506971

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/TMJ/059**	**Sample Ref. No.**	:	**TMJ/059**
Issued To	:	**M/s. Tantia-MPPL (WILO) JV**	**Report Date**	:	12.06.15
Address	:	Joka Tram Depot. Gate No. – 3, Kolkata – 700 104.	**Date of Sampling**	:	09.06.15
			Analysis Started on	:	11.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	11.06.15
Location	:	**Construction of Box drain below proposed extension of runway of Behala Airport**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998, Methane and Non Methane.			
Ambient Temperature in °C (Average)	:	35.0			

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Time of Sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
11:00 AM to 07:00 PM	129.67	57.36	26.39	55.09	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

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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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/153**
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
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

Sample Ref. No. : SL/153
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Monitoring Details :

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

Starting Time : 12:20 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	58.5	0.11111111	70794.578	818080.949
2	60.4		109647.820	
3	60.2		104712.855	
4	59.3		85113.804	
5	57.4		54954.087	
6	58.6		72443.596	
7	60.3		107151.931	
8	59.5		89125.094	
9	57.4		54954.087	
10	58.4		69183.097	

*** The equivalent Noise Level Leq. 59.13 dB(A)**

Maximum dB(A): *60.4*
Minimum dB (A): *57.4*

..... 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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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194
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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/15-16/154**
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
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/154
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Monitoring Details :
Height from the floor : 1.5 M
Distance of Source : 3.0 M
Starting Time : 12:10 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	55.3	0.11111111	33884.416	432085.988
2	56.8		47863.009	
3	57.9		61659.500	
4	57.2		52480.746	
5	55.3		33884.416	
6	54.6		28840.315	
7	56.1		40738.028	
8	55.2		33113.112	
9	57.4		54954.087	
10	56.5		44668.359	

*** The equivalent Noise Level Leq. 56.36 dB(A)**

Maximum dB(A): *57.9*
Minimum dB (A): *54.6*

..... 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. :9339789157, 9836470938, 7797506970
Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194

S.S.I. Reg. No.- 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/155**
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
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

Sample Ref. No. : SL/155
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Monitoring Details :

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

Starting Time : 9:50 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	56.5	0.11111111	44668.359	727979.258
2	58.3		67608.298	
3	60.5		112201.845	
4	59.7		93325.430	
5	57.4		54954.087	
6	54.6		28840.315	
7	57.1		51286.138	
8	59.8		95499.259	
9	58.6		72443.596	
10	60.3		107151.931	

*** The equivalent Noise Level Leq. 58.62 dB(A)**

Maximum dB(A): *60.5*
Minimum dB (A): *54.6*

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

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For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-lab, Env. Div.
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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194
Durgapur Office : 4, Matangini Hazra Bithi, SAIL Co-operative, DGP-16, Burdwan, Mob : 9232395890, 7797506971

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/156**
Issued To : **M/s. Tantia-MPPL (WILO) JV.**
Address : Joka Tram Depot. Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/156
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
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

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)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	55.3	0.11111111	33884.416	318216.097
2	53.8		23988.329	
3	54.7		29512.092	
4	56.5		44668.359	
5	55.9		38904.514	
6	56.4		43651.583	
7	53.6		22908.677	
8	52.9		19498.446	
9	55.1		32359.366	
10	54.6		28840.315	

*** The equivalent Noise Level Leq. 55.03 dB(A)**

Maximum dB(A): *56.5*
Minimum dB (A): *52.9*

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

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(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-lab, Env. Div.
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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/157**
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
Location : **Kadamtala Govt. Housing Road**
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/157
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Towards Sustainable Growth

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	62.5	0.11111111	177827.941	1747482.194
2	60.8		120226.443	
3	61.9		154881.662	
4	63.6		229086.765	
5	63.1		204173.794	
6	62.5		177827.941	
7	60.6		114815.362	
8	62.9		194984.460	
9	63.4		218776.162	
10	61.9		154881.662	

*** The equivalent Noise Level Leq. 62.42 dB(A)**

Maximum dB(A): *63.6*
Minimum dB (A): *60.6*

..... 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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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/15-16/158**	**Sample Ref. No.**	**: SL/158**
Issued To	**: M/s. Tantia-MPPL (WILO) JV.**	**Report Date**	**: 11.06.15**
Address	: Joka Tram Depot. Gate No. – 3, Kolkata – 700 104	**Date of Monitoring**	**: 09.06.15**
Sample Description	**: Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	**: Kadamtala Govt. Housing Road**		
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		

Monitoring Details :

Height from the floor	:	1.5 M	Starting Time	: 10:45 PM
Distance of Source	:	3.0 M	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	56.5	0.11111111	44668.359	501375.150
2	57.5		56234.133	
3	55.3		33884.416	
4	58.5		70794.578	
5	57.9		61659.500	
6	54.5		28183.829	
7	55.3		33884.416	
8	58.9		77624.712	
9	56.1		40738.028	
10	57.3		53703.180	

*** The equivalent Noise Level Leq. 57.00 dB(A)**

Maximum dB(A): *58.9*

Minimum dB (A): *54.5*

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

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/159**
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
Location : **Kali Charan Dutta Road**
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/159
Report Date : 11.06.15
Date of Monitoring : 09.06.15

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

Starting Time : 11:25 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	57.3	0.11111111	53703.180	524312.034
2	58.6		72443.596	
3	58.1		64565.423	
4	56.4		43651.583	
5	55.3		33884.416	
6	57.9		61659.500	
7	58.1		64565.423	
8	56.5		44668.359	
9	55.3		33884.416	
10	57.1		51286.138	

*** The equivalent Noise Level Leq. 57.20 dB(A)**

Maximum dB(A): *58.6*
Minimum dB (A): *55.3*

End of Report

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/160**
Issued To : **M/s. Tantia-MPPL (WILO) JV.**
Address : Joka Tram Depot. Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/160
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Location : **Kali Charan Dutta Road**
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

Monitoring Details :

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

Starting Time : 11:20 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	54.7	0.11111111	29512.092	272658.674
2	55.3		33884.416	
3	53.6		22908.677	
4	54.9		30902.954	
5	52.6		18197.009	
6	53.7		23442.288	
7	55.1		32359.366	
8	54.6		28840.315	
9	52.9		19498.446	
10	55.2		33113.112	

*** The equivalent Noise Level Leq. 54.36 dB(A)**

Maximum dB(A): ***55.3***
Minimum dB (A): ***52.6***

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

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For, **INDICATIVE CONSULTANT INDIA**

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(Manager-Laboratory)
Signatory Authority

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/161**
Issued To : **M/s. Tantia-MPPL (WILO) JV.**
Address : Joka Tram Depot. Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/161
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Location : **Construction of Box drain below proposed extension of runway of Behala Airport**
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 : 2:40 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	54.3	0.11111111	26915.348	275581.212
2	52.7		18620.871	
3	55.3		33884.416	
4	54.9		30902.954	
5	53.6		22908.677	
6	52.5		17782.794	
7	53.8		23988.329	
8	55.1		32359.366	
9	54.8		30199.517	
10	55.8		38018.940	
*** The equivalent Noise Level Leq.**			**54.40**	**dB(A)**

Maximum dB(A): ***55.8***
Minimum dB (A): ***52.5***

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

Checked By

For, **INDICATIVE CONSULTANT INDIA**

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(Manager-Laboratory)
Signatory Authority
Parbati Golui
Manager-lab, Env. Div.
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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/162**
Issued To : **M/s. Tantia-MPPL (WILO) JV.**
Address : Joka Tram Depot. Gate No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/162
Report Date : 11.06.15
Date of Monitoring : 09.06.15

Sample Description : **Ambient Noise**
Sampling Method : By Digital Noise Meter
Location : **Construction of Box drain below proposed extension of runway of Behala Airport**
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

Monitoring Details :

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

Starting Time : 12:40 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	52.8	0.11111111	19054.607	151728.952
2	52.0		15848.932	
3	51.4		13803.843	
4	50.3		10715.193	
5	52.7		18620.871	
6	51.6		14454.398	
7	50.7		11748.976	
8	52.3		16982.437	
9	50.9		12302.688	
10	52.6		18197.009	
*** The equivalent Noise Level Leq.**			**51.81**	**dB(A)**

Maximum dB(A): *52.8*
Minimum dB (A): *50.3*

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

Checked By

For, **INDICATIVE CONSULTANT INDIA**

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

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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194

Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant

Phone : 2415 2145
2405 5015

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Test Report

NABL Accredited Laboratory
Certificate No. T-2226

Format No.BF/FM/37

Analysis Report of Ambient Air Quality

Report No.: **AP/15/002** Date of Reporting: 08.01.2014

Name and Address of the Industry:	**M/s. Simplex –KRITA JV. Garden Reach , STP.**
Date of Sampling: 05.01.2015	Date of Completion of Analysis : 07.01.2015
Sampling done by:	Mr. R. Das

General and Meteorological Conditions at Sampling Location:		
1.	Location :	**Jacking Shaft Area**
2.	Height of sampler from ground level:	0.50 M
3.	Meteorological Conditions :	Sunny & Clear
4.	Average Temperature (Deg C) :	19.5
5.	Relative Humidity (%):	71
6.	Barometric Pressure (mm of Hg) :	758
7.	Smell / Odour :	Tolerable

Results of Sampling and Analysis of Ambient Air Quality:

Sl. No.	Parameters Analysed	Specification/Standard Method	Permissible Limits*	Results
1.	PM_{10} ($\mu g/m^3$):	IS-5182(Pt-23)2006 : Part 23	100	26.4
2.	Sulphur Dioxide ($\mu g/m^3$):	IS-5182(Pt-2) 2001: Part 2	80	9.7
3.	Nitrogen Dioxide ($\mu g/m^3$):	IS-5182 2006: Part 6	80	49.4

* Limits as per National Ambient Air Quality Standards

SIMPLEX-KRITA JV

Authorised Signatory
For Bharat Foundation
A. Neogi
C. E. O. & Technical Manager

Page 01 of 01

----------End of the Report----------

Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested and such water sample(s) are retained for 7 days from completion of test. The other samples will be preserved for 30 days from date of collection / submission. The samples from regulatory bodies are to be retained as specified. This document cannot be reproduced except in full, without prior written approval of Bharat Foundation.

Phone : 2415 2145
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Test Report

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Analysis Report of Ambient Air Quality

Report No.: **AP/15/003**

Date of Reporting: 08.01.2014

Name and Address of the Industry:	**M/s. Simplex –KRITA JV. Santoshpur PUMP HOUSE**
Date of Sampling: 05.01.2015	Date of Completion of Analysis : 07.01.2015
Sampling done by:	Mr. R. Das

General and Meteorological Conditions at Sampling Location:

1.	Location :	**Near Receiving Shaft Area.**
2.	Height of sampler from ground level:	0.50 M
3.	Meteorological Conditions :	Sunny & Clear
4.	Average Temperature (Deg C) :	19.4
5.	Relative Humidity (%):	71.2
6.	Barometric Pressure (mm of Hg) :	758
7.	Smell / Odour :	Tolerable

Results of Sampling and Analysis of Ambient Air Quality:

Sl. No.	Parameters Analysed	Specification/Standard Method	Permissible Limits*	Results
1.	PM_{10} ($\mu g/m^3$):	IS-5182(Pt-23)2006 : Part 23	100	173.1
2.	Sulphur Dioxide ($\mu g/m^3$):	IS-5182(Pt-2) 2001: Part 2	80	8.2
3.	Nitrogen Dioxide ($\mu g/m^3$):	IS-5182 2006: Part 6	80	59.5

* Limits as per National Ambient Air Quality Standards

Authorised Signatory

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----------End of the Report----------

SIMPLEX-KRITA JV

For Bharat Foundation
A. Neogi
C. E. O. & Technical Manager

* Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested and such water sample(s) are retained for 7 days from completion of test. The other samples will be preserved for 30 days from date of collection / submission. The samples from regulatory bodies are to be retained as specified. This document cannot be reproduced except in full, without prior written approval of Bharat Foundation.

ENVIROCHECK

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E-mail : envcheck@cal2.vsnl.net.in
Website : www.envirocheck.org

No.:322/EC/M/14-15

Date: 08.01.2015

NOISE LEVEL STUDY

Name of the Company	:	Simplex – Krita JV
Address	:	Bidhangarh, Paharpur, Kolkata - 700066
Date of Study	:	02.01.2015
Method No.	:	IS:10988-1984
Height from Ground Level	:	4 ft.

1. Location: Jacking Pit / Shaft

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
12:10 – 12:30	:	73.6	72.4	76.7	74.70
		75.6			
		76.7			
		74.1			
		72.4			
		73.7			
		74.0			
		75.8			
		76.2			
		72.5			

2. Location: Receiving Pit (Pump House)

Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
12:40 – 1:00	:	56.4	56.1	59.7	57.83
		57.2			
		59.7			
		58.3			
		56.8			
		59.5			
		57.3			
		58.0			
		56.1			
		57.5			

SIMPLEX-KRITA JV

3. Location: Intermediate Point Between JP&RP

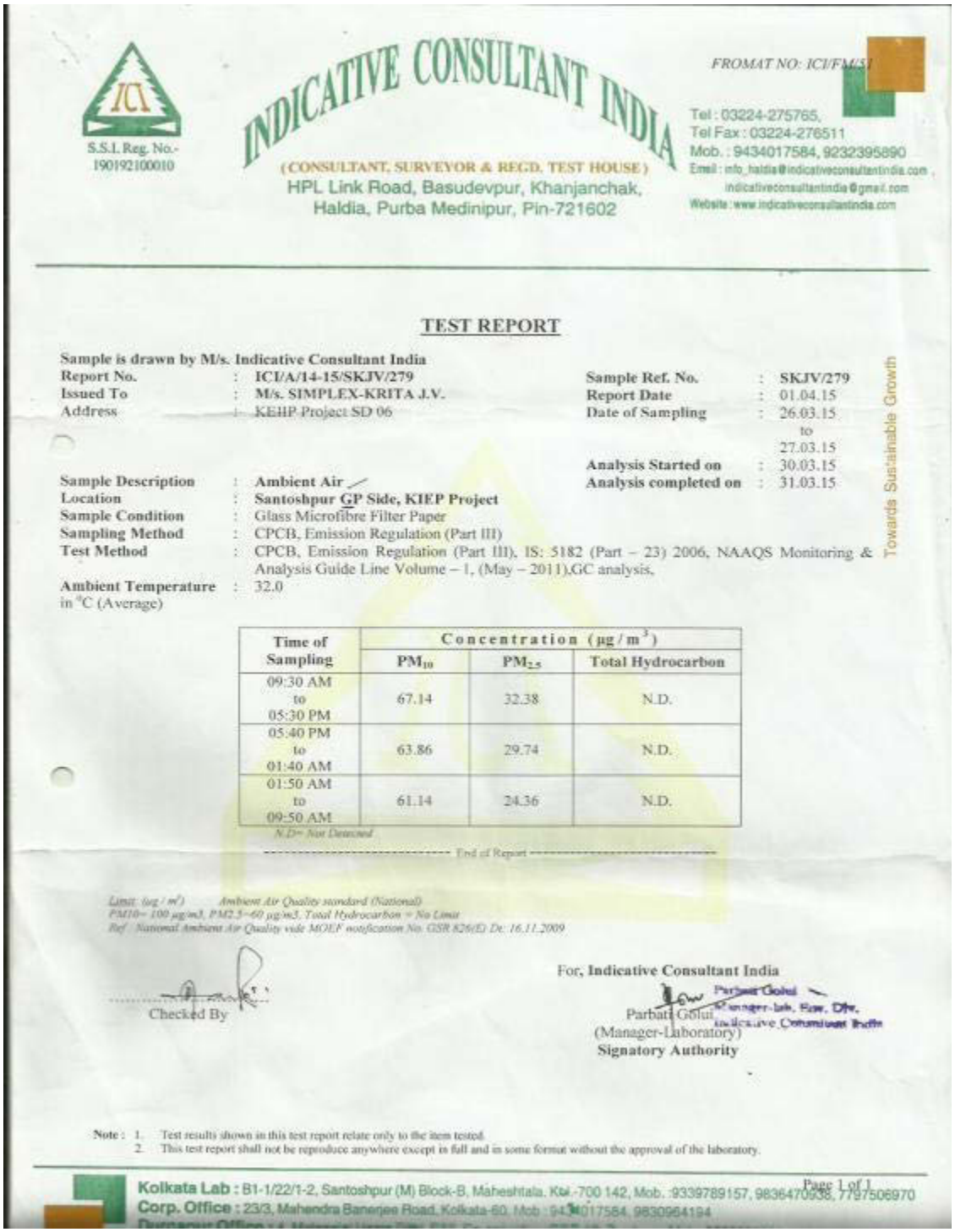
Time (P.M)	:	dB(A)	RESULT		
			Minimum dB(A)	Maximum dB(A)	L_{eq} dB(A)
1:10 – 1:30	:	64.3	62.4	66.9	64.70
		65.5			
		66.9			
		63.6			
		62.7			
		65.1			
		64.0			
		66.4			
		63.8			
		62.4			

** Mean of L_{eq}: Equivalent to Sound Energy

Signature & Seal

Page No. 2

SIMPLEX-KRITAY



S.S.I. Reg. No.- 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/14-15/SKJV/279**	**Sample Ref. No.**	: **SKJV/279**
Issued To	:	**M/s. SIMPLEX-KRITA J.V.**	**Report Date**	: 01.04.15
Address	:	KEIIP Project SD 06	**Date of Sampling**	: 26.03.15 to 27.03.15
			Analysis Started on	: 30.03.15
			Analysis completed on	: 31.03.15
Sample Description	:	**Ambient Air**		
Location	:	**Santoshpur GP Side, KIEP Project**		
Sample Condition	:	Glass Microfibre Filter Paper		
Sampling Method	:	CPCB, Emission Regulation (Part III)		
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011),GC analysis.		
Ambient Temperature in °C (Average)	:	32.0		

Time of Sampling	Concentration (µg/m³)		
	PM_{10}	$PM_{2.5}$	Total Hydrocarbon
09:30 AM to 05:30 PM	67.14	32.38	N.D.
05:40 PM to 01:40 AM	63.86	29.74	N.D.
01:50 AM to 09:50 AM	61.14	24.36	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, Total Hydrocarbon = No Limit
Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt. 16.11.2009

Checked By

For, **Indicative Consultant India**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

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Address	:	KEIIP Project SD 06	**Date of Sampling**	: 26.03.15 to 27.03.15
			Analysis Started on	: 30.03.15
Sample Description	:	**Ambient Air**	**Analysis completed on**	: 31.03.15
Location	:	**Santoshpur RP Side, KIEP Project**		
Sample Condition	:	Glass Microfibre Filter Paper		
Sampling Method	:	CPCB, Emission Regulation (Part III)		
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – 23) 2006, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011),GC analysis,		
Ambient Temperature in ^{o}C (Average)	:	32.0		

Time of Sampling	Concentration ($\mu g/m^3$)		
	PM_{10}	$PM_{2.5}$	Total Hydrocarbon
09:05 AM to 05:05 PM	72.92	37.41	N.D.
05:15 PM to 01:15 AM	67.35	33.71	N.D.
01:25 AM to 09:25 AM	64.83	31.37	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: ($\mu g/m^3$) Ambient Air Quality standard (National)
PM10 – 100 µg/m3, PM2.5 –60 µg/m3, Total Hydrocarbon = No Limit
Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

Checked By

For, **Indicative Consultant India**

Parbati Gol... Manager-lab, Env. Div.
(Manager-Labora... Indicative Consultant India
Signatory Authority

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/SKJV/086**	**Sample Ref. No.**	:	**SKJV/086**
Issued To	:	**M/s. Simplex Krita J.V.**	**Report Date**	:	25.06.15
Address	:	Plot No.- 22, Block-EN, Sector - V, 4th Floor, Saltlake, Kolkata, Pin- 700 091	**Date of Sampling**	:	20.06.15 to 21.06.15
			Analysis Started on	:	22.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	24.06.15
Location	:	**Railway Line At Solabigha**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998. GC analysis,			
Ambient Temperature in °C (Average)	:	28.0			

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:45 AM to 06:45 PM	81.38	38.70	12.81	49.42	N.D.
06:55 PM to 02:55 AM	74.96	31.21	10.98	47.59	N.D.
03:05 AM to 11:05 AM	69.32	27.50	10.10	43.93	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

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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Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/SKJV/087**	**Sample Ref. No.**	:	**SKJV/087**
Issued To	:	**M/s. Simplex Krita J.V.**	**Report Date**	:	25.06.15
Address	:	Plot No.- 22, Block-EN, Sector - V, 4th Floor, Saltlake, Kolkata, Pin- 700 091	**Date of Sampling**	:	20.06.15 to 21.06.15
			Analysis Started on	:	22.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	24.06.15
Location	:	**Santoshpur Pumping Station (RP)**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998. GC analysis,			
Ambient Temperature in °C (Average)	:	28.0			

Time of Sampling	Concentration (µg / m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:10 AM to 06:10 PM	79.26	35.04	15.55	58.24	N.D.
06:15 PM to 02:15 AM	71.30	31.21	13.61	56.27	N.D.
02:30 AM to 10:30 AM	67.57	27.50	11.66	54.30	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3. PM2.5=60 µg/m3. SO2=80 µg/m3. NO2=80 µg/m3. Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt. 16.11.2009

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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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	**ICI/A/15-16/SKJV/088**	**Sample Ref. No.**	:	**SKJV/088**
Issued To	:	**M/s. Simplex Krita J.V.**	**Report Date**	:	25.06.15
Address	:	Plot No.- 22, Block-EN, Sector - V, 4th Floor, Saltlake, Kolkata, Pin- 700 091	**Date of Sampling**	:	20.06.15 to 21.06.15
			Analysis Started on	:	22.06.15
Sample Description	:	**Ambient Air**	**Analysis Completed on**	:	24.06.15
Location	:	**Gardenreach Sewerage Treatment Plant (JP)**			
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, NAAQS Monitoring & Analysis Guide Line Volume – 1, (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed 1998. GC analysis.			
Ambient Temperature in °C (Average)	:	28.0			

Time of Sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
10:30 AM to 06:30 PM	70.27	30.00	14.14	55.44	N.D.
06:35 PM to 02:35 AM	65.10	27.47	12.25	53.56	N.D.
02:40 AM to 10:40 AM	62.23	24.97	11.22	51.29	N.D.

N.D= Not Detected

---------- End of Report ----------

Limit: (µg / m³) Ambient Air Quality standard (National)
PM10= 100 µg/m3, PM2.5=60 µg/m3, SO2=80 µg/m3, NO2=80 µg/m3, Total Hydrocarbon = No Limit

Ref : National Ambient Air Quality vide MOEF notification No. GSR 826(E) Dt: 16.11.2009

For, **Indicative Consultant India**

Checked By

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-lab, Env. Div.
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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/15-16/192**	**Sample Ref. No.**	: SL/192
Issued To	**: M/s. Simplex Krita JV.**	**Report Date**	: 25.06.1
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	**Date of Monitoring**	: 20.06.1
Sample Description	: **Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	: **Santoshpur Pumping Station (RP)**		
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	:	10:30 AM
Distance of Source	:	3.0 M	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	62.7	0.11111111	186208.714	2139748.609
2	64.5		281838.293	
3	63.8		239883.292	
4	61.7		147910.839	
5	62.5		177827.941	
6	64.8		301995.172	
7	64.0		251188.643	
8	62.7		186208.714	
9	61.7		147910.839	
10	63.4		218776.162	

*** The equivalent Noise Level Leq. 63.30 dB(A)**

Maximum dB(A): *64.8*

Minimum dB (A): *61.7*

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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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : **ICI/SL/15-16/193**

Issued To : **M/s. Simplex Krita JV.**

Address : Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091

Sample Ref. No. : SL/193

Report Date : 25.06.15

Date of Monitoring : 20.06.15

Sample Description : **Ambient Noise**

Sampling Method : By Digital Noise Meter

Location : **Santoshpur Pumping Station (RP)**

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 EPA 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)	ft = dt/T	ft X 10^(Li/10)	Sum of ft X 10^(Li/10)
1	57.3	0.11111111	53703.180	561512.145
2	56.8		47863.009	
3	57.5		56234.133	
4	58.7		74131.024	
5	58.0		63095.734	
6	57.1		51286.138	
7	56.5		44668.359	
8	57.4		54954.087	
9	58.0		63095.734	
10	57.2		52480.746	

*** The equivalent Noise Level Leq. 57.49 dB(A)**

Maximum dB(A): *58.7*

Minimum dB (A): *56.5*

.... 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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Durgapur Office : 4, Matangini Hazra Bithi, SAIL Co-operative, DGP-16, Burdwan, Mob : 9232395890, 7797506971

Paradeep Office : [illegible]

S.S.I. Reg. No.- 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/15-16/194**	**Sample Ref. No.**	**: SL/194**
Issued To	**: M/s. Simplex Krita JV.**	**Report Date**	**: 25.06.15**
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	**Date of Monitoring**	**: 20.06.15**
Sample Description	**: Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	**: Garden Reach Sewerage Treatment Plant (JP)**		
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	:	11:05 AM
Distance of Source	:	3.0 M	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	58.4	0.11111111	69183.097	830010.733
2	60.3		107151.931	
3	59.2		83176.377	
4	58.5		70794.578	
5	57.4		54954.087	
6	58.1		64565.423	
7	59.6		91201.084	
8	59.8		95499.259	
9	60.5		112201.845	
10	59.1		81283.052	
*** The equivalent Noise Level Leq.**			**59.19**	**dB(A)**

Maximum dB(A): *60.5*

Minimum dB (A): *57.4*

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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Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, Mob : 9434017584, 9830964194
Durgapur Office : 4, Matangini Hazra Bithi, SAIL Co-operative, DGP-16, Burdwan, Mob : 9232395890, 7797506971

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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/15-16/195
Issued To : M/s. Simplex Krita JV.
Address : Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091

Sample Ref. No. : SL/195
Report Date : 25.06.15
Date of Monitoring : 20.06.15

Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Location : Garden Reach Sewerage Treatment Plant (JP)
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 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	54.6	0.11111111	28840.315	260096.144
2	55.4		34673.685	
3	55.0		31622.777	
4	54.6		28840.315	
5	52.7		18620.871	
6	53.9		24547.089	
7	54.0		25118.864	
8	52.7		18620.871	
9	53.6		22908.677	
10	54.2		26302.680	

* The equivalent Noise Level Leq. **54.15** dB(A)

Maximum dB(A): 55.4
Minimum dB (A): 52.7

.... End of Report ....

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Golui
(Manager, Laboratory)
Signatory Authority
Indicative Consultant India

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TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/15-16/195A**	**Sample Ref. No.**	: SL/195A
Issued To	**: M/s. Simplex Krita JV,**	**Report Date**	: 25.06.15
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	**Date of Monitoring**	: 20.06.15
Sample Description	: **Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	: **Railway Line At Solabigha**		
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	: 11:50 AM
Distance of Source	:	3.0 M	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	63.8	0.11111111	239883.292	1896957.108
2	63.0		199526.231	
3	62.8		190546.072	
4	62.1		162181.010	
5	63.0		199526.231	
6	61.9		154881.662	
7	62.8		190546.072	
8	63.4		218776.162	
9	62.7		186208.714	
10	61.9		154881.662	

*** The equivalent Noise Level Leq. 62.78 dB(A)**

Maximum dB(A): *63.8*

Minimum dB (A): *61.9*

..... 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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Towards Sustainable Growth

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	**: ICI/SL/15-16/195B**	**Sample Ref. No.**	**: SL/195B**
Issued To	**: M/s. Simplex Krita JV.**	**Report Date**	**: 25.06.15**
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	**Date of Monitoring**	**: 20.06.15**
Sample Description	: **Ambient Noise**		
Sampling Method	: By Digital Noise Meter		
Location	: **Railway Line At Solabigha**		
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 EPA Act, 1986		

Monitoring Details :

Height from the floor	:	1.5 M	Starting Time	:	11:15 PM
Distance of Source	:	3.0 M	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	62.0	0.11111111	158489.319	1557637.710
2	61.9		154881.662	
3	62.0		158489.319	
4	62.3		169824.365	
5	60.8		120226.443	
6	61.4		138038.426	
7	62.4		173780.083	
8	63.0		199526.231	
9	62.0		158489.319	
10	61.9		125892.541	

*** The equivalent Noise Level Leq. 61.92 dB(A)**

Maximum dB(A): *63.0*

Minimum dB (A): *60.8*

End of Report

Checked By

For, **INDICATIVE CONSULTANT INDIA**

Parbati Golui
(Manager-Laboratory)
Signatory Authority

Parbati Golui
Manager-Lab, Env. Div.
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APPENDIX 7: SITE-SPECIFIC HEALTH AND SAFETY PLAN

ENVIRONMENT, HEALTH & SAFETY PLAN

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

SCOPE OF WORK

Site Address:	:	Eastern Tower ,Ghatakpara,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.

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 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.

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.

6. HAZARD IDENTIFICATION AND RISK ASSESSMENT

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

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 posses 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-ITD Cem Plant Dept. & Electrical dept. prior to introduce 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 machinery's, 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 s & torch side. • It is mandatory to use of 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.

FIRST - AID FACILITIES AND MEDICAL TREATMENT

a) Each worksite/area shall be equipped with it's 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.

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 mean 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	25 Nos	Site Store
6	Safety Shoes Pairs	10 Nos (Each sizes)	Site Store

–

ENVIRONMENT, HEALTH & SAFETY PLAN (Revised Date – 30.06.2015)

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/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

1. SCOPE OF WORK

Site Address:	:	Garden Reach Sewerage Treatment Plant, Near Nature park /Tatamotors Service Centre Railway level Crossing, Taratala Road, Kolkata-700088
Client Details:	:	The Kolkata Municipal Corporation Business Towers 206, A.J.C.Bose Road, 2nd Floor, Kolkata-700017, West Bengal
Name of Project:	:	Laying of Water Trunk Main from Garden Reach Water Works to Taratala Valve Station and Laying of Sewer Line along Dimond Harbour Road by Microtunneling Method
Brief Scope of Work:	:	Laying of RCC NP Pipes. Construction of RCC Grade Box. Constructi0on of Manholes. Installation of HDPE Flap Gates / valves. Laying of MS Spirally Welded Pipes. Installation of air valves and sluice valves. Installation of Butterfly valves. Road restoration work, site preparation, spoil, removal, miscellaneous work etc.
Completion Period:	:	1095 days from date of commencement (19th May-2014)
Value of Work:	:	146 Crores INR
Major Activities.		☞ Vehicle movement – site transport and construction ☞ Use of heavy cranes for lifting and shifting operations.

- ☞ Use of hydraulic piling rigs /jack-up Platform
- ☞ Temporary Site Electrification
- ☞ Operation of floating crafts & vessels
- ☞ Fabrication of Steel Liners & Reinforcement Cage.
- ☞ Welding and Cutting.
- ☞ Storage of brought out finishing items.
- ☞ Placing of precast beam.
- ☞ Scaffolding and staging for civil works.

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.

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.

3. 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.

4. HAZARD IDENTIFICATION AND RISK ASSESSMENT

5. 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

6. 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-ITD Cem Plant Dept. & Electrical dept. prior to introduce 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 machinery's, 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 s & torch side.

- It is mandatory to use of 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.

7. FIRST - AID FACILITIES AND MEDICAL TREATMENT

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

8. 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 mean 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/ Site office container/ All DG Rooms / casting Yard etc.,
5	Safety Helmets	50 Nos	Site Store
6	Safety Shoes Pairs	10 Nos (Each sizes)	Site Store
7	Stretchers	4 Nos.	First Aid room / Ambulance / Store

8	Oil spill absorbent materials (Hesian Cloth / Foam)	Sufficient Quantity	Site Store

9. Reporting System for Emergency

Important Telephone Numbers of Persons at Corporate /Division Level

Name	Designation	Location	Mobile	Phone Office	Phone Residence
Mr. Pravin Panchal	Corporate Head – Safety & Environment	Mumbai	09619183102	022-67680836	
Mr. Anup Bhattacharya	Division Head - Safety & Environment	Kolkata	09433038445	033-23577384	
Mr. Rupak Sarkar	Head Div. 1	Kolkata	9163329955	033-2357 7384/5213	
Mr. Adun Saraban	Managing Director	Mumbai		022-66931600/7	

Important Internal Telephone Numbers at Site

Name	Designation	Contact No.
Mr.Kamrop Proprinkit	Project Manager	+91 8584864124
Mr. Sourav Das	Dy. Project Manager	+91 9831387615
Mr. Ayan Nandy	Admin. In-Charge	+91 9163302969
Mr. Arghasree Saha	Safety In-Charge	+91 8584864132

Important Contact Number of Client

Name	Contact No.
Mr. Souma Ganguly	+91 9831080056
Mr. Santanu Das	+91 9830671296
Mr. Kalyan Ghosh	+91 9434177691

Important Contact Number - Outside

Agency /Office	Address	Telephone
Local Fire Station	New Alipore	03364149408/ 9433422791
Private Hospital	Ekbalpur Nursing Home Pvt. Ltd	033-24490456/30910909/ 9903035156
Police Station	Taratala	03324011881/03324092100

Health and Safety Management Plan

JUNE 2015

PROJECT: CONSTRUCTION OF PUMPING STATION IN BEGORE KHAL 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

Health & Safety plan for the package Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant

Pre Construction and Construction phase Health and Safety Management Plant

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 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 manufacture-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.	Company health and safety guidelines will be followed.

APPENDIX 8: RECORDS OF TRAININGS CONDUCTED DURING REPORTING PERIOD

ENVIRONMENTAL SAFEGUARD – INDUCTION TRAINING PROGRAM FOR CONTRACTOR, CONSTRUCTION MANAGER & SUPERVISOR – KEIIP DSC

Safeguard review meeting and training has been conducted on safeguard issues and application of Environmental Management Plan (EMP) **at DSC office of KEIIP on 16th February 2015**
Construction Managers and Supervisors of DSC, PM, Dy PM, Supervisor Engineers and Safety officers of contractors are participated in the training program
The issues discussed like,

- Preparation of site specific EMP
- Labour and Office Camp site management- requirement of proper sanitation and solid waste management
- Disposal / utilization of overburden earth , spoil materials after work
- Storage of construction materials
- Occupational and public safety during construction
- Traffic management during laying of pipes (as per requirement)
- Requirement of Pollution Under Control (PUC)/ No Objection Certificate (NOC) from concerned department and renewal of the same before expiry
- Requirement of baseline monitoring data- inclusion of air quality parameters like PM_{10}, $PM_{2.5}$, SO_2,, NO_2 and HC in monitoring program

EMP application requirement and methodology have also been discussed.
Instruction is given to supervisor engineer and environmental officer of construction contractor to arrange weekly consultation/ training program particularly on safety and other safeguard issues for labours.
Note on EMP application requirement as per site condition attached as **Annex 1**
Attendance sheet attached as **Annex 2**
Instruction has been given to contractor,

- Submission of air, noise, water quality data once in 4 months
- Monthly monitoring report by 5th of the next month
- Submission of valid PUC, revised and applicable traffic management & spoil management plan

Later letter has been issued to new contractor for submission of site specific EMP, generation of base line data, spoil management and traffic management plan. Also instruction has been given to contractors for submission of monthly monitoring report as per given format.

		
Photo: Safeguard Meeting	**Photo: Safeguard Meeting**	**Photo: Safeguard Meeting**

Ardhendu Mitra
(Dr. Ardhendu Mitra)
Environmental Specialist DSC

Annex 1

EMP APPLICATION- Requirement as per site condition

A. Site Establishment and Preliminary Activities

- **Legislation, Permits and Agreements**
  - Assist DSC to obtain statutory clearances relevant to the project
  - Submit consent to establish in compliance to Air Act for setting up (in relation to hot mixing, stone crushers, diesel generators – as per requirement
  - Availability of EMP at construction site office
- **Site access**
  - Need to ascertain the existing condition of the roads and repair damage shall not occur due to construction.
  - Preparation and submission of **traffic management plan** before starting of construction. Involvement of Traffic Department in planning stage (after identification areas of traffic diversion, road closure)
  - The location of all affected services and servitudes must be identified and confirmed.
  - Local Traffic Department must be informed at least a week in advance if the traffic in the area will be affected.
  - Avoiding removal of trees/shrubs/ vegetation. If required permission needed from concerned dept.
  - As per requirement maintain drainage on all temporary haulage roads
- **Setting up of Construction Labour Camp and site office**
  - Preparation and submission of site plan before finalization
  - Avoiding low laying/ flooded area. Also avoid Pvt. land
  - The construction camp can thus be comprised of:
    - site office
    - toilet facilities
    - designated first aid area
    - eating areas
    - staff lockers and showers (where water and waterborne sewers are available)
    - storage areas
    - batching plant (if required)
    - refuelling areas (if required)
    - maintenance areas (if required)
    - crushers (if required)
  - Make adequate provision for temporary toilets for the use of their employees during the construction phase. Such facilities, which shall comply with local authority regulations, shall be maintained in a clean and hygienic condition.
  - Arrangement of waste storage bin. Recycling and the provision of separate waste management
- **Establishing Equipment Lay-down and Storage Area**[26]
  - Choice of location for equipment lay-down and storage areas must be taken into account prevailing winds safe from access by children / animals etc.
  - Storage area not in proximity of residents, businesses, schools
  - Equipment lay-down and storage areas must be designated, demarcated and fenced
  - Fire prevention facilities at storage site
  - Separate 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 that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources
  - Fuel Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site tanks as per specification

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

The contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training

- **Materials Management – Sourcing**[27]
  - 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 Environment Specialist
  - Comply with relevant legislation
- **Education of site staff on general and Environmental Conduct**[28]
  - Arrangement of environmental awareness training
  - No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the Contractor
  - Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitized to any potential hazards associated with their task
  - All employees must undergo safety training and wear the necessary protective clothing
  - A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules:
    - No alcohol / drugs to be present on site;
    - Prevent excessive noise
    - Construction staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bus as a toilet facility are forbidden)
    - No fires to be permitted on site
    - Trespassing on private / commercial properties adjoining the site is forbidden
    - Other than pre-approved security staff, no workers shall be permitted to live on the construction site
    - No worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do
- **Social Impacts**[29]
  - The road closure together with the proposed detour needs to be communicated via advertising, pamphlets, radio broadcasts, road signage, etc
  - Advance road signage indicating the road detour and alternative routes. Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.
  - The time that stripped areas are left open to exposure shall be minimised wherever possible. Care shall be taken to ensure that lead times are not excessive.
- **Noise Impacts**
  - Construction vehicles are be to fitted with standard silencers prior to the beginning of construction
  - Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers, etc) will be used as per operating instructions and maintained properly during site operations
- **Dust/Air Pollution**[30]
  - Vehicles travelling along the access roads must adhere to speed limits to avoid creating excessive dust.
  - Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust.
  - Alternative arrangements (other than fires) for cooking and / or heating requirements. LPG gas cookers may be used provided that all safety regulations are followed.

[27] Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.
[28] These points need to be made clear to all staff on site before the subproject begin.
[29] It is important to take notice of the needs and wishes of those living or working adjacent to the site. Failure to do so can cause disruption to work.
[30] Establishment of the camp site, and related temporary works can reduce air quality.

- **Soil Erosion**
  - Wind screening and storm water control shall be undertaken to prevent soil loss from the site.
  - Topsoil is to be conserved while providing access to the site and setting up the camp
- **Storm water**
  - Submission of drainage plan to the DSC Environment Specialist for approval and must include the location and design criteria of any temporary stream crossings (siting and return period etc).
  - Temporary cut off drains and berms may be required to capture storm water and promote infiltration.
- **Water quality**
  - Storage areas that contain hazardous substances must be bunded with an approved impermeable liner
  - A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site or as directed by the DSC Environment Specialist
  - Provision shall be made during set up for all polluted run off to be treated to the DSC Environment Specialist's approval before being discharged into the storm water system. (This will be required for the duration of the project.)
- **Conservation of the Natural Environment**[31]
  - No vegetation may be cleared without prior permission from the DSC Environment Specialist.
  - Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material)
- **Set-up of Waste Management Procedure**
  - The excavation and use of rubbish pits on site is forbidden
  - Burning of waste is forbidden.
- **Cultural Environment**
  - Prior to the commencement of construction, all staff need to know what possible archaeological or historical objects of value may look like, and to notify the DSC Environment Specialist/Contractor shall such an item be uncovered.
- **Security and Safety**
  - Lighting on site is to be set out to provide 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 must be stable and well secured to avoid collapse and possible injury to site workers
  - Flammable materials shall be stored as far as possible from adjacent residents / businesses.
  - All interested and affected persons shall be notified in advance of any known potential risks associated with the construction site and the activities on it. Examples are:
    - stringing of power lines
    - excavation for the micro-tunnel equipment
    - earthworks / earthmoving machinery on beside houses/infrastructure/sensitive receptors risk to residences/sensitive receptors along haulage roads / access routes/ local residents.

B. Construction and Workforce Activities

- **Access to Site**
  - Access roads are maintained in good condition by attending to potholes, corrugations and storm water damage as soon as these develop
  - Contractor to employ a staff to clean surface roads adjacent to construction sites where materials have been spilt.

[31] Alien plant encroachment is particularly damaging to natural habitats and is often associated with disturbance to the soil during construction activities. Care must be taken to conserve existing plant and animal life on and surrounding the site.

- Contractor to avoid unnecessary compaction of soils by heavy vehicles.
- Contractor to restrict construction vehicles to demarcated access, haulage routes and turning areas.

➢ **Maintenance of Construction Camp**
- Monitor and manage drainage of the camp site to avoid standing water and soil erosion.
- Maintenance of toilets in a clean state and shall be moved to ensure that they adequately service the work areas
- Ensure all litter is collected from the work and camp areas daily
- Arrangement of solid waste collection bin, dispose wastes at the pre-approved sites
- Eating areas are regularly serviced and cleaned to the highest possible standards of hygiene and cleanliness.
- Ensure that camp and working areas are kept clean and tidy at all times.

➢ **Staff Conduct**
- Contractor to monitor performance of construction workers
- Contractor to ensure rules that are explained in the worker conduct

➢ **Dust and Air Pollution**[32]
- Ensure vehicles travelling to and from the construction site adhere to speed limits so as to avoid producing excessive dust.
- Contractor to dampen access and other cleared surfaces whenever possible
- A speed limit of 30km/hr must be adhered to on all dirt roads.
- utilize screening using wooden supports and shade cloth where dust is unavoidable in residential/commercial/sensitive receptors areas
- Keep vehicles and machinery in good working order and meet manufacturers specifications for safety, fuel consumption etc.
- check and repair equipment as soon as possible if excessive emissions are observed

➢ **Soil erosion**
- Once an area has been cleared of vegetation, the top layer (nominally 150mm) of soil shall be removed and contractor to stockpile in the designated area.
- Ensure storm water control and wind screening to prevent soil loss from the site.
- Dispose unusable soils and spoils to pre-approved disposal sites[33].

➢ **Storm water**
- Shall not in any way modify nor damage the banks or bed of streams, water bodies
- Dispose earth, stones, and rubbles and prevent obstruction of natural water pathway materials. Waste should not be placed in storm water channels, drainage lines
- Check periodically sites' drainage system to ensure that the water flow is unobstructed.
- Contractor to slow down flows where surface run-off is concentrated (e.g. along exposed roadways/tracks) by contouring with hay bales or bundled vegetation generated during site clearance operation.

➢ **Water quality**
- Ensure mixing/decanting of all chemicals and hazardous substances take place either on a tray or on an impermeable surface and dispose waste from these to pre-approved disposal sites.
- Ensure every effort chemicals or hazardous substances do not contaminate the soil, water body, or groundwater on site.
- Contractor to prohibit site staff in using any stream, other open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction or related activities Municipal water shall instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting etc.

➢ **Conservation of Natural Environment**

[32] Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions and fires.
[33] Estimated total volume of unused excavated material to be disposed is 36200 cubic meters and 18800 cubic metres of road crust.

- Check vegetation clearing and tree-felling have prior permission as the work front progresses
- Contractor to ensure only trees that have been marked beforehand are to be removed (avoiding tree felling by modification of design)
- Contractor to ensure, where possible, cleared indigenous vegetation is kept in a nursery for use at a later stage (such as site rehabilitation process).

➢ **Material Management**

- Ensure stockpiles do not obstruct natural water pathways
- Ensure stockpiles do not exceed 2m in height
- Cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps.
- Ensure stockpiles are kept clear of weeds and alien vegetation growth by regular weeding
- Ensure all concrete mixing take place on a designated, impermeable surface.
- Ensure hazardous substances/materials are transported in sealed containers or bags
- Ensure vehicles transporting concrete to the site are not washed on-site.

➢ **Waste Management**

- Place refuse in designated skips/bins, rubbles in demarcated areas, remove from the site, and transport to the pre-approved disposal sites
- Prohibit littering on-site and clear the site of litter at the end of each working day
- Encourage recycling by providing separate receptacle for different types of waste and make sure that staffs are aware of their uses.
- Clean toilets regularly; and avoid contamination of soils, water, pollution and nuisance to adjoining areas

➢ **Health & Safety**

- Implement good housekeeping practices at the construction camp.
- Strictly implement health and safety measures and audit on a regular basis.
- Secure enclosed construction site.
- Use reputable contractors.
- Provide warning signs of hazardous working areas.
- Clearly demarcate excavations and provide barriers (not just danger tape) to protect pedestrians from open trenches.
- Thoroughly train workers assigned to dangerous equipment.
- Workers have the right to refuse work in unsafe conditions.
- Undertake waste management practices.
- Control speed and movement of construction vehicles
- Exclude public from the site
- Ensure all workers are provided with and use Personal Protective Equipment.
- Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas
- Ensure that qualified first-aid can be provided at all times. Ensure equipped first-aid stations are easily accessible throughout the site;
- Provide medical insurance coverage for workers.
- Provide clean eating areas where workers are not exposed to hazardous or noxious substances;
- Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;
- Ensure moving equipment is outfitted with audible back-up alarms;
- Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate.

➢ **Social impact**

- Contractor to restrict activities and movement of staff to designated construction areas

- Ensure conduct of construction staff, when dealing with the public or other stakeholders, shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site
- Ensure disruption of access for local residents is minimized
- Provide walkways and metal sheets where required to maintain access across for people and vehicles.
- Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools.
- Contractor to inform affected persons in writing of disruptive activities at least 24 hours beforehand. This can take place by way of distribution of leaflets
- Consult businesses and institutions regarding operating hours and factoring this in work schedules
- Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints
- Ensure lighting on the construction site is to be pointed downwards and away from oncoming traffic and nearby houses.
- Ensure machinery and vehicles are in good working order to minimize noise nuisance.
- A complaints register (refer to the Grievance Redress Mechanism) shall be housed at the site office. This shall be in carbon copy format, with numbered pages. Any missing pages must be accounted for by the Contractor. This register is to be tabled during monthly site meetings.
- Contractor to assign staff for formal consultation with the interested and affected people in order to explain and answer questions on the construction process.

➢ **Cultural Environment**

- Contractor to note possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery, remains, fossils etc. If something of this nature be uncovered, contractor to stop work immediately and notify the DSC Environment Specialist which in turn inform the PMU and coordinate with ASI or State Department of Archaeology.

Annex 2

Environment and Safety Review Meeting and Training

Venue: DSC office KEIIP

Date: 16.02.2015

Sr. No.	Name	Organization	Contact No./ E mail	Signature
1	S. N. Deshmukh	DSC	9977639762	
2.	M. K. Gupta	DSC	7044282159	
3.	Mahadeb Maji.	DSC	9830959003	M Maji.
4.	S. Mukherjee	ITD - Cementindia JV	8420023995	
5.	S. Dalla	— do —	9007098020	
6	D. K. Rai	Tantia MPPL (WILO) JV.	9903900636	
7.	Javed Akhtar Hossain	Tantia MPPL (WILO) JV	9903900645	
8.	Arpharee Saha	ITD-ITDCem JV	+91-8584864132	
9.	Sudhir Kr. Kolay	KBL	9748152309	
10	N N Mahapatra.	KBL	9830504511	
11.	D. Sengupta -	CM/DSC.	98317-98533.	
12	A K Chatterjee	CM/DSC	9007535134	
13.	Utthas Deshmukh	CM/DSE	7044164882	
14.	Sangate Shaw	Simplex - Knit	9831366912	

Ardhendu Mitra
16/2/15

ENVIRONMENTAL SAFEGUARD – INDUCTION TRAINING PROGRAM FOR CONTRACTOR, CONSTRUCTION MANAGER & SUPERVISOR – KEIIP DSC

Safeguard review meeting and training has been conducted on safeguard issues and application of Environmental Management Plan (EMP) and its compliance at **DSC office of KEIIP on 30th June 2015**

Construction Managers and Supervisors of DSC, PM, Dy PM, Supervisor Engineers and Safety officers of contractors are participated in the training program

Environment Specialist of PMU attended the meeting

The issues discussed like,

- Preparation of site specific EMP
- Labour and Office Camp site management- requirement of proper sanitation and solid waste management
- Disposal / utilization of overburden earth , spoil materials after work
- Storage of construction materials
- Occupational and public safety during construction
- Traffic management during laying of pipes (as per requirement)
- Requirement of Pollution Under Control (PUC)/ No Objection Certificate (NOC) from concerned department and renewal of the same before expiry
- Requirement of baseline monitoring data- inclusion of air quality parameters like PM_{10}, $PM_{2.5}$, SO_2,, NO_2 and HC in monitoring program

EMP application requirement and methodology have also been discussed.

Instruction is given to supervisor engineer and environmental officer of construction contractor to arrange weekly consultation/ training program particularly on safety and other safeguard issues for labours.

Attendance sheet attached as **Annex 1**

		
Photo: Safeguard Meeting	**Photo: Safeguard Meeting**	**Photo: Safeguard Meeting**

Ardhendu Mitra

(Dr. Ardhendu Mitra)
Environmental Specialist DSC

Annex 1

Attended Sheet

KEIIP

Environment and Safety Review Meeting

Venue: DSC office KEIIP

Date: 30.06.2015

Sr. No.	Name	Organization	Contact No./ E mail	Signature
1	Dr. C Chakraborty	KEIIP, EMW	9830184360	
2	D.K. RAI	Tantia MPPL (WILCO) JV	9903900636 dk rai @ tantiagroup.com	
3	J. A. Hossain	Tantia - MPPL (WILCO) JV	9903900695	
4	N. N Mohapatra	Kirloskar Brothers Ltd.	9830520471	
5	Yashwant Singh	"	9800880125	
6	Hiranya Banerjee	ITD-Cementia (IV)	8100927289	
7	Arghasree Saha	ITD-ITDCem(JV)	tel-8584864132	Arghasree Saha.
8	D. Sengupta	Construction Mgr./DSC	98317-98523	
9	Sangata Shaw	Simplex - Krita JV	98313-66912	S Shaw

A Mitra
(Environment SPL)
DSC
30/6/15

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

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

नैशनल इन्श्योरेन्स कंपनी लिमिटेड

NATIONAL INSURANCE COMPANY LT

(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

ENDORSEMENT SCHEDULE

Policy No : 260600/41/14/8600000061 Dept : Workmen Compensation   Employees Compensation Insurance Policy

Endorsement No: 260600/41/14/86/82000033
Insured's Name: ITD ITD CEM JOINT VENTURE
Address : NATIONAL PLASTIC BUILDING, A-SUBHASH ROAD, PARANJAPE B-SCHEME, VILE PARLE (E), MUMBAI Dist.

Dev. Officer /Agent : 912530 / 91263000000081
Issuing Office Code : 260600 Special Client Code : 239
Address : Second Floor, Sterling Cinema Building, 65, Murzaban Street, Fort, Mumbai, Greater Mumbai, Maharashtra, Pin : 400004
Telephone : 022 22019856 (D) 22019971 (G)

Policy Issue Date : 15/12/2014
Endorsement Effected From : 06/01/2015
Policy Expiring On : 14/12/2015
Co-Insurance : NIC 260600 : 100%

Insured's Request/Reference Date : 06/01/2015   Number: 1

ENDORSEMENT CAUSE:
CHANGE OF INSURED NAME w.e.f. 06.01.2015

ENDORSEMENT WORDING:

IT IS HEREBY DECLARED AND AGREED THAT AS PER EMAIL DTD. 06.01.2015 RECEIVED FROM BROKER M/S. HOWDEN INSURANCE BROKERS INDIA PVT. LTD., THE NAME OF THE INSURED SHOULD READ AS

"M/S. ITD-CEMINDIA JOINT VENTURE" W.E.F.06.01.2015

AND NOT AS MENTIONED ON THE POLICY.

ALL OTHER TERMS, CONDITIONS AND EXCLUSIONS REMAIN UNALTERED.

For and on behalf of
National Insurance Company Limite

Authorised Signatory

Registered & Head Office : 3, Middleton Street, Kolkata 700 071 • Visit us at : www.nationalinsuranceindia

CIN No: U10200WB1906GOI001713, IRDA Regn. No: 58

...erms and conditions attached. You are requested to check the document and if any discrepancy is observed, please contact policy issuing office immediately. ...cy/Endorsement is valid subject to realisation of cheque. In case of dishonour of cheque the Policy/Endorsement will automatically stand cancelled and void ab... the Company will not be on risk under this Policy/Endorsement. All correspondence are to be made only with the Policy issuing Office quoting the Policy No.

All other terms and conditions remain unaltered   Page 1 of

शनल इन्श्योरेन्स कंपनी लिमिटेड
(भारत सरकार का उपक्रम)
मंडल कार्यालय – 14, स्टर्लिंग सिनेमा बिल्डींग, 2री मंजिल
65, मर्झबान रोड, मुंबई – 400 001
फोन : 2201 9971 / 2201 9630 • फैक्स : 2201 9973

नेशनल इन्श्योरेन्स
National Insurance

NATIONAL INSURANCE COMPAN
(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

POLICY SCHEDULE

Dept :Workmen Compensation

Employees Compensation Insurance Policy

Policy Number :260600/41/14/8600000061

Agent Code:91263000000031 Agent Name: Howden Insurance Brokers India Pvt. Ltd. Agent Contact No: 9920970055

Insured's Name: ITD ITD CEM JOINT VENTURE
Address : NATIONAL PLASTIC BUILDING, A-SUBHASH ROAD, PARANJAPE B-SCHEME, VILE PARLE (E), MUMBAI
Dist. : GREATER MUMBAI, Maharashtra
Pin Code: 400057

Issuing Office Code : 260600
Address : Second Floor, Sterling Cinema Building, 65, Murzaban Street, Fort, Mumbai, Greater Mumbai,
Telephone : 022 22019050 (O) 22019971 (G)
Special Client Code : 239
Paid Up Capital Upto Rs. 15 Crores

Development Officer : 912630
Date Of Proposal & Declaration:15/12/2014 Client Type:Corporate
Policy Period 00:00 Hrs On 15/12/2014 To Midnight of 14/12/2015
Net Premium :118658 RUPEES ONE LAKH EIGHTEEN THOUSAND SIX HUNDRED FIFTY EIGHT ONLY/2014 260600/82/14/000003626
NIC 260600 : 100%

Srl.No	Description	Sum Insured (Rs)
1	170 INDIAN WORKERS ENGAGED IN PILING, CIVIL WORKS NOT ON ELEVATED STRUCTURE	97,02,000.00
2	125 INDIAN WORKERS EARNING ENGAGED IN CLERICAL STAFF INCLUDING TECHNICLA ASST., PEONS, SECURITY GUARD, COOKS ETC. EMPLOYED FOR INDOOR AS WELL AS OUT DOOR WORK	34,80,000.00
3	14 THAI WORKERS ENGAGED IN PILING, CIVIL WORKS NOT ON ELEVATED STRUCTURE	26,30,000.00
4	10 THAI WORKERS ENGAGED IN CLERICAL STAFF INCLUDING TECHNICLA ASST., PEONS, SECIRITY GUARD, COOKS ETC. EMPLOYED FOR INDOOR AS WELL AS OUT DOOR WORK	15,50,000.00

Total Sum Insured (Rs.) : Rs.1,73,62,000.00
Total Sum Insured (in words) : RUPEES ONE CRORE SEVENTY THREE LAKH SIXTY TWO THOUSAND ONLY

Risks Covered : 95 INDIAN & 7 THAI WORKERS ENGAGED -REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDEN REACH PROJECTS, EMPLOYER : KOLKATA MUNICIPAL CORPORATION, KOKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAMME CONTRACT NO: KEEIP/ICB/TR-1/WS01/2013-14
Location : KOLKATA, INDIA
Special Peril : AS PER STANDARD WC POLICY WITH COVERING WC ACT 1923 WITH ALL SUBSEQUENT AMENMENTS, 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 LACS PER EMPLOYEE, MEDICAL EXPENSE LIMIT RS. 1 LAKH PER ACCIDENT PER EMPLOYEE AGGREGATE LIABILITY FOR ALL ACCIDENT DURING THE PERIOD OF INSURANCE Rs.10,00,000/-
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

In witness whereof this policy has been signed at 2ND FLOOR, STERLING CINEM on this 18th day of December , 2014.

For and on behalf of
National Insurance Company Limited

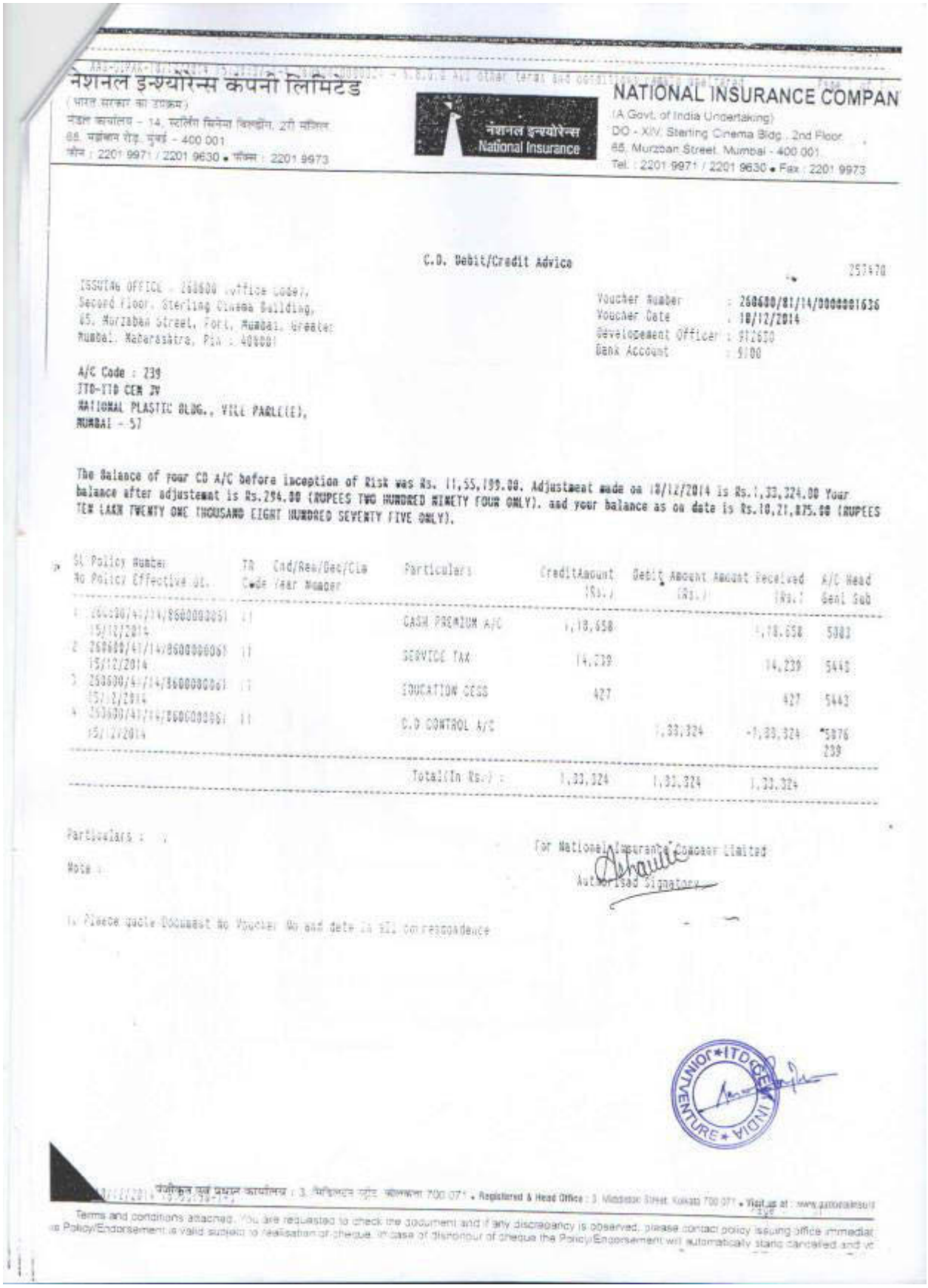
ITD-CEM JOINT VENTURE

Authorised Signatory

PAN No. : [illegible] ISDA Regn. No. 58

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

Terms and conditions attached. You are requested to check the document and if any discrepancy is observed, please contact policy issuing office immedia... Policy/Endorsement is valid subject to realisation of cheque - in case of dishonour of cheque the Policy/Endorsement will automatically stand cancelled and ...



नेशनल इन्श्योरेन्स कंपनी लिमिटेड
(भारत सरकार का उपक्रम)
मंडल कार्यालय - 14, स्टर्लिंग सिनेमा बिल्डींग, 2री मंजिल,
65, मर्झबान रोड, मुंबई - 400 001
फोन : 2201 9971 / 2201 9630 • फैक्स : 2201 9973

नेशनल इन्श्योरेन्स
National Insurance

NATIONAL INSURANCE COMPAN
(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.O. Debit/Credit Advice

257470

ISSUING OFFICE : 260600 (Office Code),
Second Floor, Sterling Cinema Building,
65, Murzaban Street, Fort, Mumbai, Greater
Mumbai, Maharashtra, Pin : 400001

Voucher Number : 260600/81/14/00000001636
Voucher Date : 18/12/2014
Developement Officer : 912600
Bank Account : 9100

A/C Code : 239
ITD-ITD CEM JV
NATIONAL PLASTIC BLDG., VILE PARLE(E),
MUMBAI - 57

The Balance of your CD A/C before inception of Risk was Rs. 11,55,199.00. Adjustment made on 18/12/2014 is Rs.1,33,324.00 Your balance after adjustment is Rs.294.00 (RUPEES TWO HUNDRED NINETY FOUR ONLY). and your balance as on date is Rs.10,21,875.00 (RUPEES TEN LAKH TWENTY ONE THOUSAND EIGHT HUNDRED SEVENTY FIVE ONLY).

Sl No	Policy Number Policy Effective dt.	TR Cnd/Rea/Dec/Cla Code Year Number	Particulars	CreditAmount (Rs.)	Debit Amount (Rs.)	Amount Received (Rs.)	A/C Head Genl Sub
1	260600/41/14/8600003051 15/12/2014	11	CASH PREMIUM A/C	1,18,658		1,18,658	5083
2	260600/41/14/8600000061 15/12/2014	11	SERVICE TAX	14,239		14,239	5443
3	260600/41/14/8600000061 15/12/2014	11	EDUCATION CESS	427		427	5442
4	260600/41/14/8600000061 15/12/2014	11	C.O CONTROL A/C		1,33,324	-1,33,324	*5876 239
			Total(In Rs.) :	1,33,324	1,33,324	1,33,324	

Particulars : ,

Note :

1. Please quote Document No Voucher No and date in all correspondence

For National Insurance Company Limited
Authorised Signatory

JUNIOR ITD CEM VENTURE INDIA

Terms and conditions attached. You are requested to check the document and if any discrepancy is observed, please contact policy issuing office immediat
e Policy/Endorsement is valid subject to realisation of cheque. In case of dishonour of cheque the Policy/Endorsement will automatically stand cancelled and vo

Page 1 Of 1 BPW-15/12/2014 14:10:26-1-1

नेशनल इन्श्योरेन्स कम्पनी लिमिटेड

NATIONAL INSURANCE COMPANY LTD.
(A Govt. of India undertaking)
(Regd. Office : 3, Middleton Street, Post Box No. 9229, Kolkata - 700071)

नेशनल इन्श्योरेन्स National Insurance

Issuing Office Code, Name & Address

257376

260600; Mumbai Division XIV; Second Floor, Sterling Cinema Building, 65, Murzban Street, Fort, Mumbai, Greater Mumbai, Maharashtra, Pin - 400001; Phone - 022 22019850 (D) 22019971 (G)

Collection Receipt

Document Ref. No.
Document Ref. Date
Scroll No. 260600/81/14/0000001622
Scroll Date 15/12/2014

Sl No.	Deposit / Policy / Cheque No.	Drawee Bank / Branch	Cheque No. and Date	Account Description / Class of Business/Narration	Main Acct / Sub Acct	Amount in Rs.	Ps.
				1002 / 15/12/2014			
1	912630	Axis Bank Ltd MUMBAI	24247 12/12/2014	C.D CONTROL A/C M/S. ITD CEMENTATION INDIA LTD.	5076 / 240	1,33,324	00

Received with thanks from

Rupees

Name of the Payee (for payments only)

M/S. ITD CEMENTATION INDIA LTD.

RUPEES ONE LAKH THIRTY THREE THOUSAND THREE HUNDRED TWENTY FOUR ONLY

Total : 1,33,324.00

Revenue Stamp

Signature of Recepient

Particulars :

Prepared by | Checked by | Authorised Signatory of the Company

Receipt is valid subject to realisation of cheque when payment made by Cheque. Our Document Number and Date, Policy Year and Number should be quoted in all correspondence with us only to the policy issuing Office address mentioned above. Revenue Stamp is to be affixed when the amount exceed Rs. 5000/-

ITD-CEM JOINT VENTURE * INDIA

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

NATIONAL INSURANCE COMPANY LTD.

[illegible]

Employees Compensation Insurance Policy

Policy Number : [illegible]

Agent Code: [illegible] Agent Name: [illegible] Agent Contact No: [illegible]

Insured's Name: [illegible]

Address: [illegible]

Issuing Office Code: [illegible]

Address: [illegible]

Policy Period: [illegible]

Srl.No	Description	Sum Insured (Rs)
1	[illegible]	[illegible]
2	[illegible]	[illegible]
3	[illegible]	[illegible]

[illegible]

For and On Behalf of National Insurance Company Limited

Authorised Signatory

NATIONAL INSURANCE COMPANY LTD.

(A Govt. of India Undertaking)

Employees Compensation Insurance Policy

Policy Number : [illegible]

Premium Computation :

Net Premium = [illegible] Service Tax : [illegible] Stamp Duty : [illegible] Total : [illegible]

Chargeable (%)

Visit us at www.nationalinsuranceindia.com for information on Products, Services and Grievance Redressal.

In witness whereof this policy has been signed at [illegible], STERLING CINEMA on this 29th day of June , 2015.

For And On Behalf Of
National Insurance Company Limited

Authorised Signatory

CIN No: [illegible], IRDA Regn. No: 58

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

This Policy/Endorsement is valid subject to realisation of cheque. In case of dishonour of cheque this Policy/Endorsement will automatically stand cancelled and void ab initio and the Company will not be on risk under this Policy/Endorsement. All correspondence are to be made only with the Policy Issuing Office quoting the Policy No.

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

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
Visit us at : www.orientalinsurance.org.in
Address all communication to Policy Issuing Office

Date: 24/09/2014

To,

Tantia - MPPL (WILO) JV

Reg.: Acknowledgement letter and held cover certificate for Workmen's Compensation Policy

Dear Sir,

We thankfuly acknowledge the receipt of your payment of **Rs.45,905/- [Rupees Forty Five Thousand Nine Hundred and Five Only]** paid vide Cheque No 000473 dated 23.09.2014, issued on Andhra Bank in our favour towards issuance of Workmen's Compensation Policy for the Tantia – MPPL(WILO) JV as per the details mentioned here under:-

Client Name:	Tantia - MPPL (WILO) JV
Mailing Address	DD 30, Sector-I, Salt Lake City, Kolkata- 700064
Policy Period:	01.11.2014 to 31.10.2015
Policy Type:	Workmen's Compensation Policy
Business of the Insured's:	Construction
Nature of Work:	Construction of pumping stations in Begore Khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Harbour Road Catchment.
Worker's details:	i) Unskilled Workers- 100 ii) Skilled Workers- 25
Policy Sum Insured:	Rs. 10,448,802/-
Hypothecation details:	i) Oriental bank of Commerce ii) SBI. iii) State Bank of Travancore. iv) Axis Bank. v) IDBI. vi)Standard Chartered Bank. vii) Indian Overseas Bank. viii) Andhra Bank. ix) Allahabad Bank.
Clauses to be attached:	i) As per standard Workmen's Compensation Policy. ii) Contractors & Sub Contractors Workers are covered. iii) Agreed bank clause

इश्योरेंस 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
Visit us at : www.orientalinsurance.org.in
Address all communication to Policy Issuing Office

Name of the Broker: Salasar Service (Insurance Broker's) Pvt. Ltd.

Hence, We acknowledge the receipt of the same and confirm that risk under the policy is covered for the period from 01.11.2014 to 31.10.2015

Original policy will be issued at the earliest.

Thanking you,

Yours faithfully,

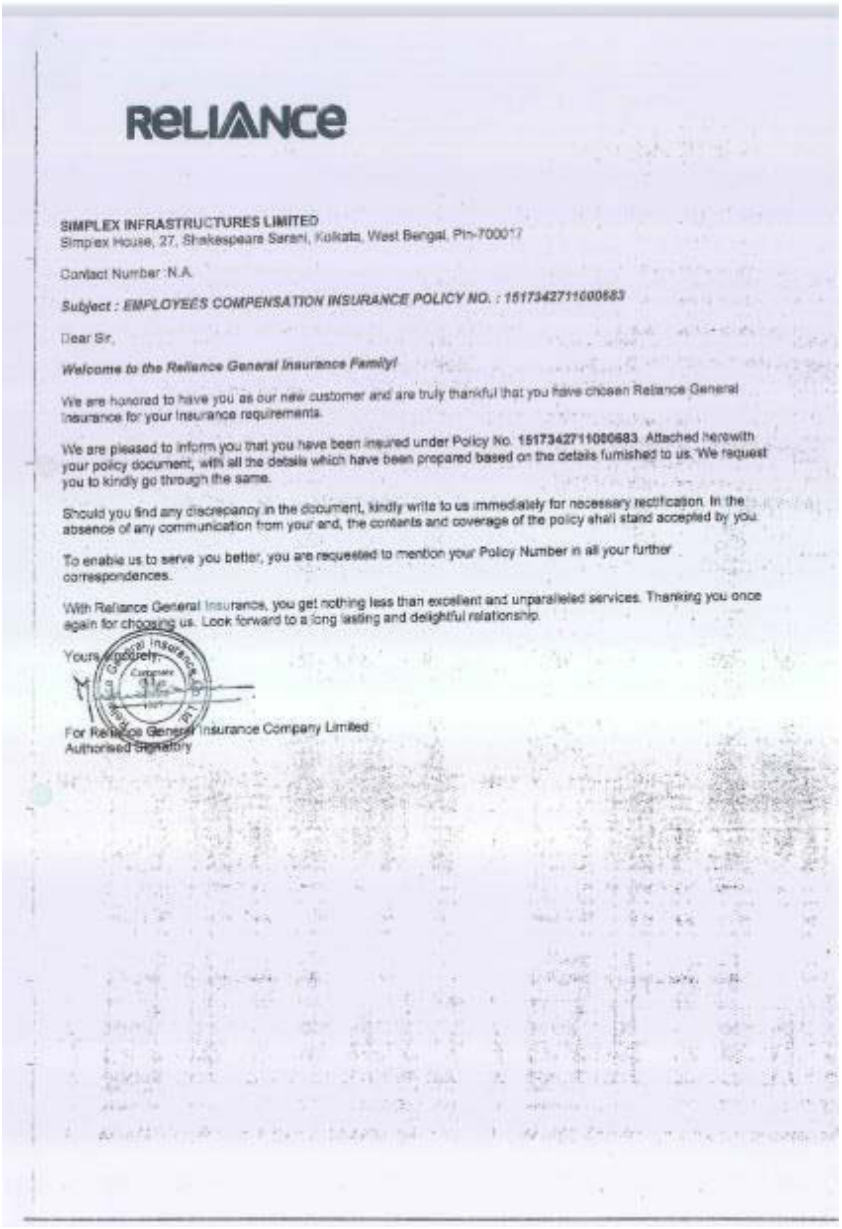
For The Oriental Insurance Co. Ltd.

Authorized Signatory

CC: Salasar Services (Insurance Brokers) Pvt. Ltd.
23 A, Netaji Subhas Road, Fortuna Tower, [illegible] Floor, Room No. - 14,
Kolkata 700 001

2

Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant



RELIANCE

SIMPLEX INFRASTRUCTURES LIMITED
Simplex House, 27, Shakespeare Sarani, Kolkata, West Bengal, Pin-700017

Contact Number :N.A.

Subject : EMPLOYEES COMPENSATION INSURANCE POLICY NO. : 151734271100683

Dear Sir,

Welcome to the Reliance General Insurance Family!

We are honored to have you as our new customer and are truly thankful that you have chosen Reliance General Insurance for your insurance requirements.

We are pleased to inform you that you have been insured under Policy No. **151734271100683**. Attached herewith your policy document, with all the details which have been prepared based on the details furnished to us. We request you to kindly go through the same.

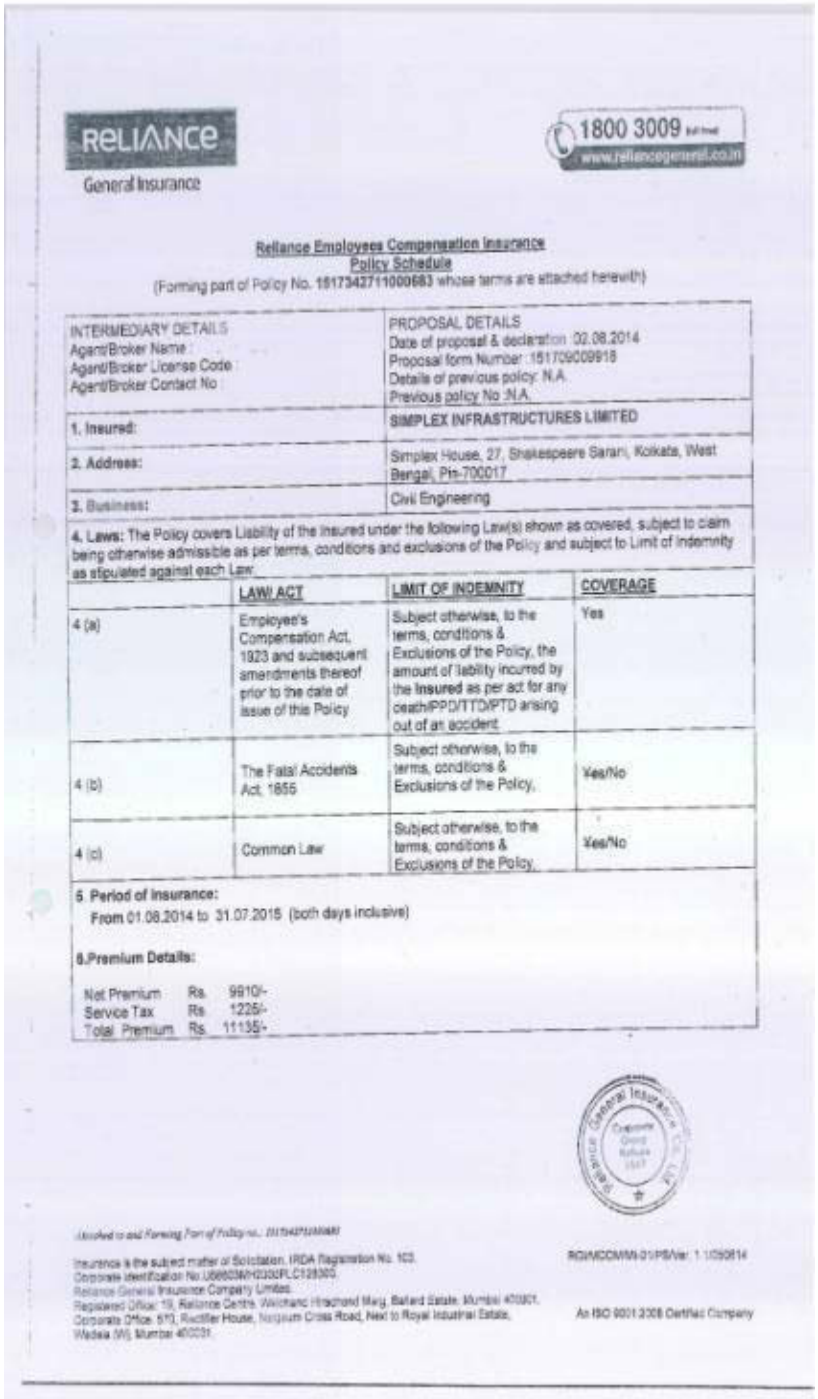
Should you find any discrepancy in the document, kindly write to us immediately for necessary rectification. In the absence of any communication from your end, the contents and coverage of the policy shall stand accepted by you.

To enable us to serve you better, you are requested to mention your Policy Number in all your further correspondences.

With Reliance General Insurance, you get nothing less than excellent and unparalleled services. Thanking you once again for choosing us. Look forward to a long lasting and delightful relationship.

Yours sincerely,

For Reliance General Insurance Company Limited
Authorised Signatory



RELIANCE
General Insurance

1800 3009
www.reliancegeneral.co.in

Reliance Employees Compensation Insurance
Policy Schedule
(Forming part of Policy No. 161734271100068 3 whose terms are attached herewith)

INTERMEDIARY DETAILS Agent/Broker Name : Agent/Broker License Code : Agent/Broker Contact No :	PROPOSAL DETAILS Date of proposal & declaration: 02.08.2014 Proposal form Number : 161709009918 Details of previous policy: N.A. Previous policy No :N.A.
1. Insured:	SIMPLEX INFRASTRUCTURES LIMITED
2. Address:	Simplex House, 27, Shakespeare Sarani, Kolkata, West Bengal, Pin-700017
3. Business:	Civil Engineering

4. Laws: The Policy covers Liability of the Insured under the following Law(s) shown as covered, subject to claim being otherwise admissible as per terms, conditions and exclusions of the Policy and subject to Limit of Indemnity as stipulated against each Law:

	LAW/ ACT	LIMIT OF INDEMNITY	COVERAGE
4 (a)	Employee's Compensation Act, 1923 and subsequent amendments thereof prior to the date of issue of this Policy	Subject otherwise, to the terms, conditions & Exclusions of the Policy, the amount of liability incurred by the Insured as per act for any death/PPD/TTD/PTD arising out of an accident	Yes
4 (b)	The Fatal Accidents Act, 1855	Subject otherwise, to the terms, conditions & Exclusions of the Policy,	Yes/No
4 (c)	Common Law	Subject otherwise, to the terms, conditions & Exclusions of the Policy,	Yes/No

5. Period of Insurance:
From 01.08.2014 to 31.07.2015 (both days inclusive)

6.Premium Details:

Net Premium	Rs.	9910/-
Service Tax	Rs.	1225/-
Total Premium	Rs.	11135/-

Insurance is the subject matter of Solicitation. IRDA Registration No. 103.
Corporate Identification No.U66603MH2000PLC128300.
Reliance General Insurance Company Limited.
Registered Office: 19, Reliance Centre, Walchand Hirachand Marg, Ballard Estate, Mumbai 400001.
Corporate Office: 6th, Rectifier House, Nesbitt Cross Road, Next to Royal Industrial Estate, Wadala (W), Mumbai 400031.

RGI/MCOMW-01/PB/Ver. 1.1/050814

An ISO 9001:2008 Certified Company

RELIANCE
General Insurance

1800 3009
www.reliancegeneral.co.in

7. Details of Employees Covered:

Description of work done by Employees	Declared Number of Employees	Declared Wages during the Period of Insurance	Place/Places of Employment	Classification No.
Micro tunneling works on Sewerage Pressure Main from Santoshpur Pumping Station to Garden reach Sewage Treatment Plant at Kolkata-Kolkata Environmental improvement Program	Workers-25	1801800	Santoshpur Pumping Station to Garden reach Sewage Treatment Plant at Kolkata	48
TOTAL	25	1801800		

8. Subject to following clauses
Conditions:

- Attendance register should be maintained in the places of employment mentioned.
- Does not cover compressed air diseases listed in part "A" of the Schedule III to W.C.Amendment Act,1984
- Does not cover occupational diseases listed in part "C" of the Schedule III to W.C.Amendment Act,1984
- Financial guarantee & Insolvencies , ex gratia claims settlement excluded.
- Liability will be out of arising due to an accident at project site / places of employment only.
- No tunnelling and blasting works involved
- The change in places of employment if any during the policy period should be referred to the insurer compulsorily or else cover will be void.
- The total number of employees mentioned and the numbers of employees against the designation mentioned should not exceed at any moment and if it is exceeding the same should be informed to the insurer and premium should be paid accordingly.
- The wilful disobedience by the workmen of orders and rules expressly given to secure the safety of the workmen is excluded
- the workman having been under the influence of liquor or drugs is excluded.
- Loss or damages due to war, Civil war, Nuclear energy and radio active effects are excluded.
- Coverage as per WC Act only.
- "Condition of Average" is waived subject to adjustment of wages within 1 month from the date of expiry of policy.
- Workers of Subcontractors are covered. (Endorsement No.179 applicable as per WC Tariff)
- Warranted that workers are not engaged in chimneys/to work.
- Medical Extension is not covered.
- Wages per month per person: Rs 6,000/-

Exclusion:

- Losses suffered in the course of manufacturing and / or supplying and / or producing, storing, filling, [illegible] down, transporting: -
  a. Fireworks, ammunitions, fuses, cartridges, powder, nitro-glycerine, or any explosives. b. Gases and or air under pressure in containers.
  c. Butane, methane, propane, and other liquefied gases. d. Celluloid and pyroxylin

Attached to and Forming Part of Policy no.: [illegible]

Insurance is the subject matter of Solicitation. IRDA Registration No. 103.
Corporate Identification No.U66603MH2000PLC128300.
Reliance General Insurance Company Limited.
Registered Office: 19, Reliance Centre, Walchand Hirachand Marg, Ballard Estate, Mumbai 400001.
Corporate Office: 570, Rectifier House, Naigaum Cross Road, Next to Royal Industrial Estate, Wadala (W), Mumbai 400031.

RGI/WCOMM/5-01/PS/Ver. 1.1/050814

An ISO 9001:2008 Certified Company

RELIANCE

General Insurance

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e. Petrochemicals and also chemicals of a "toxic" (as defined under India's Public Liability act 1991), noxious, explosive and or highly flammable nature.
f. Asbestos and or asbestos products other than
(The storage, Transport and / handling of any of the substances above mentioned other than f) which is merely incidental to the operations and/or trade of the insured not otherwise excluded, is hereby covered)

- Losses suffered in the course of the construction, maintenance and demolition of towers, steeples, bridges, flyovers and other walkways and road bridges not longer than 300 meters and road bridges with unsupported span longer than 100 meters.
- Excavation and tunneling work in connection with mining, quarrying and for tunneling work exceeding 200 meters.
- Contractors predominantly engaged in the wrecking or demolition of buildings and/or collection or removal of scrap metal.
- Losses suffered in the course of shipbuilding, ship repairing and ship breaking other than pleasure crafts, stevedoring and or harbor / long shore work and Sub-aqueous work.
- Aircraft crews in respect of flight risk.
- Fire brigades other than those formed privately for loss prevention purposes.
- Service in any kind of armed forces (including, but not limited to military, police, security services).
- Operation of railways, other than sidings.
- Oil and Gas Companies - drilling ,producing, refining and distribution (other than retail distributors whose main occupation is not otherwise excluded)
- Underground and/or underwater mines and underground services
- Subaqueous work
- Quarries where explosives are used.
- Loss suffer in connection of offshore rigs
- Ship Crew other than on inland vessels or on vessels operating within territorial waters. However, this exclusion shall not apply to vessel crewed by six persons or less.
- Professional Sports Team.
- Employees employed on a permanent basis in USA/ Canada.

In witness whereof the policy has been signed at Kolkata on 04.08.2014

Consolidated Stamp Duty paid vide GRAS GRN No. MH000819484201415E dated 23-May-2014**
**Not Applicable for the State of Jammu & Kashmir.

Warranted that in case of dishonor of premium cheque(s) the company shall not be liable under the policy and the contract shall be void ab-initio'

For: Reliance General Insurance Co Ltd.

Authorised Signatory

Attached to and Forming Part of Policy no.: [illegible]

Insurance is the subject matter of Solicitation. IRDA Registration No. 103.
Corporate Identification No.U66603MH2000PLC128300
Reliance General Insurance Company Limited.
Registered Office: 19, Reliance Centre, Walchand Hirachand Marg, Ballard Estate, Mumbai 400001.
Corporate Office: 570, Rectifier House, Naigaum Cross Road, Next to Royal Industrial Estate, Wadala (W), Mumbai 400031.

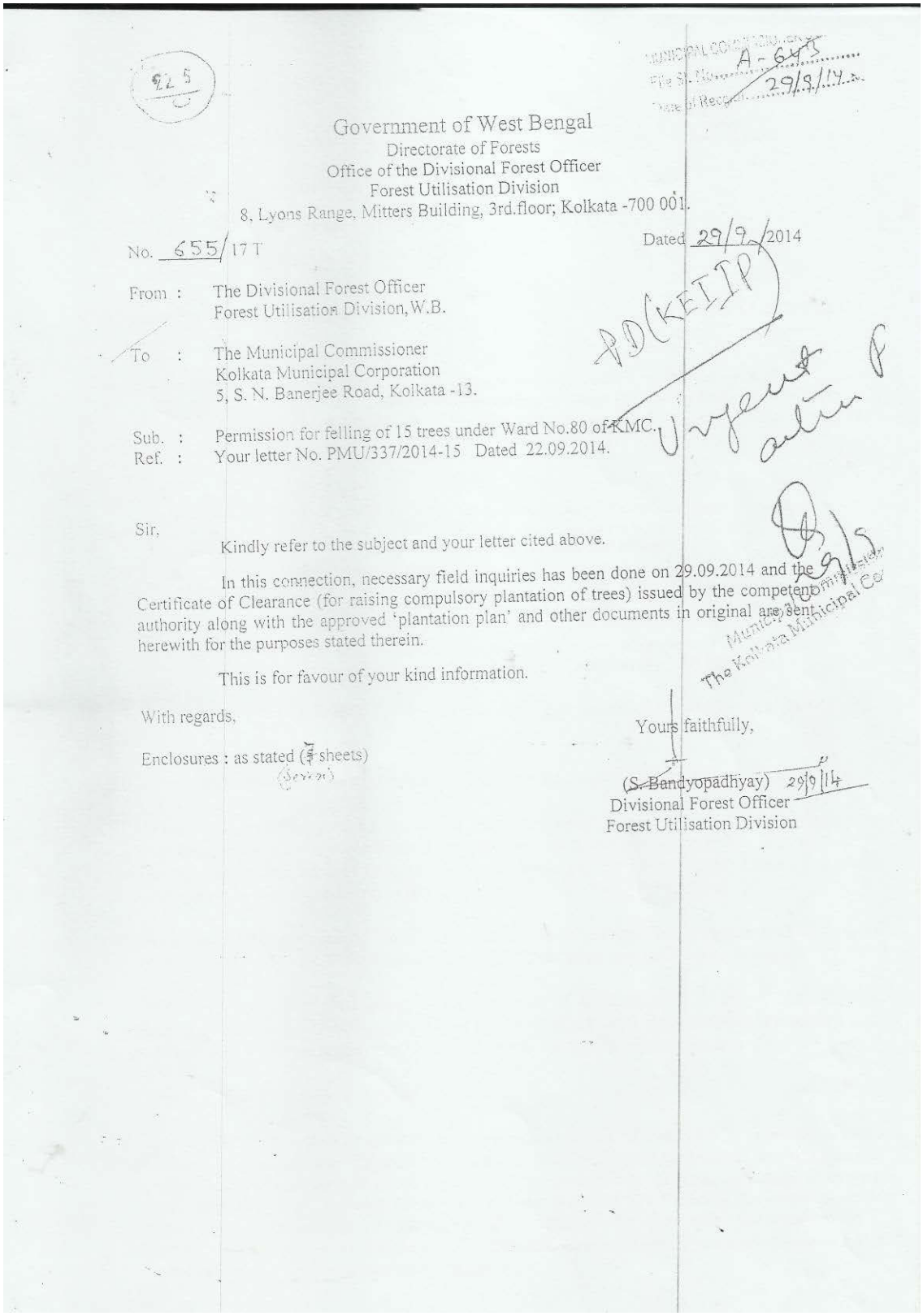
RGI/MCOM/MS-01/PS/Ver. 1.1/060614

An ISO 9001:2008 Certified Company

APPENDIX 10: 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	Staff: 12 Worker: 13 Total- 25	Nil	25
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 ITD- ITD CEM Jv	Staff: 41 Workers: 407 Total- 448	1	390
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: 80 Workers: 120 Total- 200	1	122
Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **(KEIIP/NCB/ Tr-1/SD-06/13-14)**	M/s Siimplex Krita JV	25	Nil	10

APPENDIX 11: Tree felling noc for pacakage – KEIIP/ICB/ Tr-1/SD-05/13-14



Government of West Bengal
Directorate of Forests
Office of the Divisional Forest Officer
Forest Utilisation Division
8, Lyons Range, Mitters Building, 3rd.floor; Kolkata -700 001.

No. 655/17 T Dated 29/9/2014

From : The Divisional Forest Officer
Forest Utilisation Division, W.B.

To : The Municipal Commissioner
Kolkata Municipal Corporation
5, S. N. Banerjee Road, Kolkata -13.

Sub. : Permission for felling of 15 trees under Ward No.80 of KMC.
Ref. : Your letter No. PMU/337/2014-15 Dated 22.09.2014.

Sir,

Kindly refer to the subject and your letter cited above.

In this connection, necessary field inquiries has been done on 29.09.2014 and the Certificate of Clearance (for raising compulsory plantation of trees) issued by the competent authority along with the approved 'plantation plan' and other documents in original are sent herewith for the purposes stated therein.

This is for favour of your kind information.

With regards,

Enclosures : as stated (5 sheets)

Yours faithfully,

(S. Bandyopadhyay) 29/9/14
Divisional Forest Officer
Forest Utilisation Division

Form IV

Form for Certificate of Clearance for Developers
[see Rule 7 (5)]

Certificate No. 62/Clearance/14. Dated : 29/09/2014

Whereas the developer, ~~Sri/Smt~~ /Messrs : Md. Ghulam Ali Ansari, IAS, Project Director, Kolkata Environment Improvement Investment Programme (KEIIP)

Address : Unnayan Bhavan, 206, A.J.C. Bose Road, Kolkata -700 017, has submitted an application with the prescribed fee on ... 29.09.2014 ... for Certificate of Clearance for the following developmental project :

(a) Nature of Project : Construction for laying of Water trunk main from Taratala Valve Station toGarden Reach water works, KMC. along Taratala Road (by Microtunneling)

(b) Location : Left / Right flank of Taratala Road in between Taratala Valve Station and Jinjirabazar crossing, Kolkata.

(c) Details of Plot(s) of Land : Location mentioned in item (b) above in Ward No. 80 of Kolkata Municipal Corporation, P.S. -Beniapukur.

(d) Total Area (in Ha.) : not available/not ascertainable at present (laying of water trunk)

AND Whereas the aforesaid developer has also submitted a plantation plan in the prescribed format;

AND Whereas the undersigned has approved the said plantation plan after satisfying himself on proper scrutiny of the plan and completing the field inquiry that the proposed plantation of trees as shown in the plantation plan is in accordance the provisions of the West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006 and the rules made there under;

AND Whereas the concurrence of the West Bengal Pollution Control Board has been obtained vide their letter No. ...EN/2372/T-I-3/001/2006/1(2) dated 07. 12. 2007 being their general concurrence.

Now, therefore, the undersigned issues this Certificate of Clearance in favour of the aforesaid Developer in accordance with sub-section (4) of section 9 of the West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006, subject to the following conditions :-

1. This Certificate is non-transferable.

2. The developer shall take up plantation of 75 (seventy five) nos. of trees over ... area/location shown in approved plantation plan ... ha. (subject to a minimum of 5 times the trees, if any, to be felled) in the same and adjacent plot (s) of the land being developed at (a) along both flanks of Taratala Road, Kolkata and (b) Inside Garden Reach Water Works of KMC – beside Santoshpur Road of Nature Park, in accordance with the approved plantation plan and complete the same within ... 1 (one) ... month from issuance of Certificate of Clearance, ~~from the date of sanction of the building / construction plan by the sanctioning authority~~.

APPENDIX 12: TRAFFIC MANAGEMENT PLAN

ITD-ITD Cem Joint Venture
SAFETY & HEALTH OPERATION CONTROL PROCEDURES
Traffic Management Plan (TMP) - Revised

- Location : Traffic Diversion: From western Franken of Diamond harbour Road approximate 700 Meters from Thakurpukur bus stand to Diamond Park (towards Joka). Shaft no 16 to Shaft no 18 – micro tunnelling zone.

▪ 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-ITDCEM 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	<u>General</u>
	☞ 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.

Traffic diversion schedule

Sl No.	Sfaft No		Traffic diversion		Diversion Removed
	From	To	From	To	Date
1	Shaft No1	Shaft No3	Shakher Bazar	Sheelpara	12.11.2015
2	Shaft No17	Shaft No18	3A bus stand	Diamond Park	11.05.2015
3	Shaft No13	Shaft No16	3A bus stand	Thakurpukur Bazar	22.06.2015

Traffic Management Plan

JUNE 2015

PROJECT: CONSTRUCTION OF PUMPING STATION IN BEGORE KHAL 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 20th JUNE 2015)

Traffic Diversion: Kali Charan Dutta Road, Rakhal Mukherjee Road, Amritalal Mukherjee Road & Kadamtala Govt. Housing Road for Pipe Laying

▪ 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	<u>General</u>
	• 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	<u>Planning stage</u>
	• 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 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	<u>On site</u>
	• 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 :

	○ traffic signs; ○ cones; ○ barriers; ○ road hazard warning lights; ○ information boards; and ○ site lighting • Adequate lighting has been provided.

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 2015-16

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: 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)

ITD-ITD Cem Joint Venture

Environment, Health and Safety Management Plan

KEIIP Micro tunneling Project, Kolkata

HSE budgets for the year of 2015-16

Sl. No.	Contents	Requirement and Cost			Remarks
		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

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.(2015-16)

The details are given below.

Sl. No.	Description	Amount (Yearly)
1.	Safety Officers	Rs. 4,20,000/-
2.	Safety Assistant	Rs. 2,40,000/-
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. 2,50,000/-
7	Air quality and Noise level monitoring	Rs. 1,50,000/-
	Total =	**Rs. 11,40,000/-**

Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant (KEIIP/NCB/ Tr-1/SD-06/13-14)

SIMPLEX-KRITA JV

BUDGET OF IMPLEMENTATION MITIGATION AND MONITORING PROGRAMME (ANNUAL BUDGET)

1.	**COST OF SAFTEY OFFICER (ANNUAL CTC) -**	**7.00 LAKH**
2.	**MONITORING CHARGES (NOISE,AIR,HYDROCARBON,WATER,POLLUTION)-**	**2.00 LAKH**
3.	**SAFTEY AND PPP EQUIPMENTS FOR SITE AND OFFICE-**	**8.00 LAKH**

(Helmet, Gumboot, Saftey Jacket,Mask,Saftey Belt,Saftey Board,

Volunteer, Oxygen, Hand Gloves, Sunglass, Saftey Divider/Barrier,

First Aid Box With Medicine,Red Danger Tape,Saftey Signs,Saftey Net,Saftey Lights,Saftey Mirror,Barricadding Board,Extinguisher,Rubbish Bin,Fire

Alarm, Fire Hose Roll, Bio Toilet, Insects Killer Liquids, Circular Cutter With Noise Barrier For Tmt Cutting, Silent Dg Set.)

TOTAL-	**17.00 LAKH**

APPENDIX 14: PUBLIC CONSULTATION ON ENVIRONMENTAL ISSUES DURING CONSTRUCTION/ IMPLEMENTATION

PLACE OF CONSULTATION	
DATE OF CONSULTATION	
PROJECT NAME	
PACKAGE NO.	
NAME OF THE FIELD SUPERVISORS	
NAME OF THE PERSONS	
ADDRESS	

S.No.	POINTS DISCUSSED	REMARKS
01.		
02.		
03.		
04.		
05		
06.		
07		
08		
09		
10		

Consultation Summary

Participants

APPENDIX 15: 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

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