Semi-Annual Environmental Monitoring Report

Project number: 42266-023

Period: January – June 2016

IND: Kolkata Environmental Improvement Investment Program – Tranche 1

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Semi-Annual Environmental Monitoring Report

ADB Loan Number 3053-IND
Period Covered: January to June 2016

August 2016

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

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

KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROGRAM (KEIIP) – PROJECT 1

PROJECT MANAGEMENT UNIT

4th

SEMI ANNUAL ENVIRONMENT MONITORING REPORT

TRANCHE 1

ADB Loan 3053-IND

(Period January to June 2016)

AUGUST 2016

KOLKATA MUNICIPAL CORPORATION

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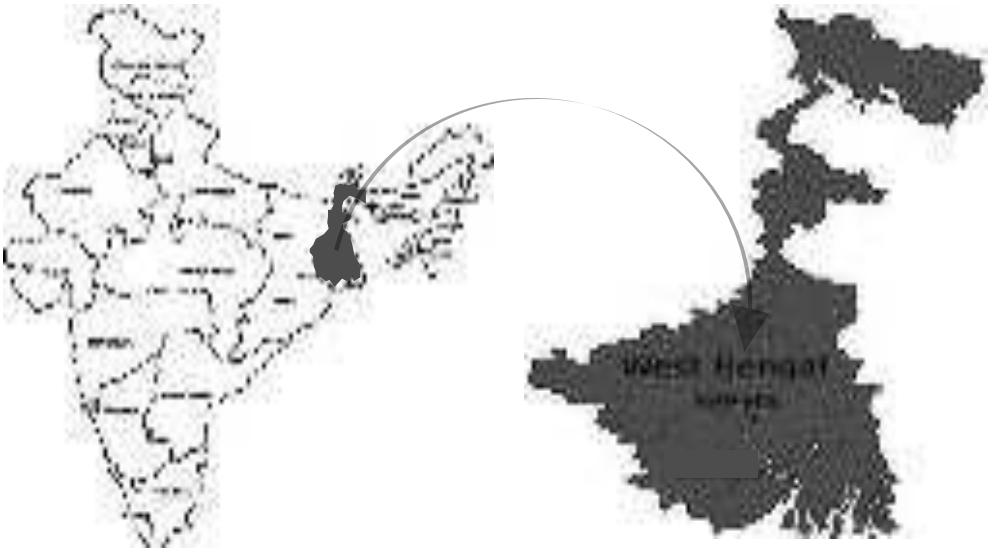
ABBREVATIONS

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

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



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 2016** and describes the implementation of the environmental management plan (EMP) in respect of each subproject as laid down in the approved IEE.

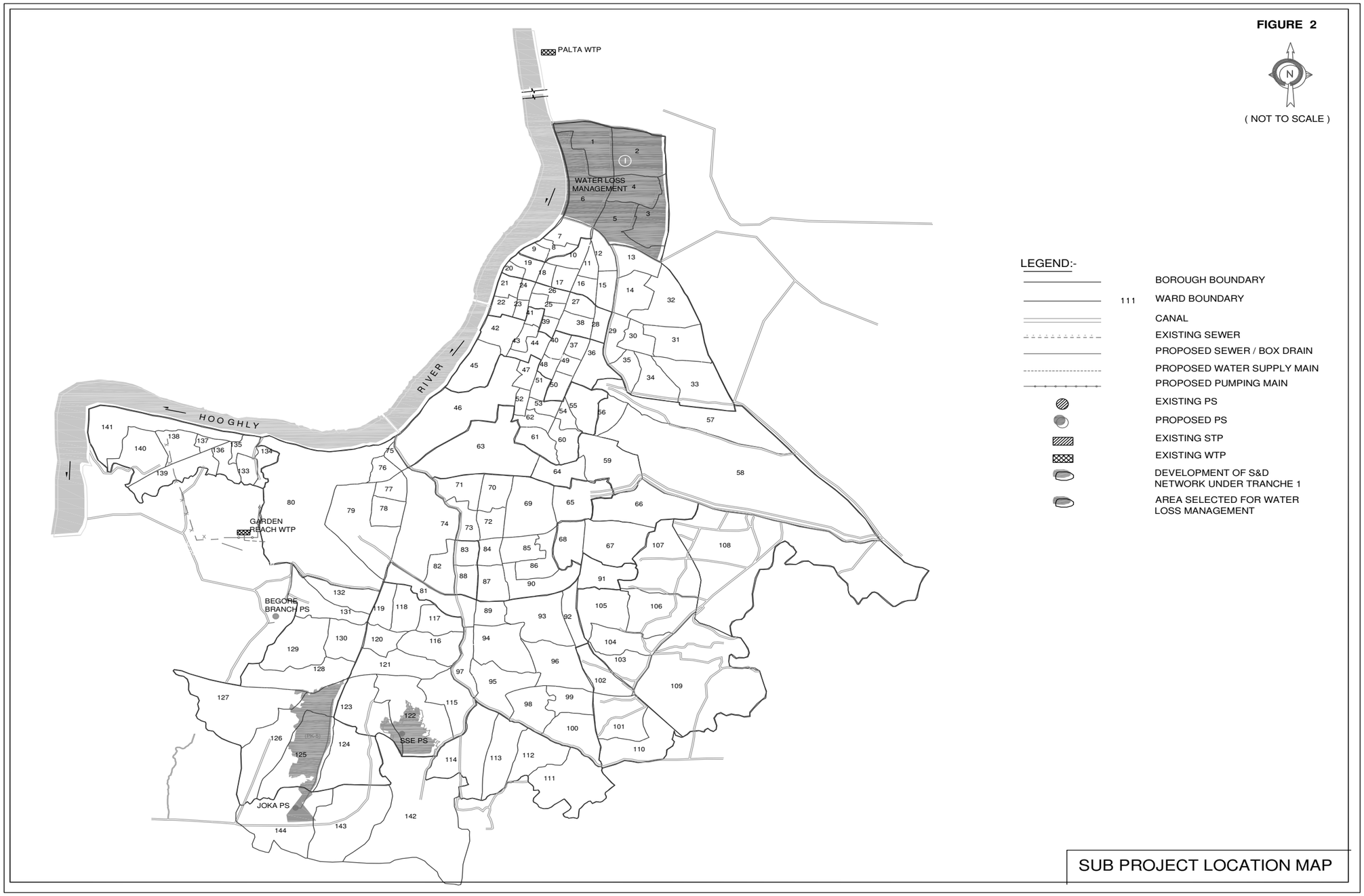


Figure 2: Sub Project location map- Project 1(Tranche 1)

II. IMPLEMENTATION PROGRESS

A. Status of Subprojects under Tranche 1

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

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

Sr. No.	Package No.	Components	Status
1	**KEIIP/ICB/Tr-1/ WS01/R/2015- 16 Environment non–sensitive package**	Performance Based Water Loss Management Works at Cossipore Service Zone, Ward no. 01 to 06	Under Bidding stage. BID invitation done on 25.02.2016
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- 22.0%**
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- 71.5%**
4	**KEIIP/ICB/ Tr-1/WS**	**Water supply & Waste water**- Laying of water trunk	Procurement

Sr. No.	Package No.	Components	Status
	& SD-04/13-14	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	process completed. LoA issued on 4 March 2014, Implementation started on 19th May 2014 **Physical work under progress-60.15%**
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-27.1%**
6	**KEIIP/NCB/ Tr-1/SD-06/13-14**	**Waste water-** Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant Pressure main between Santoshpur Main pumping station (MPS) and Garden Reach Sewage Treatment Plant (STP) by micro tunnelling approx. Length 525 m, 1800 mm inner dia, RCC NP-4 pipe	Procurement process completed. LoA issued on 16th January 2014, Implementation started on 19th May 2014. Work completed on 21.05.2016 **Physical work completed -100.0 %**
7	**KEIIP/ICB/ Tr-1/SD-07/15-16**	**Waste water –** Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the	Contractor selected LOA issued on 12.12.2015 Agreement signed

Sr. No.	Package No.	Components	Status
		Pumping Stations(s) and STP	on 04.01.2016 and Notice to Proceed given for implementation on 05.01.2016. Work started on 5th January 2016. **Physical work under progress-1.4%**
8	**KEIIP/NCB/TR-1/BR-08A/2015-16**	Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works	Contractor selected LOA issues on 09.11.2015 Agreement signed on 02.12.2015 and Notice to Proceed given for implementation on 04.02.2016. Work started on 4th February 2016 **Physical work under progress-25%**
9	**KEIIP/NCB/TR-1/BR-08B/2015-16 Environment non–sensitive package**	Supply and Installation of Software & Hardware for development of project accounting system	Under Bidding stage. BID invitation done on 19.04.2016

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

9. For all awarded packages, contractors have been mobilized and works are in different stages of implementation. During the report period work has been completed for package KEIIP/NCB/Tr-1/SD-06/13-14. **Appendix 2** shows implementation status of different components (package wise). Photo illustration of project locations is shown in **Appendix 3.**

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

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
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	22.0	**No work components completed.** **Palta Water works.** Work status as follows- A. Works in progress :- (i) Dismantling activity of old alum store, switch gear room, boundary wall, watch tower - completed (ii)Dismantling of existing WTP – completed (iii)Filter house – 188Nos. pile completed. Total pile completed for FH. (iv) Temporary access road for jetty - completed (v)Work of guard wall – primer painting completed (vi) Flush mixer – 4Nos. pile completed (vii) Parshall flume –4No.s pile completed (viii) Flocculator & IP.S. :- 108Nos. pile completed (ix) jetty work :- (a) 8Nos. temporary pile – completed (b)6Nos. permanent structural pile-completed (c) 7Nos. fender pile- completed (x) Switch gear room – roof concreting done. Plastering & plinth protection completed. (xi)Alum room-roof concreting done.(xii)Chemical house: - Column

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
						above 1st floor under progress. Bottom of chemical storage tank under progress. Work for wall of chemical tanks is under progress. (xiii) Construction of culvert: - (a)Culvert No.5:-slab concreting done (b)Culvert No.2:- slab concreting done. (c)Culvert No.3:-slab concreting completed. (xiv)Chlorine room: - roof concreting done. (xv) Road PST 2&3- WBM under progress (xvi) Road work near jetty :- sand filling under progress (xvii) Road work near pressure station 2:- under progress. **Garden Reach Water Works** Not yet started
KEIIP/ICB/ Tr-1/WS03/2013-14 **Environment non – sensitive package**	**Water supply**- Supply and Installation of Pumps & Motors at, • Tallah- Palta System • Garden Reach System	19.05.2014	24 months	18.05.2016	71.5	**No work components completed. All are running.** Supply almost completed. Erection work at final stage
KEIIP/ICB/ Tr-1/WS & SD-04/13-14	**Water supply & Waste water**- Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling	19.05.2014	36 months	18.05.2017	60.15	**No work components completed. All are running.** Status as follows, A. **Taratala Road (Water Main)** Total shaft 16Nos.

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
	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					1. Shaft No.0:- Shaft completed. 2. Shaft No.1:- Micro tunneling completed from shaft No. 1 to 2 & 1 to 0. 3. Shaft No. 2 :- Shaft completed. 4. Shaft No.3:- Micro tunneling completed from shaft no. 3 to 2(length 394m). Shaft No.4 :- Shaft completed 5. Shaft No.5:- Shaft completed. Micro tunneling completed on 12.10.15. to shaft No.5 to shaft No.4(total length 388m). 6. Shaft No.6 :- Shaft completed 7. Shaft No.7 :- 1800dia pipe laid 307m from shaft No.7 to8 on 23.07.2015. & laying of 1800mm dia pipe from shaft No. 7 to 6 has been completed on 17.08.2015. Total length of pushing is 404m. 8. Shaft No.8 :- Shaft completed 9. Shaft No. 9 :- Shaft No.9 to Shaft No.8 micro tunneling work completed (283.37m). 10. Shaft No. 10 :- Shaft completed. 11. Shaft No.11 :- Micro tunneling work completed from shaft No.11 to shaft No.10. 12. Shaft No.12:- Completed & micro tunneling completed on 20.05.2016. 13. Shaft No.13:- Shaft completed 14. M.S. pipe cutting :- 5067.73m

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
						15. R.C.C. Jacketing :- 4947.57m 16. C. M. Lining :-4714.72m 17. Total supply of MS pipe :- 5276.56m B. **D. H. Road (Sewerage)** :- 1. Shaft No 1 :- Manhole & road restoration work has been completed so the road is opened. 2. Shaft No2 :- Excavation, bracing , P. C. C. work completed. 1600mm dia RCC pipe laying by micro tunneling method completed. Shaft No. 2 to1 & shaft No. 2 to3 (Total length 477m) construction of manhole of shaft No.2 in progress so the road is opened. 3. Shaft No.3 :- Road restoration work has been completed so the road is opened 4. Shaft No 9 & 10 :- Utility shifting in progress. 5. Shaft No.11:- Shaft completed. Micro tunneling will start from shaft No.11to 12 from 8.7.16. 6. Shaft No 12 :- Shaft completed, micro tunneling completed from shaft No.13to12. 7. Shaft No.13 :- Shaft completed, micro tunneling work at shaft No. 13 to 14completed. 8. Shaft No 14 :- Shaft No.15 to 14 micro tunneling completed.

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
						9. Shaft No 15:- R.C.C. 2400mm dia pipe laid from shaft No.15 to16 (Length 110m) completed. Shaft No.15 to 14 micro tunneling 2400mm dia is completed (245m length). 10. Shaft No 16 :- Manhole completed 11. Shaft No 17 :- Micro tunneling & manhole completed. 12. Shaft No.18:- Shaft completed 13. Shaft No.19 :- Micro tunneling done from shaft No.19 to18. 14. Shaft No.20 :- Micro tunneling completed from shaft No. 19 to 20. 15. Shaft No.21:- Shaft completed, micro tunneling completed. 16. **RCC Pipe**:- (i)1600mm dia- 482/482m (ii)2400mmdia-2550/ 2435m (iii) 2200mmdia–1035 /983.5m
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	27.1	**No work components completed. All are running.** 1. **Pipe laying :**- 8315.7m completed in which Upen Banerjee Rd:- 1268m DI Pipe : 840m completed 2. **Manhole Construction** :- (i)420No.s completed (ii)Manhole data sheet for Zone -

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
	connections (ward 125 &126) Approx length- 17.5 km and dia ≥250 mm • Construction of RCC box drain inside Behala AAI land • Construction of Joka pumping station inside Joka Tram depot. – ✓ DWF pumping main of dia 800 mm, approx. 3250 m long ✓ SWF pumping main of dia 1626 mm, approx. 500 m long • Construction of Begore khal pumping station located inside Behala Airport Authority of India Area ✓ DWF pumping main of dia 400 mm, approx. 675 m long ✓ SWF pumping main of dia 1626 mm, approx. 270 m long • Desalting and re-sectioning of Bagore branch canal for the portion downstream of box drain upto its outfall at Bagore canal Extra work- Construction of PS R. K. Ghosh and Behala flying club					1,2,3,4&5 (part) released to the agency 3. **Road Restoration** :- Up to jhama level 7738.04m done A. **Joka P.S.**:- Concrete work for 12thlift staining portion (16.05m) completed. B. **Begore P.S**. :- Concrete for well sump up to 8th lift staining portion done (13.2m). **Substation: -** 250mm thick brick work of substation building is in progress. **Piling** :- (i)Pile load test at Begore box drain done & 12Nos. completed (ii) Dismantling of earlier piling work at Begore box drain completed. (iii)Bored pile work completed at Begore box drain site(37 Nos. completed) (iv)Boundary wall piling at Begore P.S. completed 53Nos. out of 53 No.s. (v) Piling work at Joka substation completed 36Nos. **Other Works :-** (i)6180No.s PCC block casting done. (ii)Begore Branch Canal block pitching done for 208m at slope portion of bank. (iii)Land filling work at Begore P.S.completed. (iv)RCC pipe testing done at Bolepur,

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
						Fatehpur, D.H. Road factory. (v)Deck slab, raft & vertical wall casting done for 75m length at Begore box drain site. (vi)Dismantling work of existing culvert over Begore Branch canal has been completed. (vii)Construction of new culvert has been completed & approved road of culvert has been completed. (viii)Outfall structure is in progress.
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 (**Extended up to 28.02.2016)**	100.0	**All work completed**
KEIIP/ICB/ Tr-1/SD-07/15-16	**Waste water** • Replacement of GAP line (approx. 3.3 km) for defunct portion (From Gandhi Maidan to Karbala Unnayan Samity and upto Santoshpur Main Road), Extension of Existing drain, Construction of energy dissipater chamber, Desilting of GAP sewer for portion of sewer to be – utilized, Interconnection between sumps at Santoshpur SMPS,. CCTV survey for entire length of sewer about 4.0	05.01.2016	18 months	04.07.2018	1.4	1. **SSE STP renovation and pumping station** :- (a) Bed preparation of RCC concreting of Toe wall for maturation pond no6 in progress (b) Erection of cutting edge and shuttering , rod binding of well curve for PS in progress 2. **S&D network**:- (a) Pipe laying work 1200 mm dia pipe is in progress at zone 1 (b) Rice pipe laying (1000 mm dia) in

Package No.	Component	Start Date	Number of Days/Months to Complete Work	Target date of completion	% Physical Progress as on 30th June 2016	Works completed and continued as of 30th June 2016
	km • Development of S & D network in Ward 122 (part) (length of sewer Approx. 5.0 km), • Laying of Pumping main (700 mm diameter about 2.7 km length DI K9 pipe) along Taratala Road and Santoshpur Road from Trenching Ground Sewage PS to Santoshpur Main Sewage PS • Construction of South Suburban East combined pumping station (capacity DWF – 76 lps and SWF – 4000 lps) • Construction of DWF and SWF pumping mains from SSE PS (300 mm dia. DI, K-9 pipe – 950m length for DWF & 1400 mm dia. MS pipe – 1500 m length for SWF) • Rehabilitation of SSE STP					zone 2 – under progress 3. **GAP sewer** :- (a)Jack pushing of pipe in progress near Power Club for connection of surface drain to GAP Sewer.
KEIIP/NCB/TR-1/BR-08A/2015-16	Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works	04.02.2016	12 months	03.02.2017	25.0	1. Electrical, A.C., painting, in progress at 4th floor Block "A". 2. Painting, electrical work in progress at 4th floor Block "B" & "C". 3. Partition work in progress at 2nd floor Block "A".

B. Compliance of Safeguard Loan Covenants

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

Table 3: Compliance of Loan Covenants – Environment part

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
Environment		
7	The Borrower shall ensure or cause the EA to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project, and all projects' facilities comply with (i) all applicable laws and regulations of the Borrower and the State relating to environment, health, and safety; (ii) the Environmental Safeguards; (iii) the EARF; and (iv) all measures and requirements set forth in the respective IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	**Under compliance** Document is prepared/ or under preparation by complying all relevant State and National Laws, Safeguard Policy Statement (SPS 2009) of ADB, Environment Assessment Review Framework (EARF) for Tranche-1 program. For **Tranche 1** project Initial Environmental Examination (IEE), Environment Management Plan (EMP) report prepared and approved by ADB. IEE for Sewage and Drainage for Tranche 1 has been updated and that report has already been disclosed in ADB website on October 2015. IEE for water supply for Tranche 1 has been updated and submitted but the report yet to be disclosed in ADB website IEE will be revised further in case of any change of scope and location. All measures and requirements as prescribed in IEE/EIA and EMP are being considered during implementation. Corrective or preventive action plans will be reflected in Environment Monitoring Report and project implementation authority will take care of such actions when required.
Human and Financial Resources to Implement Safeguards Requirements		
11	The Borrower shall make available, or cause the EA to make available, all necessary budgetary and human resources to fully implement the EMP required.	**Complied** Budgetary provisions have been included in EMP of Tranche 1 project An Environment Specialist has been placed in Project Management Unit and heading Safeguard Monitoring Unit. Human resource (project consultant, i.e Environmental Specialist of DSC) for implementation of EMPs is in place for regular monitoring to secure complete compliance.
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:	**Under compliance**
	(a) comply with the measures and requirements relevant to the contractor set forth in the IEE, the EMP, the RP and the IPP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report;	(a) Approved IEE, EMP for Tranche 1 project is attached in Bidding documents. This process will be followed for all the sub projects within the present Tranche. In case of any change of scope, revised IEEs with EMP(s) will be prepared and corrective measures will be disclosed to the contractor and same will be reflected in the "Environment Monitoring Report". IEE for Sewage and Drainage for Tranche 1 has been updated and that report has already been disclosed in ADB website on October 2015 IEE for water supply for Tranche 1 has been updated and submitted but the report yet to be disclosed in ADB website
	(b) make available a budget for all such environmental measures;	(b) IEE indicates budgetary provisions for implementation of EMP.
	(c) provide the EA with a written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the RP or the IPP;	(c) During implementation of any sub project if additional impacts/risks arise due to change in scope/area that will be reflected in the revised IEEs, EMPs and Environment Monitoring Report and accordingly project Executing Agency will inform the Construction Agency for taking relevant corrective measures.
	(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and	(d) Haul roads will be marked properly (by avoiding residential and agricultural land) before commencement of transportation of materials.
	(e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	(e) Pathways, infrastructure and land which are likely to be affected for varying periods during implementation of the sub project will be restored by concerned construction agency before acceptance of the work. Restoration status will be reflected in post construction monitoring report.
Safeguards Monitoring and Reporting		
13	The Borrower shall cause the EA to do the following:	**Under compliance**
	(a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;	(a) This is 4th Semi-annual safeguard monitoring report on Environment for the period January to June 2016. The next report will be due by the end of December 2016.
	(b) if any unanticipated environmental and/or social risks and impacts arise during	(b) During implementation of any sub project, if additional impacts/risks arise

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

C. Implementation Arrangement

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

12. Safeguard Monitoring Unit (SMU) of PMU is ensuring field level monitoring and safeguard documentation. PMU is supported by the Design and Supervision Consultants (DSC). An Environment Specialist is in place to ensure: (i) EMP/ approved SEP is implemented; (ii) surveys and measurements are undertaken; (iii) inspections and observations throughout the construction period are recorded to ensure that safeguards and mitigation measures are provided as intended; and (iv) statutory clearances and permits from government agencies/other entities are obtained prior to start of civil works.

13. The Safeguards Monitoring Unit will:

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

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

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

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

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

(vi) provide necessary input for grievance redress

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

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

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

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

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

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

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

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

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

14. The Contractor's responsibilities included:

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

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

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

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

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

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

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

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

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

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

Table 4: Details of KEIIP Environmental Safeguard Team

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

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

Figure 3: Institutional Arrangement – Safeguards

III. Environmental Procedure Review

A. Environmental Legal Requirement

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

Table 5: Environmental Legal Requirements Applicable to KEIIP Tranche 1

Component	Applicable Legislation	Compliance	Action Required
1. All components that require acquisition of forest land	Forest (Conservation) Act 1980; Wildlife (protection) Act 1972 West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006	Approval from State Forest Office, Principal Chief Conservator of Forest and Ministry of Environment 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 during operation of surface Water Treatment Plant (WTP) and Sewage Treatment Plant (STP)	Based on the performance of the WTP/STP and its compliance with the disposal standards CTO to be renewed every year.

B. Compliance with Environmental Legal Requirements

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

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

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

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
KEIIP/ICB/ Tr-1/WS02/2013-14	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach	Water (Prevention and Control of Pollution) Act. 1974 Consent to Establish (CTE) for rehabilitation of WTP from West Bengal Pollution	Online application has been submitted to WBPCB on 30th June 2015 for CTE for Rehabilitation of Water Treatment Plant at Palta Water Works. **CTE received on 03.09.2015,** which	Consent to Establish received on 03.09.2015 Copy attached as **Appendix 4** Conditions and compliance are shown below (**Table 7)**

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
		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)	valid for 5 years Pipeline alignment shifted as per design modification. No tree felling is required During implementation of project, compliance with Air Act , Noise Rules and Water Act will be required Not required now as per present work	Not applicable till date
KEIIP/ICB/ Tr-1/WS & SD-04/13-14	Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method	West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006- Tree felling permission 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	Tree felling- Permission obtained from Divisional Forest Officer, Forest Utilization Division, Govt. of West Bengal at Kolkata (Ref letter 655/17 T dated 29.09.14) – felling of 17 trees along Taratala Road for laying of water main. Compensatory afforestation of 75 trees is recommended in clearance certificate. During implementation of project compliance against Air Act , Noise Rules and Water Act will be required Not required for	Tree felling has been done Compensatory afforestation at non forest land- Action has already been initiated

Package	Main package work	National and State Legal Requirement	Status	Conditions of the Clearance/NOCs
		diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	acoustic type of Generator	
KEIIP/ICB/ Tr-1/SD-05/13-14	Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010 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 Sewage Treatment Plant	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010	During implementation of project compliance against Air Act , Noise Rules and Water Act will be required	-
KEIIP/ICB/ Tr-1/SD-07/15-16	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP	Water (Prevention and Control of Pollution) Act. 1974 The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010	During implementation of project compliance against Air Act , Noise Rules and Water Act will be required	-

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

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

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

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

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

19. There are 6 environment sensitive subprojects under implementation. Site Environment plan including site specific EMP was submitted by the contractor before starting of each construction packages. These EMPs are generally revised semi annually as per progress of construction work. **Appendix 5** shows sample Site Specific EMP.

20. Environment Specialist from DSC and PMU carried out periodic monitoring of EMP implementation through desk review of contractor's records and site inspections. Package wise findings are presented in **Tables 8 to 13.** It may be noted, though most of the sites are environmentally well managed, in a few cases in packages like **KEIIP/ICB/ Tr-1/SD-05/13-14, KEIIP/ICB/Tr-1/SD-07/15-16** and **KEIIP/NCB/TR-1/BR-08A/2015-16** there were scope for further improvement in site management measures as mentioned below,

- More comprehensive Tool box training for labourers is required for pipe laying package
- One construction camp within STP site needs further improvement
- Insufficient display and caution board at one pipe laying package
- Use of PPE by contractors' site workers is not always maintained
- Further improvement of use of caution tape at excavated area for public safety
- Quicker disposal of excess earth and spoil from completed project site

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

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
			implemented						within the Water Treatment Plan premises
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Labour camp constructed as per specification. Proper drainage has been developed.
7	Establishing Equipment Lay-down and Storage Area[1]	• Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on–site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all	List of selected location and facility	Proposed locations considered in the package	DSC/PMU	Site visit and checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Storage area inside. Proper storage of fuels, lubricants done. Equipment lay-down area demarcated Site photo in **Appendix 3.**

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

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	sites if necessary. • Construction Contractor documentation					26.03.2016 28.05.2016	
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	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. Proper discharge of waste water is done 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	Complied Utilization of excess earth done. Demolition waste utilized for land development Material storage at proper place continued Spoil management plan will be applied as per EMP (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
12	Dust and Air Pollution[4]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Under Control certification • No fire wood burning is allowed on site • Carry out air quality monitoring	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected. Covering of materials done partially. Water sprinkling done as per requirement. During construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles collected

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

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

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at working sites; • Provide H&S orientation training to all new workers • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines • Disallow worker exposure to noise level greater than 85 dBA for a duration of more than8hoursper day without hearing protection.	workers • Number of accidents • Supplies of potable drinking water; • Record of H&S orientation trainings • Personal protective equipments • Sign boards for hazardous areas such as energized electrical devices and lines, service rooms						H & S training arranged for the labourer on regular basis. Drinking water and first aid box available at site. 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	• Plan truck routes (for carrying construction materials including pipes)	• Traffic Management Strategy	Project Locations	Contractor	Document check and visual	Environment Specialist of DSC and	Do	Complied Caution tape placed around

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

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

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

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		stages of the operations during road closure							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 11** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet	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
		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 their potential impacts and follow the appropriate safety	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
		measures							
8	Education of site staff on general and Environmental Conduct[8]	• Ensure that all site personnel have a basic level of environmental awareness training • All employees must undergo safety training and wear the necessary protective clothing	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Site Safety training arranged regularly. Awareness program arranged regularly
Construction									
9	Materials Management – Sourcing[9]	• Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc), and submit these to the DSC for approval prior to commencement of any work. • Use of Govt. approved quarry sites for procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	• List of approved quarry sites and sources of materials • Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Constructio n Manager, Visit by Environmen t Specialist on 22.01.2016 11.02.2016 29.03.2016 06.04.2016 17.05.2016 20.05.2016 09.06.2016	Complied Approval obtained from PMU and DSC as per requirement
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste	• Complaints from sensitive Receptors • Water and	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Established within rented house. Photo attached

[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
		management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	sanitation facilities for employees • Housekeeping – regular disposal of solid waste						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	Complied Excess earth and slurry disposed at designated/ approved location Spoil management plan applied as per EMP (Attached as **Appendix 6**) Site photo attached as **Appendix 3.**
12	Dust and Air Pollution[10]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Location of stockpiles selected. Covering of materials considered for storage Water sprinkling

[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
		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	arrangement • Cover materials						done as per requirement During construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles and equipment obtained
13	Noise level	• Noise producing work needs to be conducted at day time • Regular maintenance of noise producing equipment • Require horns not be used unless it is necessary to warn other road users • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s • At sensitive locations enclosures provided around generator set or other noise producing machinery.	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise generating problem near the project location. PPE utilized by labourers as per requirement. During construction monitoring was done. Monitoring will be continued as per EMP. Results are attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting	• Areas for stockpiles, storage	Project Locations	Contractor	• Checking of records	Environment Specialist of	Do	Complied Arrangement of

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		solid waste/silt from waste water generated at construction site	of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies			• Visual inspection of sites	DSC and PMU		drainage of waste water from construction locations done
15	Water Quality[11]	• Contractor to ensure run-off from vehicle or plant washing does not enter Hooghly river • Contractor to ensure every effort is made that any chemicals or hazardous substances do not contaminate the soil, Hooghly river, or groundwater on site.	Non entry of pollutant in water body	Project Locations	Contractor	Site observation	Environment Specialist of DSC and PMU	Do	No water source near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site	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
		or in areas adjacent to the sites.							
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.	Stockpile management	Stockpile / storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Instruction has been given to contractor for stockpiling of materials at designated areas
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all	• 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. H & S training arranged for the labourer on regular basis. Drinking water and first aid box available at site. Insurance arranged for the labourer. Attached as **Appendix 9.** No accident happened during

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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.							the report period Overall compliance is satisfactory
19	Social Impacts[12]- Community Health & safety, accessibility	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites • Contractor to ensure disruption of access for local residents is minimized • Contractor to restrict	• 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	Caution tape placed around excavated area (Ref photo **Appendix 3)** Permanent hard barricade arranged by the contractor with diversion signage

[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
		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 Plan under implementation Photo attached as **Appendix 3**.
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate • Employ local (unskilled) labor if possible	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**

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• Training of labor to benefit individuals beyond completion of the subproject							

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
			• Bid document to include requirement for a contingency plan for service interruptions			checking	PMU		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 complied as and when required
5	Traffic Management	Planning for Traffic Management	Ensure traffic management plan is part of contract documents and being implemented	-	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	Partially Complied Traffic management plan prepared and approval under process as per requirement. Arrangement of sufficient diversion boards are required. Instruction has been given to contractor for the same. **Appendix 11** shows traffic management plan
6	Construction work camps (if	• Planning for setting up worker camps, hot mix	List of selected location for construction work	Camp and other sites	DSC/PMU	Observation and	Environment Specialist of	Before start of physical	Complied. Rented house

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	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	camps, hot mix plants, stockpile areas, storage areas, and disposal areas			document checking	DSC and PMU	work & Continuous	considered for staying of labourer. Camp has been established within Joka PS campus. Sufficient drinking water, toilet facility noted. Housekeeping improved.
7	Establishing Equipment Lay-down and Storage Area[13]	• Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on – site topography and water erosion potential of the soil. • Storage areas shall be secure so as to minimize the risk of crime. • Away from school and direct residential areas • Fire prevention facilities must be present at all storage facilities • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any	List of selected location and facility	Proposed locations considered in the package	DSC/PMU	Site visit and checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Complied Proper storage of fuels, lubricants done after necessary instruction. Equipment lay-down area demarcated. Fire prevention facilities arranged.

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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[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	-	Partially complied Still there is some problem related to proper recording of training proceedings – improvement is required; appropriate instructions issued Awareness program arranged for contractor
Construction									
9	Materials Management – Sourcing[15]	• Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed	• List of approved quarry sites and sources of materials • Bid document to include	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by	Complied. Approval obtained from PMU and DSC.

[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
		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	requirement for verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation					Construction Manager, Visit by Environment Specialist on 22.01.2016 11.02.2016 22.03.2016 07.06.2016 21.06.2016	
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied mostly. Rented house arranged for labourer. Camp has been established within Joka PS campus. Sufficient drinking water, toilet facility noted Still there is a scope for improvement of housekeeping and disposal of waste/ scrap materials from camp; appropriate instructions issued

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
11	Landscape and Aesthetics	• Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures • Fencing of storage areas • Disposal of construction debris if any as per mitigation measures • Prepare and implement Waste Management List • Avoid stockpiling of excess excavated soils • Coordinate with KMC for beneficial uses of excess excavated soils	• Waste Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied There is improvement on disposal of excess earth at designated/ approved location. Frequency of removal needs to be more Spoil management plan will be applied as per EMP (Attached as **Appendix 6)**
12	Dust and Air Pollution[16]	• Selection of materials storage area • Water sprinkling at construction site for arresting dust (if any during dry period) • Use tarpaulins to cover sand and other loose material- Reducing dust hazard • All vehicles and equipments mobilized to construction site and producing emission, have Pollution Control Board certification • No fires are allowed on site	• Location of stockpiles • Complaints from sensitive receptors • Monitoring data • Heavy equipment and machinery with air pollution control • Water sprinkling arrangement • Cover materials	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied. Location of stockpiles selected. Covering of materials considered for storage. Water sprinkling not done on regular basis. During construction air quality monitoring done as per EMP. (Result

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

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

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.							
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp • Provide medical insurance coverage for workers; • Provide supplies of potable drinking water at working sites; • Provide H&S orientation training to all new workers • Mark and provide sign	• 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. H & S training should be more regular with proper recording; verbal instructions conveyed Use of PPE – improved. Instructions given for further improvement Drinking water and first aid box mostly available at site. Site photo enclosed in **Appendix 3.** Insurance arranged for the labourer. Attached as

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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.							**Appendix 10.** No accident recorded till date Overall compliance is Partially satisfactory
19	Social Impacts[18]- Community Health & safety, accessibility	• Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites • Contractor to ensure disruption of access for local residents is minimized • Contractor to restrict activities and movement of staff to designated construction areas • Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles • Consideration of public safety - as per prescribed mitigation measures • Contractors to ensure lighting on the construction site	• Traffic Management Strategy • Complaints from sensitive receptors • Number of signages placed at subproject location	Project Locations	Contractor	Document check and visual observation	Environment Specialist of DSC and PMU	Do	Complied. Caution tape placed around excavated area - improvement noticed Construction work is mostly carried out within narrow lanes where availability of space for placement of hard barricade is a constraint and there are competing users of space. Caution tape placed and flag person placed at working area for smooth movement of

[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
		• Provide protective fencing around open trenches • Provide road signs and flag persons to warn • Schedule transport and hauling activities during non- peak hours							locals and vehicles. Traffic Management Plan under implementation Placement of more number of caution and diversion boards advised at all sites Site photo attached as **Appendix 3.**
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	At present local laboures are mostly engaged. List of laborers are attached as **Appendix 10**

Table 11: 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 Work completed
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied. Access to site maintained after due consultation with local councilor / authority
3	Affected utilities	Shifting of affected utilities like electric and telephone poles, pipe lines	• List of affected utilities if any and operators • Bid document to include requirement for a contingency plan for service interruptions	Specific project location	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Do	No chance of impact to any utility services till completion of the project
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 up to completion of the package
5	Traffic Management	Planning for Traffic Management	Ensure traffic management plan is	-	DSC/PMU	Observation and document	Environment Specialist of	Do	Not required as per 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
			part of contract documents and being implemented			checking	DSC and PMU		Location pits at fixed area Work completed
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Partially Complied. Work completed. Camp has been closed after completion of work Waste needs to be disposed/ removed from the sites at earliest; appropriate instructions conveyed
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	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. Work completed

[19] 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
		• Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials • These storage facilities (including any tanks) must be on an impermeable surface • Staff must be aware of their potential impacts and follow the appropriate safety measures							
8	Education of site staff on general and Environmental Conduct[20]	• 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	-	Partially complied. Work completed. Site Safety training and awareness program not arranged regularly till completion of project
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	• 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	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Construction Manager, Visit by Environment Specialist on 22.01.2016 11.02.2016 22.03.2016 07.06.2016	Complied. Approval obtained from PMU and DSC. As and when required. Materials transportation completed

[20] These points need to be made clear to all staff on site before the subproject begin.
[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
		procurement of materials • Verify suitability of all material sources and obtain approval of Investment from PMU/DSC	necessary. • Construction Contractor documentation					21.06.2016	
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Partially Complied Camp has been established within Santoshpur PS campus. Project work has been completed and camp closed Waste needs to be disposed/ removed from the sites at earliest; appropriate instructions conveyed
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 Work completed Instructions given to remove excess earth completely from construction sites Spoil management plan applied as per EMP (Attached as **Appendix 6).** NOC obtained from local household for disposal of spoil/ slurry from micro tunneling.
12	Dust and Air	• Selection of materials	• Location of	Project	Contractor	• Checking	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[22]	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		of records • Visual inspection of sites	Specialist of DSC and PMU		Location of stockpiles was selected. During construction and post construction air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).**
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	• Complaints from sensitive receptors • Use of silencers in noise-producing equipment and sound barriers • Monitoring data	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied No as such noise generating problem nearby the project location. PPE utilized by labourer upto completion of the project and as per requirement, but not always During construction and post construction monitoring done. Monitoring will be continued as per EMP.

[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
		enclosures provided around generator set or other noise producing machinery.							Results are attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting solid waste/silt from waste water generated at construction site	• Areas for stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied partially Work completed. Instructions given for proper arrangement of complete drainage of waste water from construction locations
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 near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	No tree felling required

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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	Complied Stockpile not obstructing natural flow of water
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective Equipment like helmet, gumboot, gloves, nose mask and earplugs • H&S Training for all site personnel • Documentation of work-related accidents; • Designate a safeguard focal person and undertake safeguards orientation by PMU/PIU • Provide specific guidance for suitable PPE for every on-site work assignment • Ensure availability of First aid box at all working sites and labour camp	• 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 implemented partially up to completion of the project H & S training arranged**.** 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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		• 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 9.** No accident recorded till date Overall compliance is partially satisfactory during work
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	• 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 Work completed Caution tape placed around excavated area Traffic Management Plan not required Photo attached as **Appendix 3**.

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

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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							
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to allow further investigation if any finds are suspected	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date
21	Employment generation	• The use of labor intensive construction measures will be used where appropriate • Employ local (unskilled) labor if possible • Training of labor to benefit individuals beyond completion of the subproject	Employment record	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Complied Completion stage mostly local labourers are engaged. List of laborers are attached as **Appendix 10**

Table 12: Compliance to EMP of for the Package - Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP (KEIIP/ICB/ Tr-1/SD-07/15-16)

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
Pre Construction - Design phase									
1	Site clearance	Site preparation work including necessary clearance and permission	• Tree felling requirement – site environment plan • NOC – paper documents from line agency	All Project locations	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before commencement of final design	Tree felling not required till date
2	Access to Site	• Access to site will be via existing roads • Involvement of local Traffic Department in the planning stages of the road closure and detour and available on site in the monitoring of traffic in the early stages of the operations during road closure	• Involvement of traffic dept. • Road closure planning	Specific project location	DSC/PMU	Site observation	Environment Specialist of DSC and PMU	Do	Complied. Access to site maintained after due consultation with local councilor / authority Consultation with traffic dept. yet to be done
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 of impact to 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 complied as and when required
5	Traffic	Planning for Traffic	Ensure traffic	-	DSC/PMU	Observation	Environment	Do	Complied;

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
	Management	Management	management plan is part of contract documents and being implemented			and document checking	Specialist of DSC and PMU		Traffic management plan prepared; required approvals are being obtained periodically. **Appendix 11** shows traffic management plan
6	Construction work camps (if needed), hot mix plants, stockpile areas, storage areas, and disposal areas.	• Planning for setting up worker camps, hot mix plant, stockpile area, storage and disposal areas • Prioritize areas within or nearest possible vacant space in the subproject location • Non use of residential area • Arrangement of toilet and drinking water facility • No disposal of waste in water	List of selected location for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Camp and other sites	DSC/PMU	Observation and document checking	Environment Specialist of DSC and PMU	Before start of physical work & Continuous	Partially Complied. Camp has been established recently within Keorapukur STP. Sufficient drinking water, toilet facility available. Access to toilet is being improved; Improvement of camp environment during operation has been advised
7	Establishing Equipment Lay-down and Storage Area[25]	• 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	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 not demarcated Fire prevention facilities to be arranged

[25] 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
		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							
8	Education of site staff on general and Environmental Conduct[26]	• Ensure that all site personnel have a basic level of environmental awareness training • All employees must undergo safety training and wear the necessary protective clothing	Documentation – Training and awareness	-	DSC/PMU	Materials and records on awareness training program	Environment Specialist of DSC and PMU	-	Complied. Work just started. Site Safety training and awareness program need to be arranged on regular basis
Construction									
9	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),	• List of approved quarry sites and sources of materials • Bid document to include requirement for	Quarries and material source areas	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Daily visit by construction supervisor of DSC. Weekly visit by Construction Manager,	Complied. Approval obtained from PMU and DSC.

[26] These points need to be made clear to all staff on site before the subproject begin.
[27] 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
		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	verification of suitability of sources and permit for additional quarry sites if necessary. • Construction Contractor documentation					Visit by Environment Specialist on 15.06.2016 21.06.2016	
10	Maintenance of Construction Camp	• Establishment of temporary camps with drinking water, sanitary and solid waste management arrangement • Train employees in the storage and handling of materials • Remove all wreckage, rubbish, or temporary structures	• Complaints from sensitive Receptors • Water and sanitation facilities for employees • Housekeeping – regular disposal of solid waste	Camp site	Contractor	• Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied partially. Camp has been established recently within Keorapukur STP campus. Sufficient drinking water, toilet facility noted but access to toilet not satisfactory. Proper bed needs to be provided to labourers. Waste management and overall improvement of housekeeping is required. Appropriate instructions given and compliance is being closely monitored **Appendix 3** shows camp site photo
11	Landscape	• Removal of overburden	• Waste	Project	Contractor	• Checking	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
	and Aesthetics	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	Management List • Complaints from sensitive receptors • PMU/PIU/DSC to report in writing that the necessary environmental restoration work has been done	Locations		of records • Visual inspection of sites	Specialist of DSC and PMU		Instructions given to dispose excess earth quickly or to utilize them completely on regular basis from construction sites Spoil management plan applied as per EMP (Attached as **Appendix 6).** Fencing of storage areas not done
12	Dust and Air Pollution[28]	• 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 during construction; air quality monitoring done as per EMP. (Result certificate shown in **Appendix 7).** Pollution under Control Certificate of vehicles and equipment obtained partially

[28] 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 utilized by labourer as per requirement During construction monitoring done. Monitoring will be continued as per EMP. Results are attached as **Appendix 7**.
14	Storm water management	Arrangement of drainage of waste water and arresting solid waste/silt from waste water generated at construction site	• Areas for stockpiles, storage of fuels and lubricants and waste materials • Number of silt traps installed along drainages (in slope) leading to water bodies	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied as per requirement
15	Water Quality[29]	• Contractor to ensure run-	Non entry of pollutant	Project Locations	Contractor	Site observation	Environment Specialist of	Do	Other than STP pond no water

[29] 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
		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.	in water body				DSC and PMU		source near the construction location
16	Conservation of Natural Environment	• Contractor to ensure only trees that have been marked beforehand are to be removed • Contractor to immediately re-vegetate stripped areas • Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the sites.	Tree felling requirement and afforestation after final design	Project Locations	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	No tree felling required
17	Materials Management	• Contractor to ensure stockpiles do not obstruct natural water pathways. • Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps. • Contractor to ensure all concrete mixing take place on a designated, impermeable surface.	Stockpile management	Stockpile / storage area	Contractor	• Checking of records • Visual inspection of sites	Environment Specialist of DSC and PMU	Do	Complied Stockpile not obstructing natural flow of water
18	Occupational Health & safety	• Develop and implement site-specific Health and Safety (H&S) Plan • Use Personal Protective	• Site-specific Health and Safety (H&S) Plan	Project Locations	Contractor	• Checking of records • Visual inspection	Environment Specialist of DSC and PMU	Do	Site-specific Health and Safety (H&S) Plan under implementation.

	Field	Mitigation Activities and Method	Parameters monitored	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Date of Monitoring	Compliance Status/ Explanation
		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.	• 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			of sites			Work just started. H & S training needs to be arranged regularly**.** Use of PPE – complied mostly. 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 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[30]- 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 around excavated area. Caution board noted Traffic Management Plan prepared and road closure done with due permission from local authority Photo attached as **Appendix 3**.
20	Socio cultural resources	• Strictly follow the protocol for chance finds in any excavation work • Stop work immediately to	Chance find protocol	Project Locations	Contractor	Checking of records	Environment Specialist of DSC and PMU	Do	Not required till date

[30] 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
		allow further investigation if any finds are suspected							
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	Complied At present local laboures are mostly engaged. List of laborers are attached as **Appendix 10**

Table 13: Compliance to EMP of for the Package - Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works (KEIIP/NCB/TR-1/BR-08A/2015-16)

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
1	Dust and Air Pollution	• Use of nose mask to check entry of dust through respiratory system, use of hat/ helmet and covering of body is must • Selection of areas for disposal of demolition waste- dusty materials • Particularly for outside work dampen access and other cleared surfaces whenever possible and especially in dry and windy conditions to avoid excessive dust. • Indoor air quality monitoring will be conducted • Use tarpaulins to cover sand and other loose material	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Partially complied Instructions given for complete use of noise musk by all workers; Demolition waste filled in a bag, stored within office premises and finally transferred to disposal area after due permission. Process is delayed sometime and appropriate instructions given. Work zone air quality monitoring is done. Results certificate is attached as

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
						Appendix 7. Covering of materials not done during transportation Photo attached as **Appendix 3**. Appropriate instructions given
2	Noise level impact	• Plan activities in consultation with consultant/ project executing agency so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance • Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the working area • Indoor noise level monitoring	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Partially complied At times elevated noise level generated from construction activity noted; Indoor noise level monitoring has been done. Results certificate is attached as **Appendix 7.**
3	Waste water discharge. Maintaining aesthetic environment	Waste water which will generate from washing needs to be discharge into nearby underground drain without accumulation at working site	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Done as per requirement
4	Occupational Health & Safety	• Develop and implement site-specific Health and Safety (H&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment; (c) H&S Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Partially complied First Aid box available at the site; H & S training not done on regular basis Worker use PPE. Partially. Nose mask not used by all labourers Caution tape, board not always available. Instruction has been

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		accidents. • Specifically use of nose mask at dust producing area, ear plugs at noise producing area, helmet during demolition & renovation work, use of safety / welding goggles both at welding time and demolition and cleaning time is essential. All accident needs to be recorded in register. • Availability of First aid box needs to be ensured by contractor. Also emergency number and contact number for nearby doctor to be displayed at working site. • Medical insurance needs to be provided to all workers engage with the project • Health and safety training needs to be provided to all new workers. Training program will be conducted regularly by contractor's manager/ safety officer for their worker and by supervision consultant to the contractor's safety officer/ Manager • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. • Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing				given to contractor ti improve compliance for the above Health insurance arranged for the worker. Insurance certificate is attached as **Appendix 9.** Site photo attached as **Appendix 3**.

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		protection shall be enforced actively				
5	Public safety	• During renovation time general public will be not allowed at particular working site • For outside building work safety net and caution tape to be placed. Also movement of public will be restricted.	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied General public not allowed at working sites Outside work not yet started
6	Access to work site	• Keep the site free from all unnecessary obstructions • Alternative access for public to be provided at specific zone	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Alternative access available
7	Storage of materials	• Storage of materials should be at a place without obstructing public movement and vehicle movement within the building campus. • No excess materials stored at working site	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Done as per requirement without obstructing public and vehicle movement
8	Maintaining of safety data sheet by contractor	• Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground • Storage of fuels and hazardous materials (paints & varnish etc.) as per hazardous materials storage and handling rules • Material Safety Data Sheet (MDDS) for hazardous chemicals should be readily available at working site	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Under compliance Hazardous materials like use of paints, varnish just started. Those are stored separately
9	Disposal of construction waste / demolition waste	Waste disposal management plan needs to be prepared. Expected generation of construction waste needs to be assessed. Disposal	Contractor	Environment Specialist of DSC and PMU- Day to day monitoring	Document check and visual observation	Complied Waste disposal process continued

Sr. No.	Field	Mitigation Activities	Responsible for mitigation	Responsible of monitoring	Monitoring method	Compliance status
		site is to be selected after complying statutory rules and regulations before starting of disposal. Before acceptance of work all sites to be cleaned and complete removal of waste to be ensured				

V. ENVIRONMENTAL MONITORING AND EVALUATION

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

23. During year 2014 to 2016 base line monitoring has been conducted for different packages. During construction air quality monitoring has been done for all the packages during said report period except package KEIIP/ICB/ Tr-1/SD-07/15-16, which just started. Monitoring and health safety budget of contractor is shown in **Appendix 12.**

24. Base line and during construction air quality monitoring results are shown in **Table 14** below. All test certificates from monitoring agency are disclosed in **Appendix 7.**

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

- In all cases concentration of SO_2 is within the prescribed standard. At few locations there is marginal increase in SO_2 concentration during construction phase compared to base line level. This increase may be due to local emission from burning of fuels.
- In all cases concentration of NO_x is within the prescribed standard. Concentration of NOx for the package KEIIP/ICB/ Tr-1/WS & SD-04/13-14, KEIIP/ICB/ Tr-1/SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14 has marginally increased during construction which may be due to increased movement of traffic at construction site for transportation of workers and materials.
- In all cases concentration of $PM_{2.5}$ is within the prescribed standard. There is marginal increase of $PM_{2.5}$ for package KEIIP/ICB/ Tr-1/WS & SD-04/13-14 and KEIIP/NCB/Tr-1/SD-06/13-14 during construction, but at other construction locations there is decreasing trend for $PM_{2.5}$ level. For package KEIIP/NCB/TR-1/BR-08A/2015-16 $PM_{2.5}$ concentration during construction was just below (59.0 microgram/ cubic meter) the standard. It is noted that level of $PM_{2.5}$ increased considerably during construction of the said package. There is requirement of safety equipment like nose mask during construction work.
- In most of the cases during construction, PM_{10} are less than base line concentration and within the standard. For package KEIIP/ICB/Tr-1/SD-05/13-14 PM_{10} concentration was marginally above the standard. Application of provisions of EMP like dust suppression and control of vehicle emission at working sites are to be maintained. For package KEIIP/NCB/TR-1/BR-08A/2015-16 PM_{10} concentration during construction was just above the standard. It is noted that level of PM_{10} increased considerably during construction of the said package. There is requirement of safety equipment like nose mask during construction work.
- In most of the cases concentration of Hydrocarbon is below the detection limit

Table 14: 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 Water Works at Palta and	Proposed Water Treatment Plant – Palta at Monirampur	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
Garden Reach **KEIIP/ICB/ Tr-1/WS02/2013-14**	Near Jetty (Intake 2) - Palta at Monirampur	Base line	04.03.2015	7.50	29.92	48.62	112.81	3.50
	Gardenreach Intake point and treatment plant- near Surinamghat	Base line	07.03.2015	7.49	30.16	52.36	121.89	3.20
	Average Base line			**7.72**	**31.62**	**51.20**	**118.77**	**3.4**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	30.09.2015	10.04	23.32	19.95	61.79	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction	30.09.2015	10.96	21.07	22.50	68.33	ND
		Average During construction		**10.5**	**22.19**	**21.22**	**65.06**	**ND**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction*	11.02.2016	8.87	24.90	21.19	68.26	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction*	11.02.2016	9.85	22.23	23.72	73.45	ND
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction*	27.05.2016.	8.75	25.38	19.95	61.62	ND
	Near Jetty (Intake 2) - Palta at Monirampur	During Construction*	27.05.2016.	10.84	26.68	22.44	87.18	ND
		Average During construction*		**9.57**	**24.79**	**21.82**	**72.62**	**ND**
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	28.62	123.82	
	6 no. shaft Taratala Road Jhinjira Bazar	Base line	03.01.2015	8.20	36.54	31.21	126.80	-
		Average Base line		**8.35**	**35.77**	**29.9**	**125.3**	
	DH Road Shaft no. 17 near 3A bus stand	During construction	31.07.2015	13.41	38.11	28.86	70.85	ND
	Taratala Road Shaft no. 7	During construction	31.07.2015	15.20	36.15	30.10	80.20	ND
	Taratala Road, Shaft No. – 7 (Tunnel) Brace Bridge	During construction	31.07.2015	14.31	34.20	28.82	73.22	ND
		Average During construction		**14.30**	**36.15**	**29.26**	**74.75**	**ND**

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
	DH Road Shaft no. 19	During construction	07.12.2015	5.11	40.73	33.67	85.12	ND
	Taratala Road Shaft no. 1	During construction	07.12.2015	16.05	42.72	28.68	78.37	ND
		Average During construction		**10.58**	**41.72**	**31.17**	**81.74**	
	DH Road Shaft 19	During construction*	08.04.2016	16.75	41.79	34.96	92.45	ND
	Taratala Road, Shaft 11	During construction*	08.04.2016	18.72	45.35	29.96	88.83	ND
	DH Road Shaft 21	During construction*	02.06.2016	19.29	45.76	31.02	91.32	ND
	Taratala Road, Shaft 03	During construction*	02.06.2016	16.88	43.52	26.02	82.45	ND
		Average During construction*		**17.91**	**44.10**	**30.49**	**88.76**	**ND**
Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/ Tr-1/SD-05/13-14)**	Nearby Incoming sewer pipeline – SWF & DWF pumping main from Begore Khal Pumping station (PS) – near PS /	Base line	27.12.2014	24.15	48.21	51.19	106.44	**-**
	Box drain and Begore PS location- near Behala Airport	Base line	27.12.2014	25.33	50.89	57.36	126.84	**-**
	Near pipe laying work – Junction point of Dakshin Behala Road & Swashan Kalitala road – near Barisha Youth club	Base line	27.12.2014	24.15	49.55	41.15	89.26	**-**
	Near Joka Tram Depot. Pumping station	Base line	27.12.2014	22.22	48.60	37.41	84.24	-
		Average Base line		**23.96**	**49.31**	**46.77**	**101.69**	
	Box drain and Begore PS location- near Behala Airport	During construction	31.12.2015	22.66	42.72	38.75	89.02	ND
	Near Joka Tram Depot. Pumping station	During construction	31.12.2015	22.66	62.59	52.43	124.38	ND
	Panch Kari Ghosh Road	During construction	31.12.2015	20.77	59.61	36.30	87.30	ND
		Average During construction		**22.03**	**54.97**	**42.49**	**100.23**	**ND**
	Box drain and Begore PS location- near	During construction*	13.06.2016.	20.11	42.06	40.32	96.53	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
	Behala Airport							
	Near Joka Tram Depot. Pumping station	During construction*	13.06.2016.	25.83	57.43	52.74	117.5	ND
		Average During construction*		**22.97**	**49.74**	**46.53**	**107.01**	**ND**
Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant **KEIIP/NCB/ Tr-1/SD-06/13-14**	Santoshpur Pumping station near receiving shaft area	Base line	05.01.2015	8.2	59.5	31.25	173.1	-
	Garden reach sewage treatment plant, Jacking shaft area	Base line	05.01.2015	9.7	49.7	27.48	65.86	-
	Railway line at Solabigha	Base line	20.06.2015	11.29	46.98	32.47	75.22	ND
		Average Base line		**9.73**	**52.06**	**30.4**	**104.76**	**ND**
	Santoshpur Pumping station near receiving shaft area	During construction	26.12. 2015	16.68	57.95	28.71	81.22	ND
	Garden reach sewage treatment plant, Jacking shaft area	During construction	26.12. 2015	15.4	53.98	28.30	79.95	ND
	Railway line at Solabigha	During construction	26.12. 2015	15.69	48.81	36.44	82.46	ND
		Average During Construction		**15.92**	**53.58**	**31.15**	**81.21**	**ND**
	Santoshpur Pumping station near receiving shaft area	During construction*	12.04.2016.	16.20	57.85	30.81	80.95	ND
	Garden reach sewage treatment plant, Jacking shaft area	During construction*	12.04.2016.	16.8	56.05	32.59	83.61	ND
	Railway line at Solabigha	During construction*	12.04.2016.	14.84	56.41	29.29	82.13	ND
		Average During Construction*		**15.94**	**56.77**	**30.89**	**82.23**	
	Santoshpur Pumping station near receiving shaft area	Post construction*	22.06.2016	19.02	57.12	33.64	85.89	ND
	Garden reach sewage treatment plant, Jacking shaft area	Post construction*	22.06.2016	19.31	58.90	32.32	87.93	ND
	Railway line at Solabigha	Post construction*	22.06.2016	17.08	55.89	29.41	81.33	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
		Average Post Construction*		**18.47**	**57.30**	**31.79**	**85.05**	**ND**
Rehabilitation and Replacement of GAP sewer and allied works, **KEIIP/ICB/TR-1/SD-07/2015-16**	Sodepur Brickfield Road	Base Line	21.06.2016	11.37	26.11	26.28	79.59	-
	Inside Keorapukur STP	Base Line	21.06.2016	10.42	22.48	23.75	65.48	-
		Average Base Line		**10.89**	**24.29**	**25.01**	**72.53**	**-**
Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	2nd Floor of the building	Base Line*	24.02.2016.	13.0	22.0	21.0	69.0	ND
	4th Floor of the building	Base Line*	24.02.2016.	14.0	24.0	32.0	92.0	ND
		Average Base Line		**13.5**	**23.0**	**26.5**	**80.5**	**ND**
	4th Floor of the building	During Construction*	23.06.2016.	12.0	26.0	59.0	102.0	-
		Average During Construction*		**12.0**	**26.0**	**59.0**	**102.0**	**-**
Standard				**80.0**	**80.0**	**60.0**	**100.0**	

Note- * During construction monitoring period January to June 2016 – Report period

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

26. Base line and during construction ambient noise level data are presented in **Table 15.** Noise level (base line and during construction) is always higher at working locations of package KEIIP/ICB/ Tr-1/WS & SD-04/13-14. Since all the working sites are within the main road and accordingly level of ambient noise is higher. Noise level is comparatively low at Palta water works location, which is at an isolated area away from traffic route. In most of the cases Leq value is within the standard in respect to commercial area standard but above the limit when compared to residential area standard. For package KEIIP/NCB/TR-1/BR-08A/2015-16 both base line and during construction noise level are high and above the standard**.** In all the cases mitigation measures need to be applied as per site specific EMP. Particularly use of ear plugs by workers at high noise producing area is necessary.

Table 15: 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	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)
	Intake point and treatment plant-near Surinamghat				
	Average Base line			**50.1**	**50.2**
	Proposed Water Treatment Plant – Palta at Monirampur	During Construction	30.09.2015	56.45	47.32
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction	30.09.2015	61.25	53.08
	Average During construction			**58.8**	**50.2**
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction*	11.02.2016	65.29	56.09
	Water Treatment Plant – Palta at Monirampur	During Construction*	11.02.2016	67.09	56.65
	Near Jetty (Intake 2) -Palta at Monirampur	During Construction*	03.06.2016.	58.28	52.15
	Water Treatment Plant – Palta at Monirampur	During Construction*	03.06.2016.	55.10	51.67
		Average During construction*		**61.44**	**54.14**
Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **KEIIP/ICB/ Tr-1/WS & SD-04/13-14**	2 no. Shaft D H Road Sakherbazar	Base line	03.01.2015	84.50	-
	6 no. shaft Taratala Road Jhinjira Bazar	Base line	03.01.2015	74.44	-
		Average Base line		**79.47**	
	DH Road Shaft no. 17 near 3A bus stand	During construction	31.07.2015	68.71	-
	Taratala Road Shaft no. 7 near Brace Bridge	During construction	31.07.2015	67.34	-
	Average During construction*			**68.0**	**-**
	DH Road Shaft no. 19	During construction	07.12.2015	68.20	**-**
	Taratala Road Shaft no. 1	During construction	07.12.2015	60.96	**-**
	Average During construction			**64.58**	
	DH Road, shaft 19	During construction*	08.04.2016.	77.58	**-**
	Taratala Road, Shaft 11	During construction*	08.04.2016.	73.39	**-**
	DH Road Shaft	During	02.06.2016.	78.90	**-**

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
	no. 21	construction*			
	Taratala Road Shaft no. 3	During construction*	02.06.2016.	77.62	-
		Average During construction*		**76.87**	-
Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment **(KEIIP/ICB/ Tr-1/SD-05/13-14)**	Nearby Incoming sewer pipeline – SWF & DWF pumping main from Begore Khal Pumping station (PS) – near PS /	Base line	27.12.2014	63.97	56.32
	Box drain location- near Behala Airport	Base line	27.12.2014	54.23	49.91
	Near pipe laying work – Junction point of Dakshin Behala Road & Swashan Kalitala road – near Barisha Youth club	Base line	27.12.2014	60.74	52.26
	Near Joka Tram Depot. Pumping station	Base line	27.12.2014	52.77	48.86
		Average base line		**57.92**	**51.83**
	Box drain and Begore PS location- near Behala Airport	During construction	31.12.2015	57.15	51.83
	Near Joka Tram Depot. Pumping station	During construction	31.12.2015	60.05	55.32
	Panch Kari Ghosh Road	During construction	31.12.2015	55.68	51.15
		Average During construction		**57.6**	**52.7**
	Near Joka Tram Depot. Pumping station	During construction*	13.06.2016.	50.24	47.42
	Box drain and Begore PS location- near Behala Airport	During construction*	13.06.2016.	60.08	55.68
		Average During construction*	**55.16**	**51.55**	**55.16**
Micro-tunneling works on pressure main from Santoshpur	Santoshpur pumping station receiving shaft	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)
Pumping Station to Garden Reach Sewage Treatment Plant **KEIIP/NCB/ Tr-1/SD-06/13-14**	area- Garden reach Treatment plant				
	Intermediate location between Jacking shaft and receiving shaft Railway Line, Solabigha	Base line	02.01.2015	64.70	-
	Average base line			**65.74**	**-**
	Santoshpur pumping station receiving shaft	During construction	26.12.2015	62.90	53.47
	Jacking shaft area- Garden reach Treatment plant	During construction	26.12.2015	62.16	11.05
	Intermediate location between Jacking shaft and receiving shaft Railway Line, Solabigha	During construction	26.12.2015	62.89	62.42
		Average During construction		**62.65**	**42.31**
	Santoshpur pumping station receiving shaft	During construction*	12.04.2016.	62.03	54.47
	Jacking shaft area- Garden reach Treatment plant	During construction*	12.04.2016.	61.43	11.55
	Railway Line, Solabigha	During construction*	12.04.2016.	61.30	53.90
		Average During construction*		**61.58**	**39.97**
	Santoshpur pumping station receiving shaft	Post construction*	22.06.2016.	66.11	57.01
	Jacking shaft area- Garden reach Treatment plant	Post construction*	22.06.2016.	63.09	52.81
	Railway line at Solabigha	Post construction*	22.06.2016.	64.14	52.82
		Average Post construction*		**64.44**	**54.21**
Rehabilitation and Replacement of GAP sewer and allied works, **KEIIP/ICB/TR-1/SD-07/2015-16**	Sodepur Brickfield Road	Base Line*	21.06.2016	65.86	51.58
	Keorapukur STP	Base Line*	21.06.2016	58.45	50,09
		Average Base Line*		**62.15**	**50.83**

Package	Sampling Locations	Implementation Stage	Date of Monitoring	Day Time Leq dB(A)	Night Time Leq dB(A)
Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	Business Tower, 2nd Floor	Base Line*	24.02.2016.	62.64	-
	Business Tower, 4th Floor	Base Line*	24.02.2016.	77.55	-
		Average Base Line*		**70.09**	-
	Business Tower, 4th Floor	During Construction*	23.06.2016.	82.03	_
		Average During construction*		**82.03**	-
Standard		**Day time:** Industrial area:75 Commercial: 65 Residential area: 55 **Night time:** Industrial area:70 Commercial: 55 Residential area: 45			

Note- * During construction monitoring during January to June 2016 – Report period

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

27. Since water source is involved for the package "Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach", water quality was monitored for the said package. Results indicate that concentration for monitored parameters during construction is within the limit except BOD. No as such increasing and decreasing trends are noted.

Table 16: Water quality monitoring data for Package KEIIP/ICB/ Tr-1/WS02/2013-14- Base line monitoring

Sl. No.	Parameters	SW1	SW2*	SW3*	SW4	SW5*	SW6*	Limit**
	Date of sampling	**04.03.2015**	**11.02.2016**	**18.05.2016**	**04.03.2015**	**11.02.2016**	**18.05.2016**	
1	pH	7.27			7.42			**6.5 – 8.5**
2	Total Hardness as CaCO3 (mg/l)	104.0			112.0			
3	Calcium as Mg(mg/l)	33.67	**54.6**	**44.5**	33.67	**56.6**	**47.4**	
4	Magnesium as Mg (mg/l)	4.8			6.72			
5	Chloride as Cl (mg/l)	23.96	**22.0**	**19.0**	23.96	**17.1**	**19.0**	**600.0**
6	Iron as Fe (mg/l)	2.5			2.72			**50.0**
7	Arsenic (mg/l)	<0.01			<0.01			**0.2**
8	Cadmium (mg/l)	<0.01			<0.01			**0.01**
9	Hexavalent Chromium (mg/l)	<0.05			<0.05			
10	Copper as Cu (mg/l)	<0.04			<0.04			**1.5**
11	Cyanide(mg/l)	<0.05			<0.05			**0.05**
12	Lead (mg/l)	<0.05			<0.05			**0.1**
13	Mercury (mg/l)	<0.001			<0.001			
14	Nitrate as NO_3 (mg/l)	6.50			8.50			**50.0**
15	Total Dissolved Solid (mg/l)	295.0	**203.0**	**220.0**	313.0	**191.0**	**250.0**	**1500.0**
16	Phenolic Compounds as Phenol(mg/l)	<0.002			<0.002			**0.005**

Sl. No.	Parameters	SW1	SW2*	SW3*	SW4	SW5*	SW6*	Limit**
17	Zinc as Zn (mg/l)	0.05			0.03			**15.0**
18	Sulphate as SO4 (mg/l)	31.0			29.0			**400.0**
19	Turbidity (NTU)	6.0	**238.0**	**133.0**	7.0	**133.0**	**116.0**	
20	Residual Free Chloride (mg/l)	<0.04			<0.04			
21	Fluoride (mg/l)	<0.1			<0.1			**1.5**
22	Manganese (mg/l)	<0.1			<0.1			
23	COD (mg/l)	40.0			50.0			
24	BOD (mg/l)	12.0	**4.90**	**7.88**	14.0	**<2.0**	**9.2**	**3.0**
25	Alkalinity (mg/l)	140.0			140.0			
26	Aluminium (mg/l)	<0.02			<0.02			
27	Boron (mg/l)	<0.1	**<0.1**	**<0.1**	<0.1	**<0.1**	**<0.1**	
28	Total Suspended Solids (mg/l)	37.0	**60.0**	**85.0**	42.0	**80.0**	**61.0**	

**Limit – BIS 2296, surface water quality standard

Locations: SW1: Ganges River water at Palta intake jetty- upstream (Base line)
SW2*: Ganges river water at Palta intake jetty upstream (During construction- report period)
SW3*: Ganges river water at Palta intake jetty upstream (During construction- report period)

SW4: Ganges river water at Palta intake jetty- downstream (Base line)
SW5*: Ganges river water at Palta intake jetty- downstream (During construction- report period)
SW6*: Ganges river water at Palta intake jetty- downstream (During construction- report period)

28. "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 12).**

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

Table 17: Performance Fact Sheet for Required Environmental Consents/Clearances of KEIIP Tranche 1 (Package-wise)

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

	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
5	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP **(KEIIP/ICB/ Tr-1/SD-07/15-16)**	M/s SNET-SSG Joint Venture	Yes	Not required till date	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained partially
6	Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, **KEIIP/NCB/TR-1/BR-08A/2015-16**	M/s S. Mishra Infradev Private Ltd.	Contract clauses related to health and environment attached in the BID document	Not Applicable	Not required	NR as per present work	NR as per present work	Not required as per present work	Obtained partially

Table 18: 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[31]	Overall Status of EMP Implementation	Field to be Monitored as per EMP												
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources	Employment generation
					In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)													
1	Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach **(KEIIP/ICB/ Tr-1/WS02/2013-14)**	M/s ITD-CEM India JV	Yes	Nominated	Complied	2	2	2	2	2	n/a	n/a	n/a	2	2	n/a	n/a	2
2	Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method **(KEIIP/ICB/ Tr-1/WS & SD-04/13-14)**	M/s ITD- ITD CEM Jv	Yes	Nominated	Complied	2	2	2	2	2	2	2	2	n/a	2	2	n/a	2

[31]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[31]	Overall Status of EMP Implementation	Field to be Monitored as per EMP													
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources	Employment generation
					In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)													
3	Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment (KEIIP/ICB/ Tr-1/SD-05/13-14)	M/s Tantia – MPPL (WILO) Jv	Yes	Nominated	Complied	2	2	2	2	2	1	n/a	2	n/a	1	2	n/a	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	1	1	2	2	n/a	n/a	2	n/a	1	2	n/a	2

	Package Number	Name of Contractor	EMP Part of contract Document(Yes / No)	Contractor Social/ Environment Person[31]	Overall Status of EMP Implementation	Field to be Monitored as per EMP												
						Source of Materials	Camp Sites	Landscape and Aesthetics	Air Quality	Noise Level	Traffic	Ecological Resources – Terrestrial	Accessibility	Water Quality	Occupational Health & safety	Community Health & safety	Socio cultural resources	Employment generation
					In compliance (2) / Partial Compliance (1) / Not in compliance (0) / Not applicable (n/a)													
5	Construction of S & D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Stations(s) and STP **(KEIIP/ICB/ Tr-1/SD-07/15-16)**	M/s SNET-SSG Joint Venture	Yes	Nominated	Complied	2	1	2	2	2	2	n/a	2	n/a	2	2	n/a	2
6	Interior Renovation of KEIIP office at Business Towers including Electrical and Air conditioning works, (**KEIIP/NCB/TR-1/BR-08A/2015-16)**	M/s S. Mishra Infradev Private Ltd.	Contract clauses related to Safety and Environment added in BID document	No specific person	Complied	2	n/a	2	1	1	n/a	n/a	2	n/a	1	2	n/a	2

Note calculation of numerical value for determining performance status- Calculation is based on addition of numerical value like below-
Package - KEIIP/ICB/ Tr-1/WS02/2013-14= Total score- 2+2+2+2+2+2+2+2 = 16. Number of working field=13, Then- **16/8=2,** More than 1.5 (Complied)
Package- KEIIP/ICB/ Tr-1/WS & SD-04/13-14= Total score- 2+2+2+2+2+2+2+2+2+2+2= 22. Number of working field=11, Then- **22/11=2**, More than 1.5 (Complied)
Package- KEIIP/ICB/ Tr-1/SD-05/13-14= Total score- 2+2+2+2+2+1+2+1+2+2= 18. Number of field=10, Then- **17810=1.8**, More than 1.5 (Complied)
Package- KEIIP/NCB/ Tr-1/SD-06/13-14= Total score- 2+1+1+2+2+2+1+2+2= 15. Number of field=9, Then- **15/9=1.66** More than 1.5 (Complied)}- **package work completed**
Package **-** KEIIP/ICB/ Tr-1/SD-07/15-16= Total score- 2+1+2+2+2+2+2+2+2+2= 19. Number of field=10, Then- **19/10=1.9** More than 1.5 (Complied)
Package - KEIIP/NCB/TR-1/BR-08A/2015-16= Total score- 2+2+1+1+2+1+2+2= 13. Number of field=8, Then- **13/8=1.62,** More than 1.5 (Complied)

VI. CONSULTATIONS AND DISCLOSURES CONDUCTED

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

31. The indicative schedule for consultations and disclosure is presented in **Table 19. Appendix 13** shows sample consultation sheet as provided by the contractor.

Table 19: 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 2016	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

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

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

34. Awareness and environment, health & safety training program has been conducted for contractors at DSC office. Details are given in **Appendix 14.** Training program for environment monitors of PMU is also arranged in the month on February 2016. Attendance sheet is attached in **Appendix 14.**

VII. GRIEVANCE REDRESSAL

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

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

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

38. At Contractors' site offices, complaint and suggestion books will be available for lodging any complaint. The concerned Executive Engineers of KEIIP will monitor these

books and if possible take necessary actions for redressal of minor complaints with intimation to the complainant.

39. The Grievance Registration/Suggestion Form will be available at the Complaints Cell and in Borough Offices and will also be downloadable from the KEIIP/KMC websites. Grievances/ suggestions of affected persons can be dropped in suggestion boxes or conveyed through phone or mail. Affected Persons will also be able to register grievances - social, environmental or other, personally at the Complaint Cell and at Borough offices of KMC. The Grievance Officer and designated official at the Boroughs will be able to correctly interpret/record verbal grievances of non-literate persons and those received over telephone.

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

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

42. **Grievance Redressal Committee (GRC).** A PMU level GRC has already been constituted by the Project Director to address grievances. Grievances not resolved at borough level are referred to PMU level. However grievances that cannot be resolved at PMU level will be referred to an apex grievance redress committee (GRC).32 Still unresolved issues will be referred to an appropriate court of law.

43. The time limit for grievance redressal will be as follows,

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

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

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

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

46. Information Dissemination Methods of the GRM. Grievances received and responses provided will be documented and reported back to the affected persons. (**Appendix 15 -** Sample Grievance Registration Form). The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the offices of the different Boroughs of KMC and web. The phone number where grievances are to be recorded will be prominently displayed at the construction sites.

47. 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.

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

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

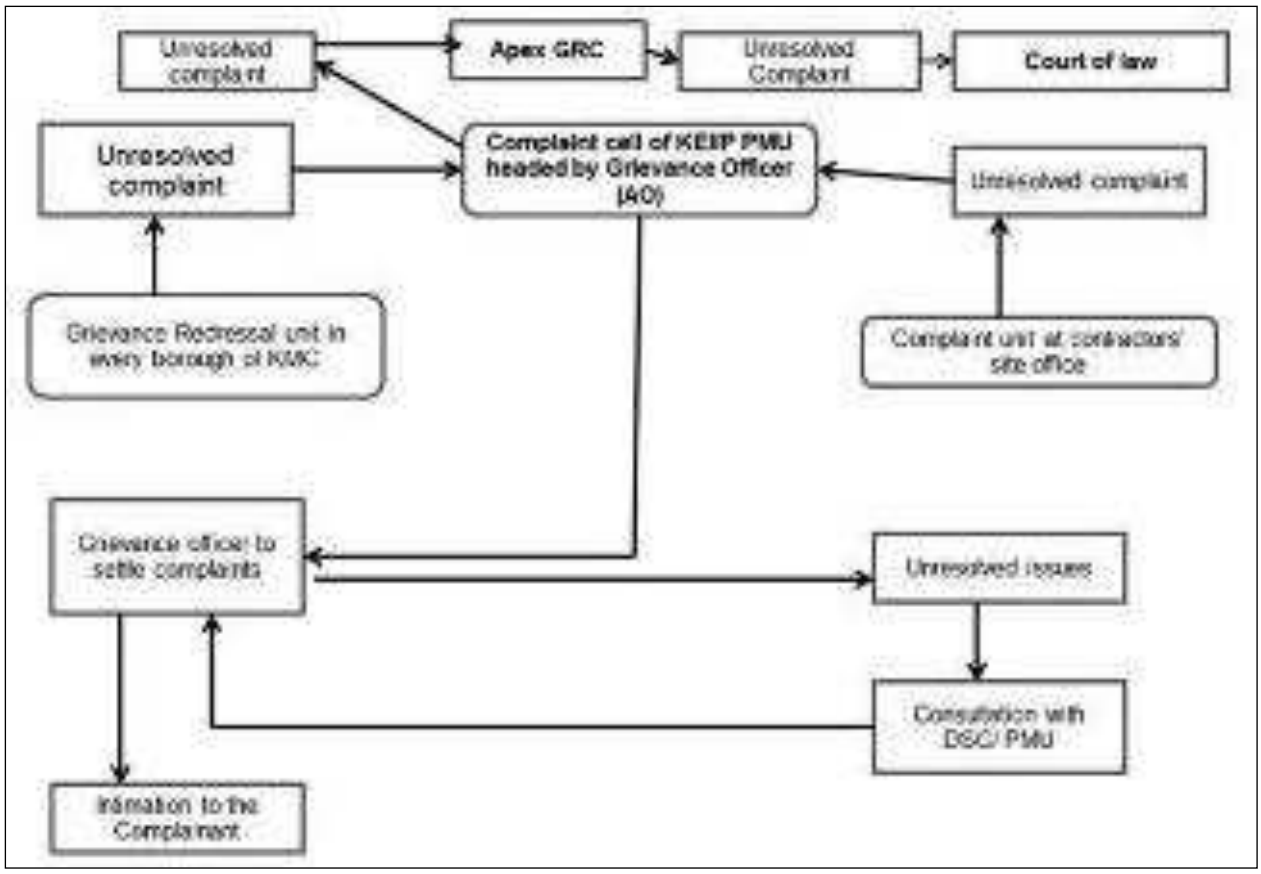


Figure 4: Grievance Redress Mechanism

50. **Appendix 16** sows filled up grievance register as received from contractor.

VIII. FINDINGS AND RECOMMENDATIONS

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

52. Minor, localised and short duration non-compliances in some work sites of a few packages during this period have been listed in paragraph 20. It may please be noted that such new non-compliances arose at new sites opened up during the period under review and may not ranked as non-resolved non-compliances reported during July-December, 2015.

53. **Table 20** 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 20: Corrective Action Plan

	Partial complied issues	Action Required	Responsible	Target Date	Indicator of Compliance
1	More comprehensive Tool box training for labourers is required for active sites of KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/TR-1/BR-08A/2015-16	Induction and tool box training on regular basis	Contractor	Continuous process	Training document, photographs
2	Insufficient display and caution board for active sites of KEIIP/ICB/ Tr-1/ SD-05/13-14	Sufficient and proper display board with contact number for grievance registration	Contractor	31st August 2016	Site observation and checking
3	One construction camp (newly set up) within SSE STP site needs improvement of KEIIP/ICB/Tr-1/ SD-07/15-16	Improvement of housekeeping and access to the camp needs to be improved	Contractor	31st August 2016	Site observation and checking
4	Use of PPE by contractors' site workers is not always maintained (KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/TR-1/BR-08A/2015-16)	Use of PPE should be at all times as per site condition and work type.	Contractor	31st August 2016	Availability and use of PPE
5	Further improvement of use of caution tape at excavated area for public safety for KEIIP/ICB/ Tr-1/ SD-05/13-14	Complete use of caution tape at all working sites	Contractor	31st August 2016 and continuous process	Site observation
6	Quicker disposal of excess earth and spoil from active and completed project site (KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14)	Post construction disposal as per EMP	Contractor	Continuous process	Site observation and disposal record

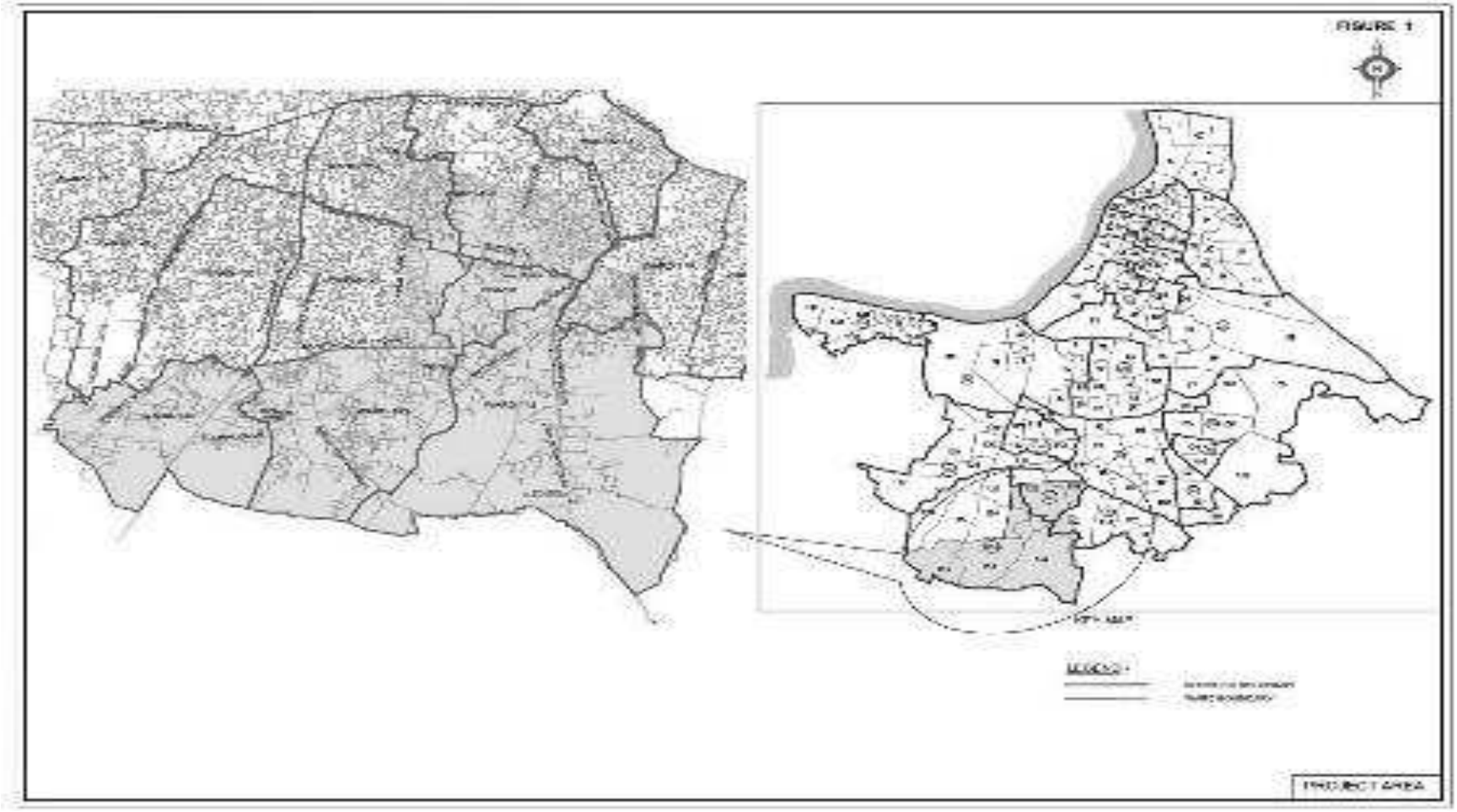
54. **Table 21** lists the implementation status of corrective action (during January-June 2016) in work sites active during July-December 2015.

Table 21: Implementation of Corrective Action Plan

Sr. No	Issues as per SEMR July – December 2015	Action Required as per SEMR July – December 2015	Implementation status of corrective action (during January-June 2016) in work sites of identified Packages active during July-December 2015
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	Issue resolved in KEIIP/ICB/ Tr-1/ SD-05/13-14
2	Water sprinkling in some places is not done according to the site conditions	Regular water sprinkling as per site condition	Issue resolved in KEIIP/ICB/ Tr-1/ SD-05/13-14
3	More comprehensive Tool box training for labourers is required	Induction and tool box training on regular basis	Issue partially resolved in KEIIP/ICB/ Tr-1/ SD-05/13-14
4	Housekeeping at some parts of the	Improvement of housekeeping	Issue resolved in KEIIP/ICB/

Sr. No	Issues as per SEMR July – December 2015	Action Required as per SEMR July – December 2015	Implementation status of corrective action (during January-June 2016) in work sites of identified Packages active during July-December 2015
	camps and working sites needs attention		Tr-1/ SD-05/13-14
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.	Issue resolved in KEIIP/ICB/ Tr-1/ SD-05 and KEIIP/NCB/ Tr-1/SD-06/13-14
6	Improper and insufficient barricading. Absence of hard barricading	Complete barricading and complete use of caution tape at all working sites	Issue resolved in KEIIP/ICB/ Tr-1/WS02/2013-14, KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14
7	Irregular disposal of excess earth and spoil	Regular disposal of construction waste, excess earth/ spoil	Issue resolved in KEIIP/ICB/ Tr-1/ SD-05/13-14
8	Unsatisfactory access of public movement along pipe laying area. Closing of road without information to locals	Proper access of public at working area. Arrangement of wooden/ metal platform	Issue resolved in KEIIP/ICB/ Tr-1/ SD-05/13-14 and KEIIP/NCB/ Tr-1/SD-06/13-14

APPENDIX 1: LOCATION MAP PROJECT AREA



Project Area – water Supply project

Sewerage and Drainage Project Area

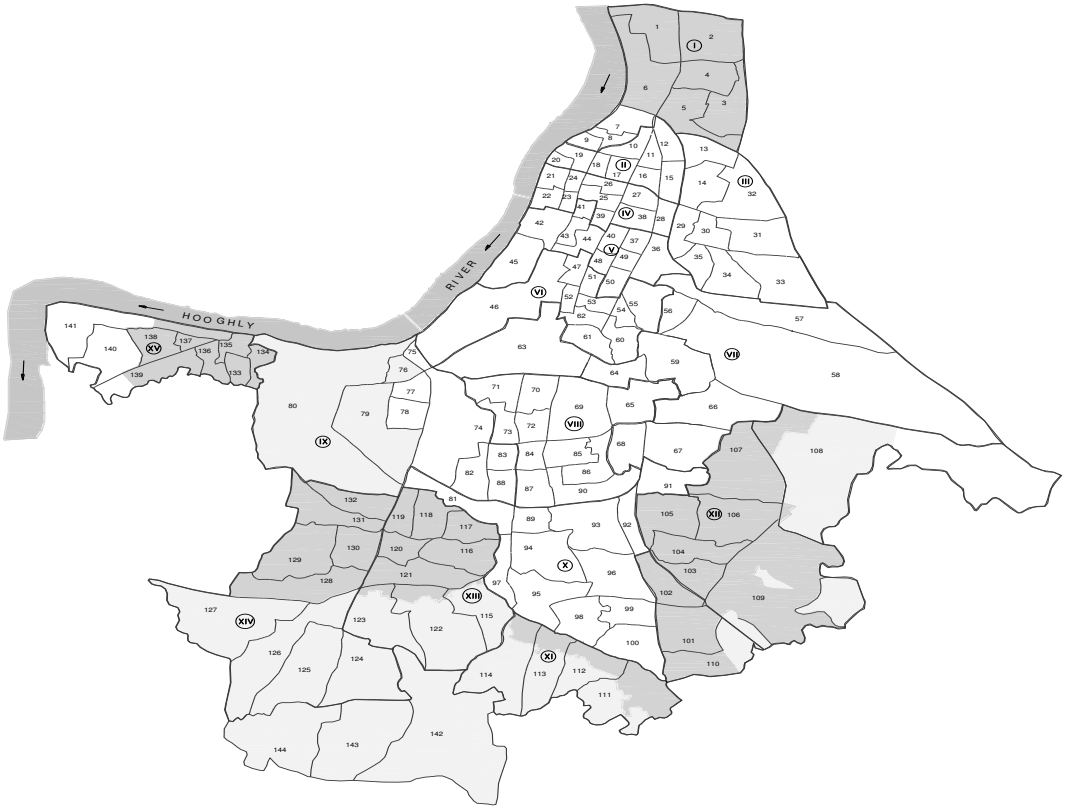
LEGEND:-

BOROUGH BOUNDARY

WARD BOUNDARY

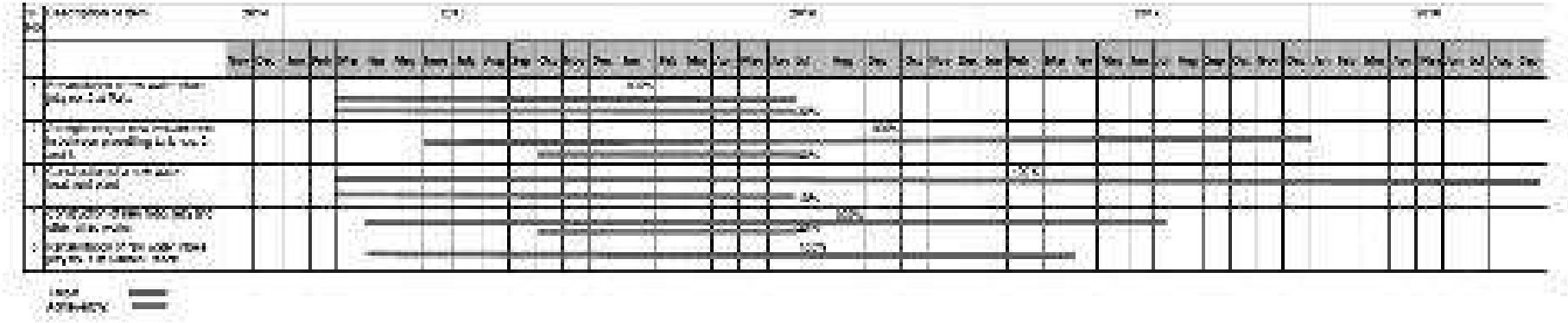
AREA TAKEN UP UNDER KEIP PHASE I

AREA TO BE CONSIDERED UNDER KEIIP FOR S&D DEVELOPMENT

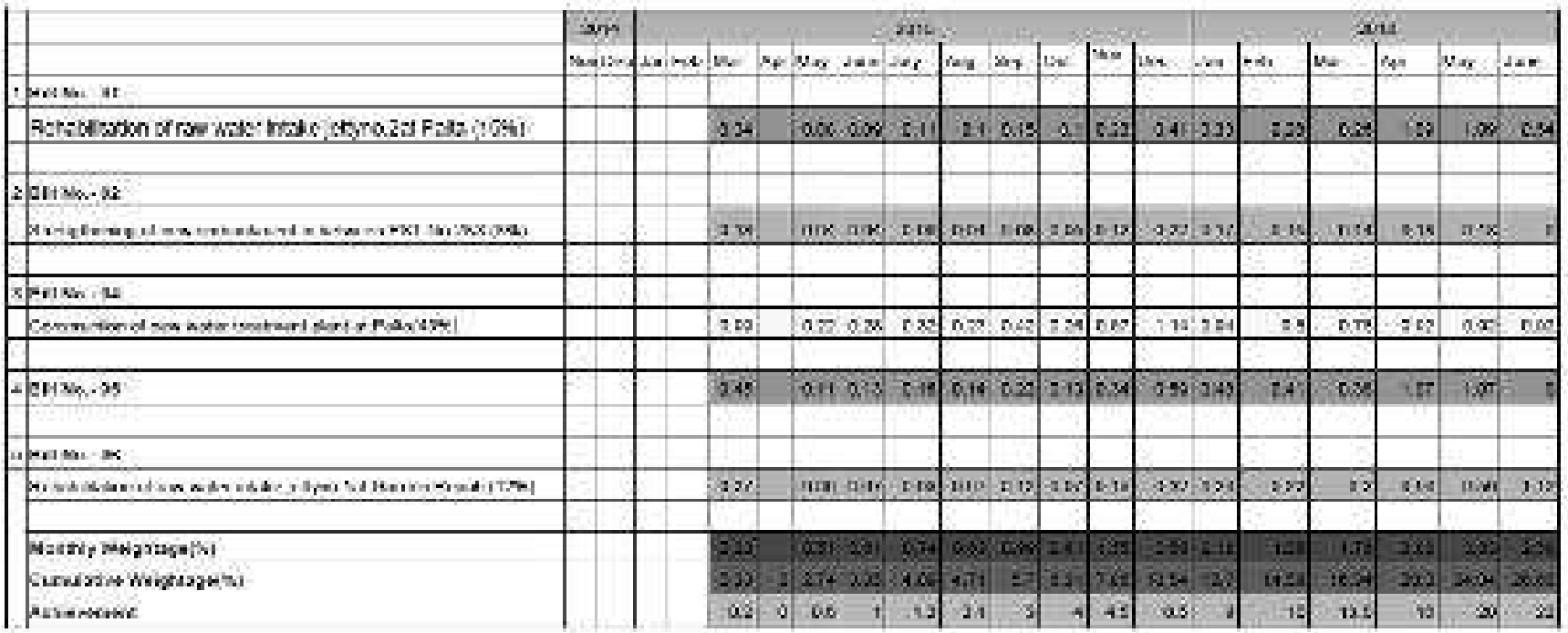


APPENDIX 2: IMPLEMENTATION SCHEDULE

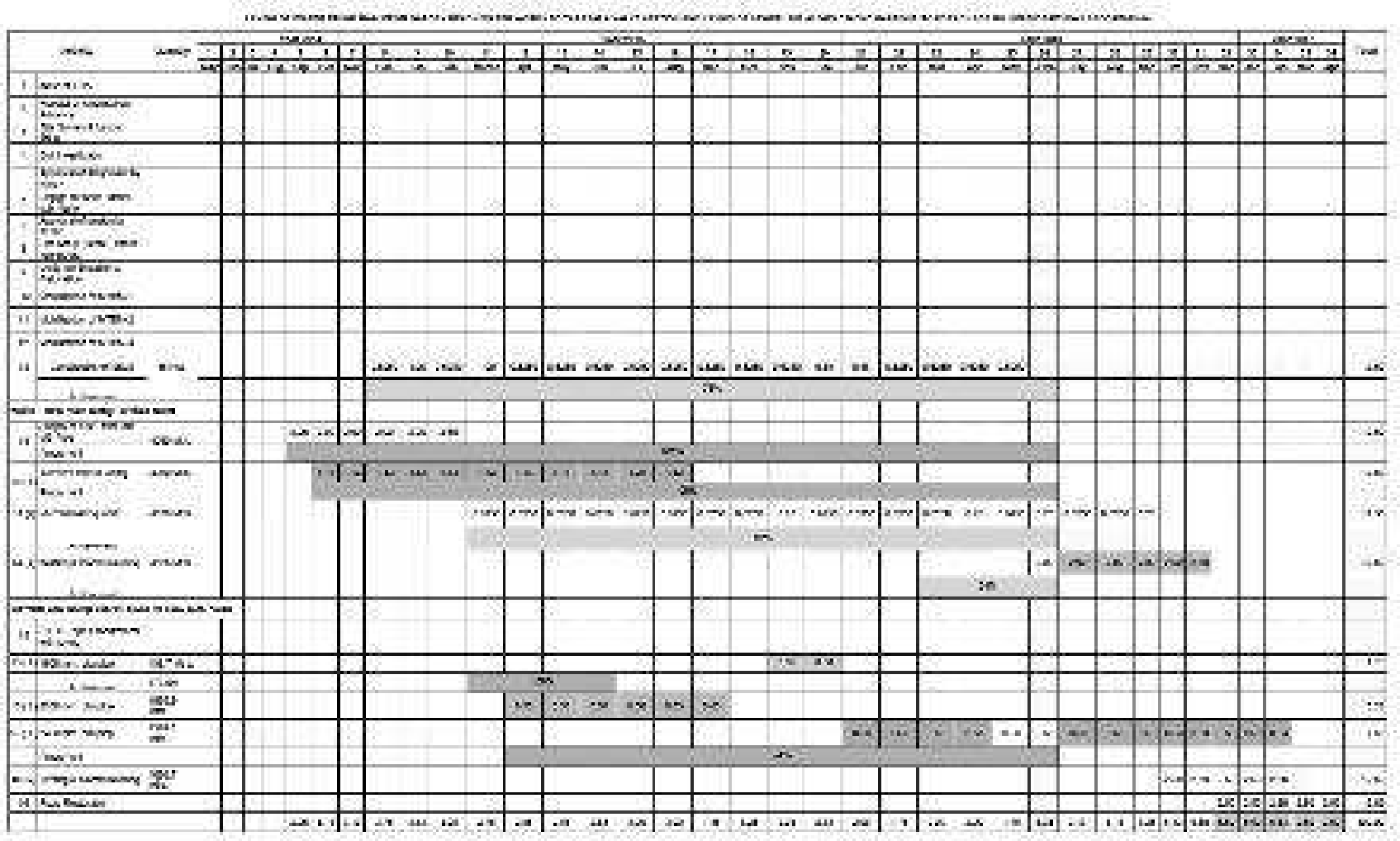
Package- Rehabilitation and Refurbishment of Water Works at Palta and Garden Reach KEIIP/ICB/ Tr-1/WS02/2013-14



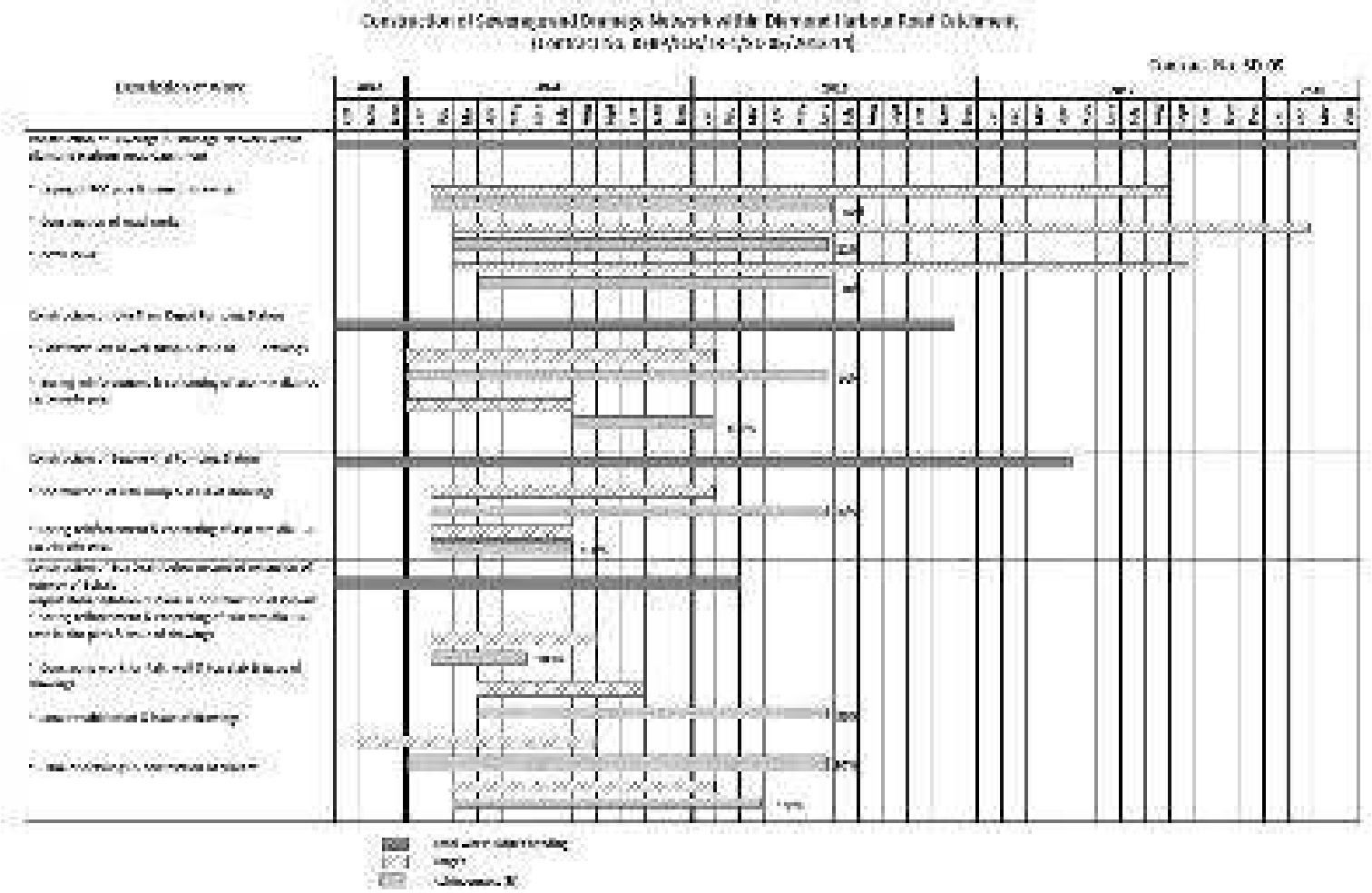
REHABILITATION AND REFURBISHMENT OF WATER WORKS AT PALTA AND GARDEN REACH (WS/02)



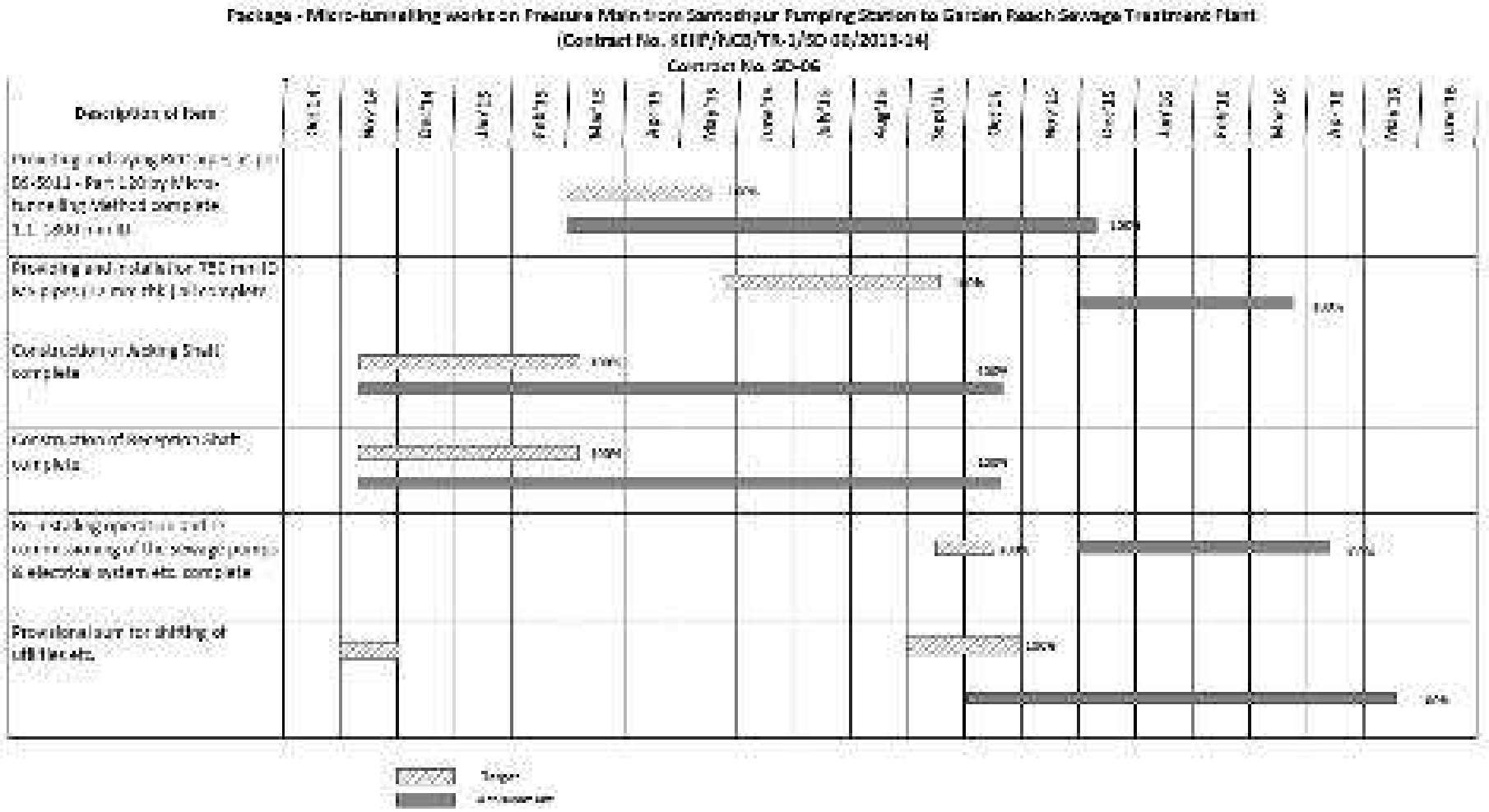
Package- Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method KEIIP/ICB/ Tr-1/WS & SD-04/13-14



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

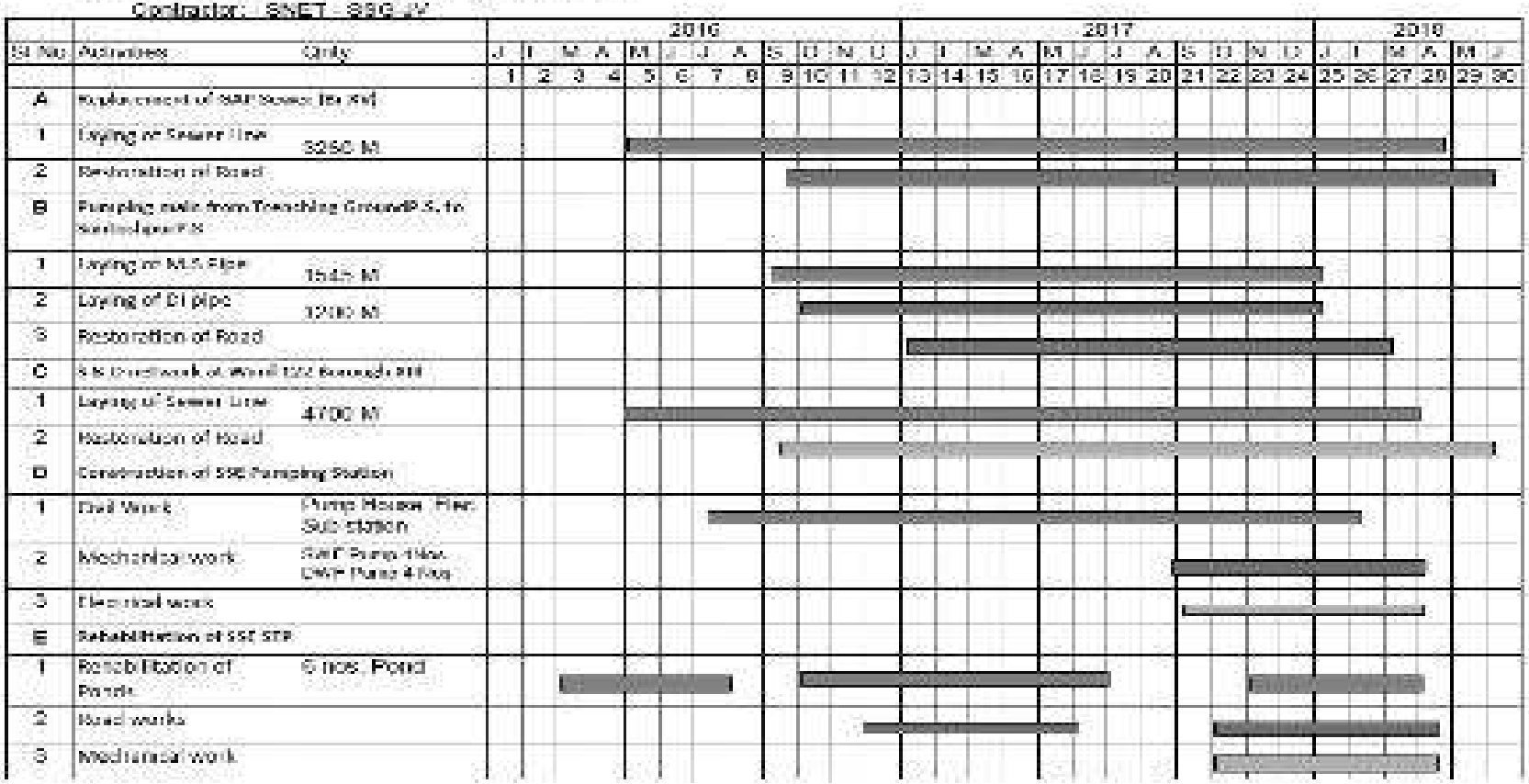


Package- Project: - Construction of S&D Network and Pumping Station in Borough XIII (Ward 122) including Replacement of GAP Sewer Line in Borough XV, Laying of Pumping Main and Rehabilitation of SSE STP including Operation & Maintenance of the Pumping Station(s) and STP (Contract Pachage: - KEIIP/ICB/TR-1/SD07/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

PROJECT PLANNING SCHEDULE

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

Contractor: SNET - SSG JV



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

Use of PPE by worker

Proper storage of oxygen cylinder near jetty area

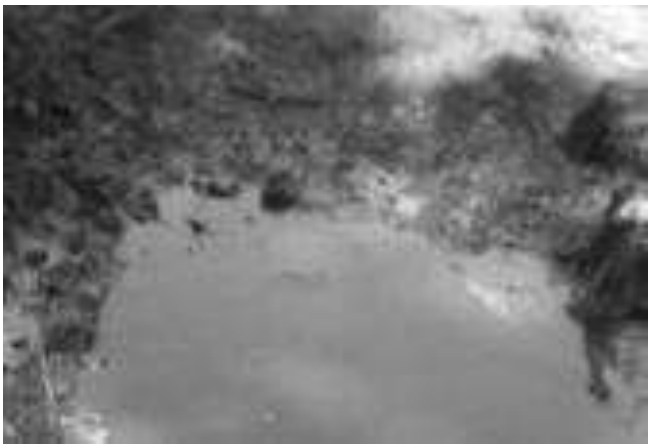
Scrap yard near jetty

Emergency contact number and signage near jetty

Waste disposal arrangement near jetty

Construction work going on at Jetty

Workers with PPE- noted



Water stagnation near working site

Proper storage of fuel – noted

Road construction undergoing at Palta site

Use of PPE by worker - noted

Inside labour camp – use of gas noted

Jetty construction work going on – use of PPE by workers noted

Construction going on – Water treatment plant at Palta

Awareness program for worker

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

Placement of proper warning signage at site

Pipe laying work through jack pushing continued- use of PPE by worker

Hard Barricading Taratala Road shaft 5

Display of emergency number at working location

Waste disposal at Aamgachhia, Joka

Rented house for labourer

Caution Board at worksite – DH Road

Local accumulation of slurry

Availability of First aid box

Internal Training program – Health and Safety

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

Pipe-laying work at 3A bus stand – access available

Storage of fuel at working camp

Emergency contact number at Joka Pumping station work site

First aid box available at working site

Electrical wire noted at ground. Shifting is required along with danger signage

Road closure by work display board

Disposal of excess earth is required immediately

Camp site at Joka PS working area

Use of PPE noted at Joka PS project location

Hard barricading and wooden platform for access to site- noted

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

Use of PPE by contractor

Use of PPE by contractor

Caution board at working sites

Caution tape noted at working site

Caution tape noted at working site

Caution board at working site

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

Cleaning of GAP Sewer

Complete use of PPE by Workers

STP rehabilitation work continued

Pipe laying work continued

Well stocked first aid box

STP rehabilitation work continued

Improper storage of PCC block near camp toilet. Access needs to be cleared

Display board with complete information at entry point of STP

Proper placement of warning board and caution tape at pipe laying work site

Display of emergency contact number at working office

.

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

No use of PPE – dusty condition noted

Labourer using safety jacket but not using nose mask

Storage of debris- construction waste backside of office building –disposal of materials required

First aid facility available at working site

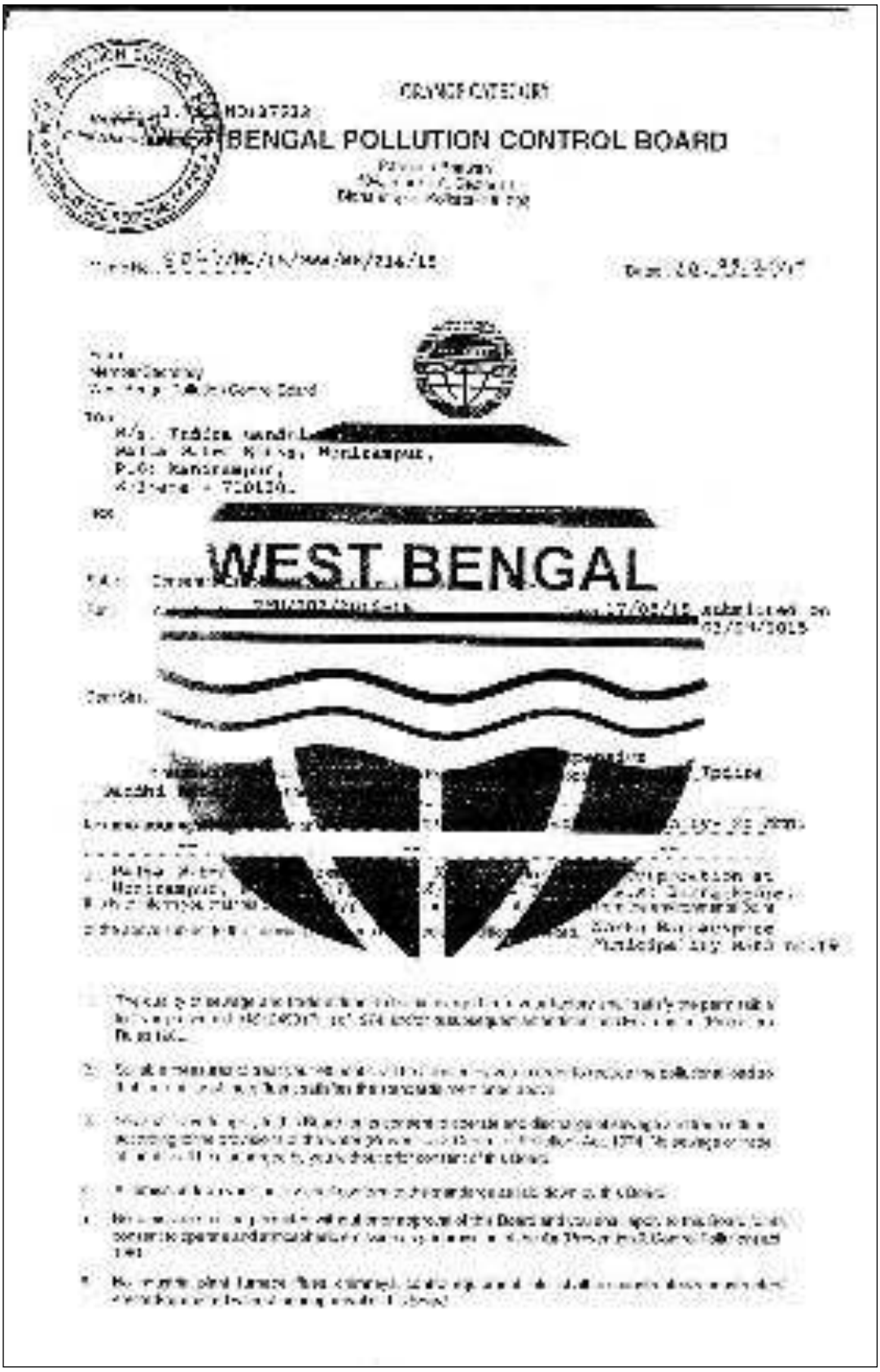
Completed part of the floor

Conference room renovated

Cleaning process continued

Use of PPE by worker – noted

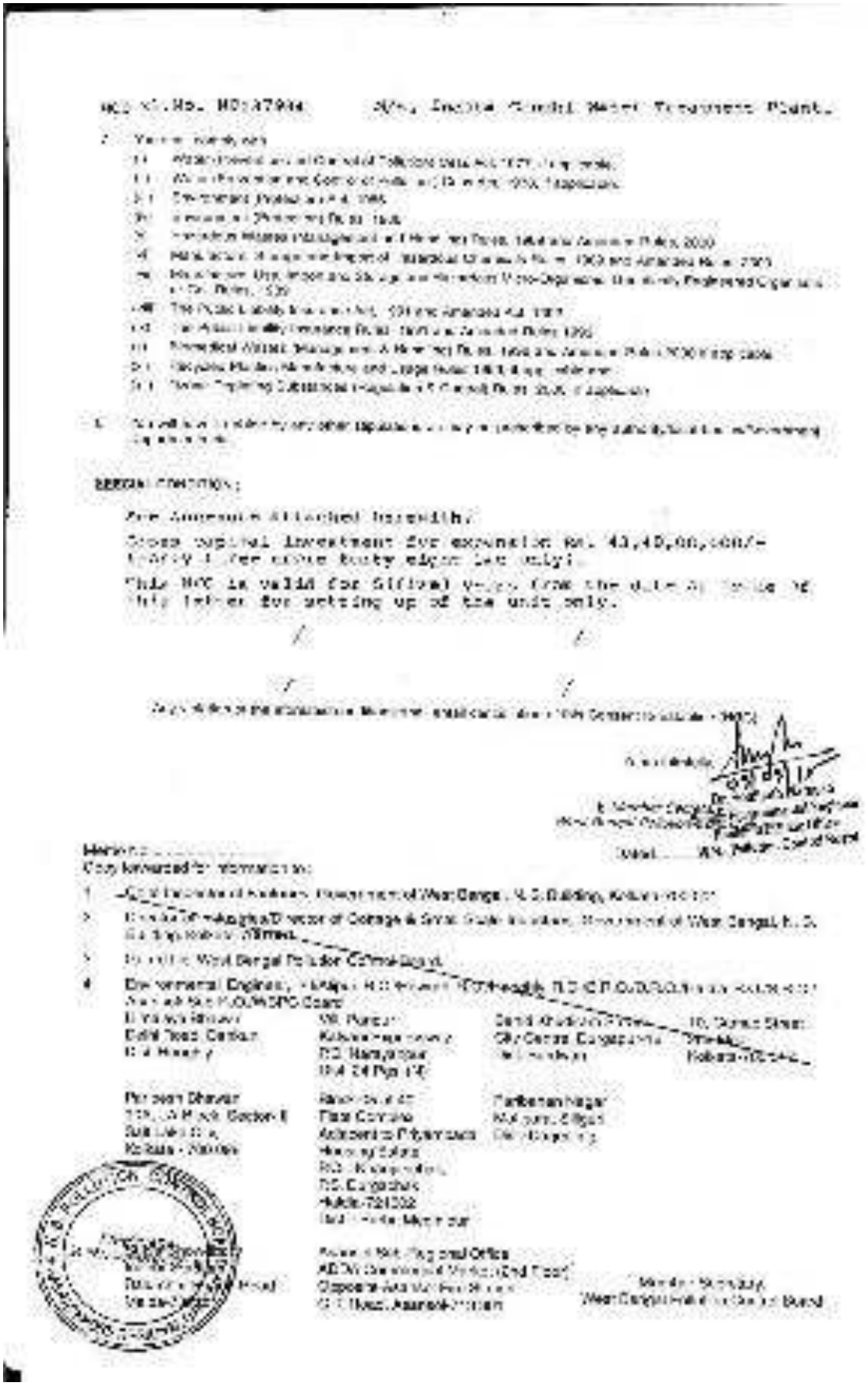
APPENDIX 4: CTE FOR PALTA WTP

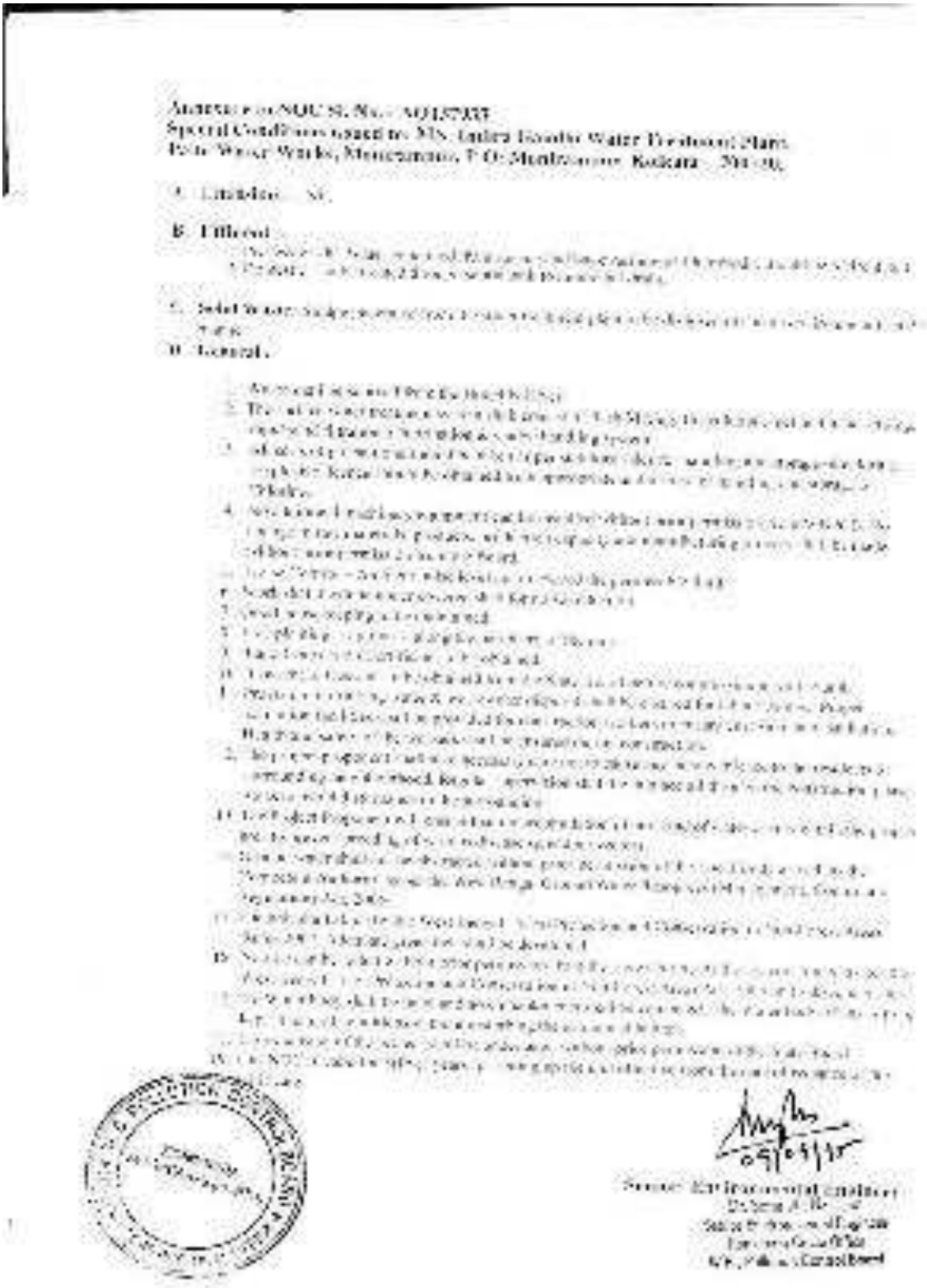


ORANGE CATEGORY

BENGAL POLLUTION CONTROL BOARD

WEST BENGAL





APPENDIX 5

Site Specific Environmental Management Plan (Revised)

JUNE 2016

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

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

PROGRAM: KOLKATA ENVIRONMENT IMPROVEMENT INVESTMENT PROGRAM (KEIIP)

EMPLOYER: KOLKATA MUNICIPAL CORPORATION (KMC)

CONTRACTOR: ITD – ITD CEM JOINT VENTURE

Prepared by

ITD-ITD CEM JOINT VENTURE

Pre Construction and Construction phase Site Specific Environmental Management Plan

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
Climate	The nature and intensity of rainfall events in an area, has implications for storm water management. Smoke from burning activities could be wider spread on windy days especially when dust could be blown off site.	Seasonal climatic variations during scheduling of construction activities in the area will be followed. Any excavation work will be done during dry season Storm water 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 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 tunneling 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 impacts on biodiversity within the area	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	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	The pipe laying for the transmission mains may however affect existing roadside trees.	been cut & 75 nos. tree plantation 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-tunneling 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 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.	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 be plan during	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
	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.	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 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 shafts area already barricaded. Warning signs has been proved at hazardous working areas. Working area clearly demarcated, barricaded to protect pedestrians from open areas- Jacking and receiving pits Thoroughly trained workers assigned to dangerous equipment. Waste management practices will be well undertaken Speed and movement of construction vehicles restricted Personal Protective Equipment are provided to all workers Visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas have been ensured	Company's health and safety guidelines followed

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
		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. The no objection certificate from Amgachia Gram Panchayat is enclosed.
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. Overnight accommodation will be provided as per requirement. – Still now not required	Company policy will be followed
Employment Generation	The subproject will provide employment opportunities for local people during construction.	Local Workers/labourers are mostly engaged at site Construction materials will be procured from local market	

Field/Issues	Anticipated Impact	Mitigation Measures	Remarks
	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.		
Archaeological and Cultural Characteristics	The proposed development will not require demolition of ASI- or state-protected monuments and buildings	There is no Heritage or archaeological protected sites. Construction staff members would be aware of the likelihood of heritage resources being unearthed and of the scientific importance of such discoveries. Building and other construction workers Act 1996 to follow	
Social Impacts	Impact on local social environment	Restrict activities and movement of staff to designated construction areas. ITD will assist in locating DSC Environment Specialist and/or PMU Environment Coordinator in the event construction staffs is approached by members of the public or other stakeholders.	
Security and Safety	Affect project activity and impact on workforce	Lighting on site is provided maximum security and to enable easier policing of the site, without creating a visual nuisance to local residents or businesses. Material stockpiles or stacks, such as, pipes will be stable and well secured to avoid collapse and possible injury to site workers / local residents. Flammable materials will be stored as far as possible from adjacent residents / businesses.	

APPENDIX 6: Spoil Management

ITD CemIndia (Joint Venture)

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

SPOIL MANAGEMENT PLAN (SMP)

- Name of Project: **Rehabilitation And Refurbishment Of Water Works At Palta** a**nd 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.

<table>
<tr><td>6.2</td><td><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.</td></tr>
<tr><td>7</td><td>▪ Spoil Volumes, Characteristics and Minimization</td></tr>
<tr><td></td><td>• Volumes
40,000 Cu.M approx
• Characteristics
Normal earth basically clay types
• Minimization Excavation of earth to be done as per requirements only. No extra earth shall be excavated.</td></tr>
<tr><td>8</td><td>Spoil Reuses Opportunities, Identification and Assessment</td></tr>
<tr><td></td><td>• 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
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<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>
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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>
<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>
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</table>

ITD CemIndia (Joint Venture)

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

SPOIL MANAGEMENT PLAN (SMP)

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

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

Site Engineers/Supervisors

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

Environment, Health & Safety (EHS) Officer

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

His duties will include: -

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

	recommendations for performance improvement. **<u>Employees</u>** 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**
	• **Small quantity of spoils will be re used for back filling of excavated shaft location.** • **Balance spoils will be removed.**
9.	**Spoil Transportation Methodology**
	• 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.

<table>
<tr><td></td><td>NOC is already obtained for dumping of spoil at that location</td></tr>
<tr><td>10</td><td>Monitoring, Reporting, Review and Improvements</td></tr>
<tr><td></td><td>• Monitoring, Reporting and all necessary improvements will be as required.</td></tr>
<tr><td>11</td><td>List of Relevant Guide Lines/ Documents
Nil</td></tr>
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</table></td></tr>
</table>

WS 04- Estimation of excess earth/ spoil

Taratala road					
Shaft Loccations					
Sl. No.	**Area of generation of spoil**	**Volume of soil (Cu.M)**	**Type of spoil**	**Detail location Preliminary local storage**	**Detail location final disposal**
1	Shaft No 0	**288**	**Soil**	**Beside Shaft No 1**	**Dag No. 15C, 158, KhatianNo. P-973/ J.L. No. 93, Mouja - Amgachia, Vill+PO- Amgachia, PS- Bishnupur,Distric: - South 24 Parganas, West Bengal**
2	Shaft No 1	393	**Soil**		
3	Shaft No 2	288	**Soil**		
4	Shaft No 3	401	**Soil**		
5	Shaft No 4	259	**Soil**		
6	Shaft No 5	393	**Soil**		
7	Shaft No 6	230	**Soil**		
8	Shaft No 7	393	**Soil**		
9	Shaft No 8	259	**Soil**		
10	Shaft No 9	349	**Soil**		
11	Shaft No 10	259	**Soil**		
12	Shaft No 11	349	**Soil**		
13	Shaft No 12	259	**Soil**		
	Total Soil	4122			

DH Road					
1	Shaft No 1	210	Clay	NA	Dag No. 15C, 158, KhatianNo. P-973/ J.L. No. 93, Mouja - Amgachia, Vill+PO- Amgachia, PS- Bishnupur,Distric: - South 24 Parganas, West Bengal
2	Shaft No 2	275	Clay		
3	Shaft No 3	277	Clay		
4	Shaft No 4	276	Clay		
5	Shaft No 5	361	Clay		
6	Shaft No 6	391	Clay		
7	Shaft No 7	286	Clay		
8	Shaft No 8	391	Clay		
9	Shaft No 9	391	Clay		
10	Shaft No 10	308	Clay		
11	Shaft No 11	421	Clay		
12	Shaft No 12	308	Clay		
13	Shaft No 13	421	Clay		
14	Shaft No 14	285	Clay		
15	Shaft No 15	421	Clay		
16	Shaft No 16	289	Clay		
17	Shaft No 17	425	Clay		
18	Shaft No 18	308	Clay		
19	Shaft No 19	370	Clay		
20	Shaft No 20	288	Clay		

21	Shaft No 21	567	Clay		
	Shaft No 21A	421			
22	Shaft No 22	311	Clay		
	Total =	**7999**			
Pipe pushing					
Taratala Road					
1	Shaft No 0-12	9193	Clay	**Beside Shaft No 1**	Dag No. 15C, 158, KhatianNo. P-973/ J.L. No. 93, Mouja - Amgachia, Vill+PO- Amgachia, PS- Bishnupur,Distric: - South 24 Parganas, West Bengal
Pipe pushing					
DH Road					
1	Shaft No 1-22	16429	Clay	NA	Dag No. 15C, 158, KhatianNo. P-973/ J.L. No. 93, Mouja - Amgachia, Vill+PO- Amgachia, PS- Bishnupur,Distric: - South 24 Parganas, West Bengal

Total volume of Spoil = **37743**

NOC from land owner

AMGACHIA GRAM PANCHAYAT OFFICE

[illegible]

([illegible] CERTIFICATE)

This is to certify that [illegible] (Name) S / D / W of [illegible] of [illegible] (Address) has been possessing a plot of land having Dag No [illegible] No. [illegible] J.L.No. [illegible] Mouza [illegible] which he wants to convert from Sali (Low land) to Basta (Homestead)

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

[illegible]

Signature of Pradhan

Pradhan

Amgachia Gram Panchayat [illegible]

[illegible] 24 Pargana [illegible]


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

Spoil Management Plan

JUNE 2016

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.

YUBAK BRINDA CLUB

Transcription- NOC from club in front of temple for utilization of excess earh for land development

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

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

	• Plan safety in accordance with the approved work methodology for daily work activities. • Establish and maintain proper communication with all workers with regard to EHS; and • Provide proper supervision for the work. **Environment, health & safety (EHS) Officer** He will be accountable to the PM for fulfilling the duties assigned to him and ensure implementation of ESH Plan. His duties will include :- • Monitor and advise relevant personnel on compliance with EHS statutory obligation at the site; • Facilitate inclusion of safety elements into work Method Statement. • Highlight the requirement of safety through Tool-Box / other meeting. • Conduct investigation of all accident/dangerous occurrences and recommend appropriate safety measures. • Advice & co-ordinate for implementation of operational control procedures etc. • Convene safety meeting & minute the proceeding for circulation & follow-up action. • Provide copies of site / office inspection report to relevant managers; • Plan procurement of PPEs and safety devices and inspect their healthiness. • Report to PM/Divisional Manager on all matters pertaining to status of safety and promotional program at site level. • Facilitate administration of FIRST – AID. • Facilitate screening of workman and safety induction. • Conduct fire drill and facilitate emergency preparedness. • Design campaigns, competitions and other special emphasis program to promote safety in the work place. • Notify site personnel non-conformance to safety norms observed during site visits / site inspections. • Attend and participate in Site EHS Management Review Meetings; • Access and advise PM on the perceived EHS training needs of project personnel; • Monitor EHS performance of subcontractor and make appropriate recommendations for performance improvement. **Employees** All employees will be accountable for conforming to the required of the EHS Plan and statutory requirements. In particular every employee will be required to :- • Take care of environmental protection and safety of himself & others; • Co-operate to 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 whatever required by site safety rules & regulations. • Take care of personal protective equipment. • Don't let your work put another worker in danger. • Use only means of access provided for specific work at site. • Avoid horseplay, practical jokes or other activities to create a hazard. • Don't use drugs or alcohol on the job. • Keep the latrines, urinals, wash points, canteen and other facilities provided in a clean and hygienic condition. • Report any unsafe work practice and any injury or accident to your supervisor.
4.0	**DEFINITIONS**

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

APPENDIX 7 – AIR, NOISE, WATER QUALITY DATA

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

INDICATIVE CONSULTANT (INDIA)

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & [illegible] TEST HOUSE)
HPL Link Road, [illegible], [illegible]
Haldia, Purba Medinipur, PIN-721 602

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

TEST REPORT

Sample is drawn by M/S. Indicative Consultant India

Report No	[illegible]	Sample Ref. No.	[illegible]
Issued To	M/S. [illegible]	Report Date	[illegible]
Address	[illegible] Water Treatment Plant, [illegible], [illegible]	Date of Sampling	[illegible]
		Analysis Started on	[illegible]
Sample Description	Ambient Air	Analysis Completed on	[illegible]
Location	Near Intake Jetty No.- 2		
Sample Condition	[illegible]		
Sampling Method	[illegible]		
Test Method	[illegible]		
Ambient Temperature (°C) (Average)	[illegible]		

Time of Sampling	Concentration in ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
[illegible] AM to [illegible] PM	[illegible]	32.72	3.52	22.35	[illegible]

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

[illegible]

Checked By

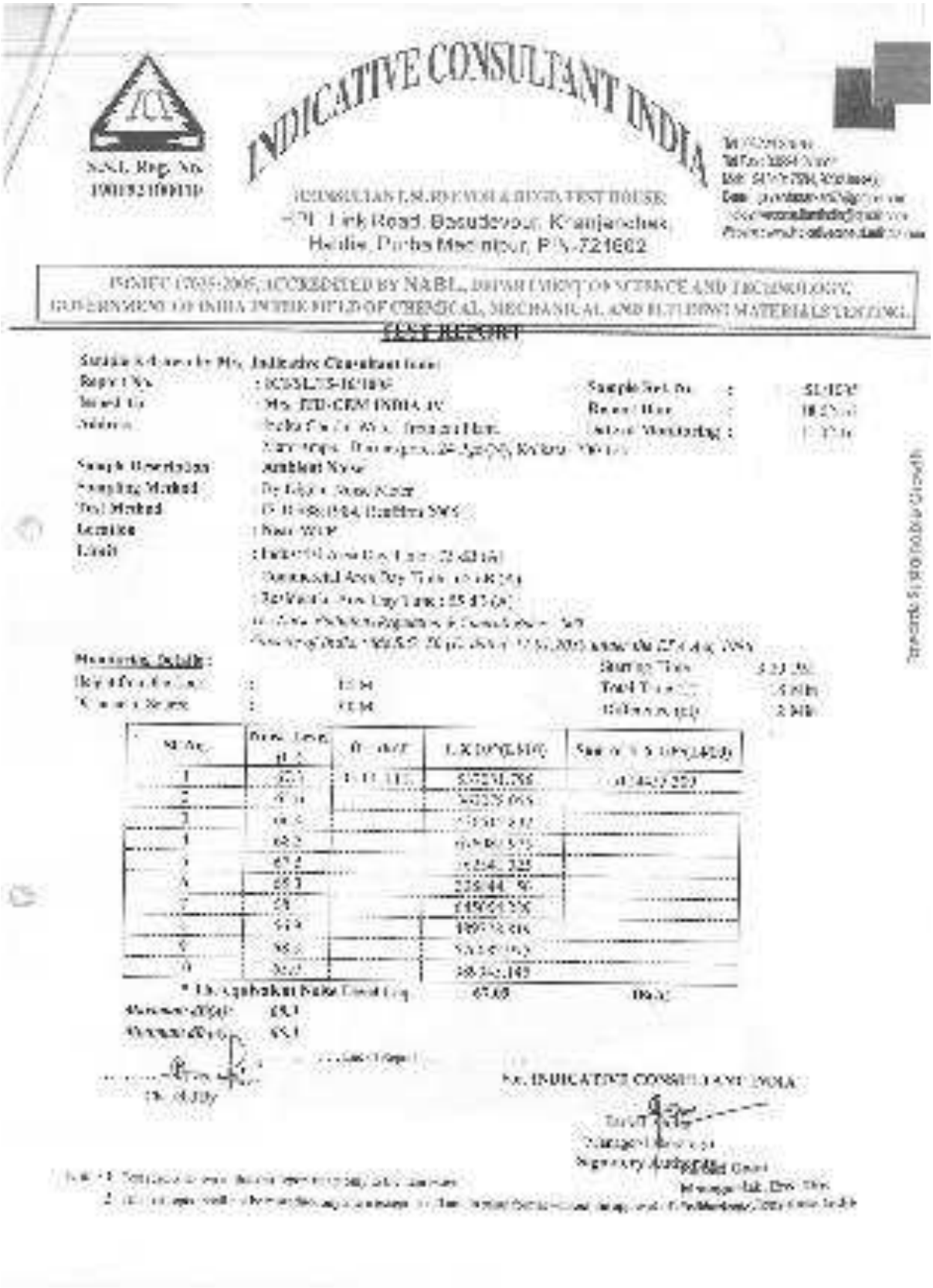
For Indicative Consultant India

[illegible]
(Manager-Laboratory)
Authorised Signatory

Note: [illegible]

Page 1 of 1

Kolkata Lab: [illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT

Sl. No.				

For INDICATIVE CONSULTANT INDIA

Signatory Authority

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192[illegible]

CONSULTANT, SURVEYOR & REGD. TEST HOUSE

HPL Link Road, [illegible], Kharganchas, [illegible] Purba Medinipur, PIN 721[illegible]

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

TEST REPORT

Sample collected by M/s. Indicative Consultant India

[illegible]	: [illegible]	Sample Ref. No. :	[illegible]
[illegible]	: M/s. ITD-CEM INDIA JV	Report Date :	[illegible]
[illegible]	: [illegible] Water Treatment Plant, [illegible] Kolkata- [illegible]	Date of Monitoring :	[illegible]
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS : 9989 : [illegible]		
Location	: Near WTP		
Limit	: [illegible] Commercial Area Night Time : 55 dB (A) [illegible]		
Monitoring [illegible]		Starting Time :	[illegible] PM
Height from the [illegible]	1.5 M	Total Time [illegible] :	[illegible] Hr
Distance of Source	2.0 M	[illegible] :	[illegible] Hr

Sl. No.	Noise Level (L)	[illegible]	[illegible]	Sum of [illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	56.5		44665.[illegible]	
4	[illegible]		[illegible]	
5	56.[illegible]		47[illegible]	
6	[illegible]		[illegible]	
7	56.9		48977.[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

[illegible] Noise Level (Leq) [illegible] dB(A)

Maximum [illegible] : [illegible]

Minimum [illegible] : [illegible]

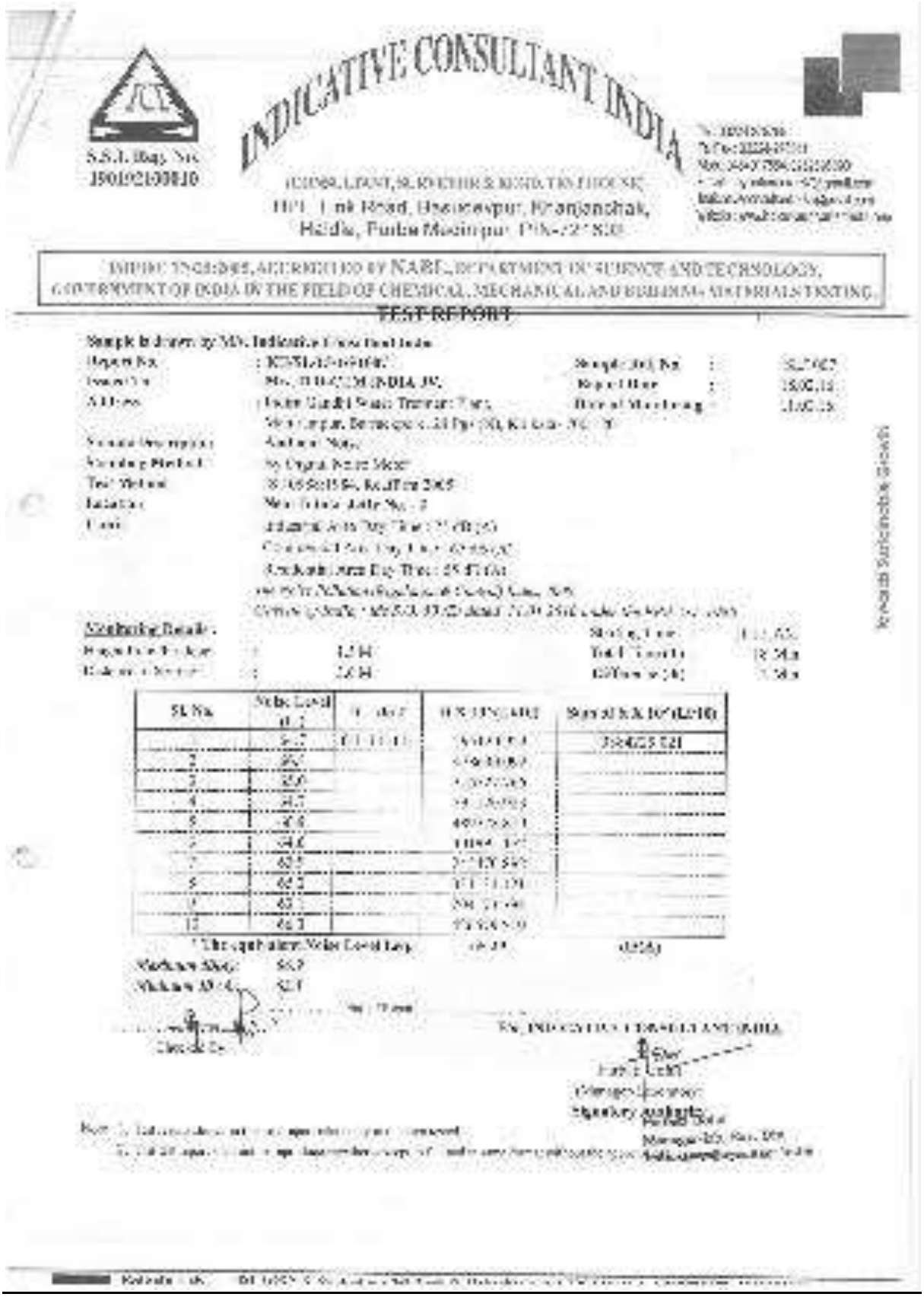
Checked by

For INDICATIVE CONSULTANT INDIA

Manager-Laboratory

Signatory Authority

Note : [illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

CONSULTANT, SURVEYOR & HIGH TEST HOUSE

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

[illegible]

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

TEST REPORT

Sample analysed by M/s. Indicative Consultant India

Report No.	: [illegible]	Sample R.F. No. :	SL-[illegible]
Issued To	: M/s. [illegible] INDIA JV	Report Date :	[illegible]
Address	: [illegible]	Date of Monitoring :	[illegible]
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS [illegible]		
Location	: [illegible] No. - 2		
Limits	: [illegible]		

Monitoring Details :

Height from the floor	[illegible]	Starting Time	[illegible]
Distance of source	[illegible]	Total Time	[illegible] Min
		Difference	[illegible] Min

S. No.	Noise Level (Li)	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	[illegible]		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

The equivalent Noise Level Leq [illegible]

Maximum [illegible] [illegible]

Minimum [illegible] [illegible]

Checked By

For, INDICATIVE CONSULTANT INDIA

Manager [illegible]

Manager-Lab [illegible]

[illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190193100010

CONSULTANT SURVEYOR & REGD. [illegible]

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

[illegible]

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

TEST REPORT

Sample is drawn by M/s Indicative Consultant India

[illegible]

Report No.	: [illegible]		Sample Ref. No.	[illegible]
Issued To	: M/s [illegible]		Report Date	[illegible]
Address	: [illegible] Water Treatment Plant [illegible]		Date of Sampling	[illegible]
	[illegible]		Analysis Started on	[illegible]
Sample Condition	: In Plastic Bottle		Analysis Completed on	[illegible]
Sample Description	: Surface Water		Time of Sampling	: 02:25 PM
Sampling Method	: IS 3025 [illegible] 2012			
Test Method	: [illegible]			
Location	: [illegible] (Up Stream)			

Sl. No.	Parameter	Unit	Result	Method Followed
1	Colour	[illegible]	[illegible]	[illegible]
2	Turbidity	NTU	[illegible]	[illegible]
3	Bio Chemical Oxygen Demand [illegible]	mg/l	[illegible]	[illegible]
4	Dissolved Oxygen	mg/L	[illegible]	[illegible]
5	Total Dissolved Solid (TDS)	mg/L	[illegible]	[illegible]
6	[illegible]	mg/L	[illegible]	[illegible]
7	Chloride	mg/L	[illegible]	[illegible]
8	Boron as B	mg/L	[illegible]	[illegible]
9	Sodium Absorption Ratio [illegible]	-	[illegible]	[illegible]
10	Total Coliform	MPN per 100 ml	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	mg/L	[illegible]	[illegible]

[illegible]

For Indicative Consultant India

Checked By

[illegible]

Manager Laboratory

Signatory Authority

Note:

1. [illegible]
2. [illegible]
3. [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192[illegible]

(CONSULTANT, SURVEYOR & [illegible] TESTING HOUSE)
HPL Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

[illegible] M/s. Indicative Consultant India
[illegible] N.A.

[illegible]	[illegible]	Sample Ref. No.	: [illegible]
[illegible]	M/s. [illegible] INDIA JV.	Report Date	: [illegible]
[illegible]	[illegible] Kolkata 700 [illegible]	Date of Sampling	: [illegible]
		Analysis Started on	: [illegible]
Sample Condition	In Plastic [illegible]	Analysis Completed on	: [illegible]
Sample Description	Surface Water	Time of Sampling	: [illegible]
Sampling Method	IS 3025 [illegible]		
Test Method	APHA [illegible]		
[illegible]	[illegible]		

Sl. No.	Parameters	Unit	Result	Method Followed
1.	Odour	[illegible]	[illegible]	[illegible]
2.	Turbidity	[illegible]	[illegible]	[illegible]
3.	Bio-chemical Oxygen Demand (3 Days at 27°C)	mg/L	[illegible]	[illegible]
4.	Dissolved Oxygen	mg/L	2.04	[illegible]
5.	Total Dissolved Solids (TDS)	mg/L	[illegible]	[illegible]
6.	Calcium as Ca, Magnesium as Mg	mg/L	[illegible]	[illegible]
7.	Chlorides as Cl	mg/L	[illegible]	[illegible]
8.	Boron as B	mg/L	[illegible]	[illegible]
9.	Sodium [illegible]		[illegible]	[illegible]
10.	Total Coliform	MPN per 100 ml	[illegible]	[illegible]
11.	Heterotrophic Plate Count	CFU/ml	[illegible]	[illegible]
12.	[illegible]	[illegible]	[illegible]	[illegible]

For Indicative Consultant India

[illegible]

Manager Laboratory
Signatory Authority

[illegible]

Kolkata Lab [illegible]

INDICATIVE CONSULTANT INDIA

TEST REPORT

S.S.I. Reg. No. 190192100046

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & HIGH TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	[illegible]	Sample Ref. No.	:	[illegible]
Issued To	:	M/s. ITD-CEM INDIA JV.	Report Date	:	[illegible]
Address	:	[illegible] Water Treatment Plant, [illegible], Kolkata-700 [illegible]	Date of Sampling	:	[illegible]
			Analysis Started on	:	[illegible]
Sample Description	:	Ambient Air	Analysis Completed on	:	[illegible]
Location	:	Near Intake Jetty No. - 2			
Sample Condition	:	Glass Micro fibre Filter Paper & Plastic Bottle			
Sampling Method	:	CPCB Emission Regulation (Part III)			
Test Method	:	CPCB [illegible], IS 5182 (Part - [illegible]), [illegible] Appendix [illegible], IS 5182 (Part - 2), 2001, IS 5182 [illegible] Analysis			
Ambient Temperature in °C (Average)	:	[illegible]			

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Lead Hydrocarbon
[illegible] AM to [illegible] PM	[illegible]	22.44	[illegible]	[illegible]	N.D.

N.D. = Not Detected

---End of Report---

[illegible]

Checked By

For, Indicative Consultant India

[illegible]
Manager (Laboratory)
Signature Authority

[illegible]

Kolkata Lab: [illegible]
Corp. Office: [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample collected by M/s. Indicative Consultant India
Sample submitted and labelled by [illegible]

Report No. : [illegible]
Issued To : M/s. ITD-CEM [illegible]
Address : [illegible]
Sample Condition : [illegible]
Sample Description : Surface Water
Sampling Method : [illegible]
Test Method : [illegible]
Location : [illegible]

Sample Ref. No. : [illegible]
Report Date : [illegible]
Date of Sampling : [illegible]
Analysis Started on : [illegible]
Analysis Completed on : [illegible]
Time of Sampling : [illegible]

Sl. No.	Parameters	Unit	Result	Method Followed
1.	Colour	Hazen Unit	[illegible]	[illegible]
2.	Turbidity	NTU	[illegible]	[illegible]
3.	Bio Chemical Oxygen Demand (3 days at 27°C)	mg/l	[illegible]	[illegible]
4.	Dissolved Oxygen	mg/l	5.5	[illegible]
5.	Total Dissolved Solids (TDS)	mg/l	220.5	[illegible]
6.	Calcium [illegible]	mg/l	[illegible]	[illegible]
7.	Chloride as Cl	mg/l	[illegible]	[illegible]
8.	[illegible]	mg/l	[illegible]	[illegible]
9.	Sodium [illegible]	–	[illegible]	[illegible]
10.	Total Coliform	MPN per 100 ml	[illegible]	[illegible]
11.	[illegible] Plate Count	[illegible]	[illegible]	[illegible]
12.	[illegible]	mg/l	[illegible]	[illegible]

End of Report

For, Indicative Consultant India

(Officer-in-charge, Laboratory)
Signatory Authority

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

Kolkata Lab : [illegible]
Corp. Office : [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India
[illegible]

Report No.	:	ICI/W/16-17/225	Sample Ref. No.	:	[illegible]
Issued To	:	M/s. [illegible] India Pvt.	Report Date	:	[illegible]
Address	:	[illegible]	Date of Sampling	:	[illegible]
		[illegible]	Analysis Started on	:	[illegible]
Sample Condition	:	[illegible]	Analysis Completed on	:	[illegible]
Sample Description	:	Surface Water	Time of Sampling	:	[illegible]
Sampling Method	:	[illegible]			
Test Method	:	APHA 22nd Ed. 2012, IS 3025			
Location	:	[illegible]			

Sl. No.	Parameters	Unit	Result	Method Followed
1.	Colour	Hazen Unit	[illegible]	[illegible]
2.	Turbidity	NTU	[illegible]	[illegible]
3.	Bio-Chemical Oxygen Demand (for 3 days at 27°C)	mg/L	[illegible]	[illegible]
4.	Dissolved Oxygen	mg/L	[illegible]	[illegible]
5.	Total Dissolved Solids (TDS)	mg/L	[illegible]	[illegible]
6.	Calcium as Ca / Magnesium as Mg	mg/L	[illegible]	[illegible]
7.	Chloride as Cl	mg/L	[illegible]	[illegible]
8.	[illegible]	mg/L	[illegible]	[illegible]
9.	Sodium Ratio [illegible]	-	[illegible]	[illegible]
10.	Total Coliform	MPN/100 ml	[illegible]	[illegible]
11.	[illegible]	[illegible]	[illegible]	[illegible]
12.	[illegible]	mg/L	[illegible]	[illegible]

[illegible]

For, Indicative Consultant India

[illegible]

Signatory Authority

[illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & FIELD TEST HOUSE)
HPL Link Road, [illegible], Khanjanchak
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No	: ICI/[illegible]	Sample Ref. No	: [illegible]
Issued To	M/s. ITD CEM INDIA JV	Report Date	: [illegible]
Address	Indira Gandhi Water Treatment Plant, [illegible], Barrackpore, 24 Pgs (N), Kolkata- 700 120	Date of Monitoring	: [illegible]
Sample Description	Ambient Noise		
Sampling Method	By Digital Noise Meter		
Test Method	IS [illegible], Reaffirm 2007		
Location	: Near WTP		
Limit	: Industrial Area Day Time: 75 dB (A)		
	: Commercial Area Day Time: 65 dB (A)		
	: Residential Area Day Time: 55 dB (A)		
	[illegible]		
	[illegible]		

Monitoring Details :

Height from the floor : 1.5 M		Starting Time	[illegible]
Distance of Source : 2.0 M		Total Time (T)	[illegible]
		Difference (t)	[illegible]

Sl. No.	Noise Level (Li)	[illegible]	[illegible]	[illegible]
1	54.6	[illegible]	[illegible]	[illegible]
2	51.2		[illegible]	
3	[illegible]		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

* The equivalent Noise Level Leq. 55.[illegible] dB(A)

Maximum dB(A): [illegible]

Minimum dB(A): 51.2

[illegible] End of Report [illegible]

Checked by

For INDICATIVE CONSULTANT INDIA

[illegible]

Signatory Authority

Indicative Consultant India

Note: 1. [illegible]

2. [illegible]

Kolkata Lab : [illegible]

Corp. Office : [illegible]

[illegible] Office: [illegible]

INDICATIVE CONSULTANT INDIA

N.S.I. Reg. No. [illegible]

CONSULTANT, SURVEYOR & REGD. TEST HOUSE
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/HL/16-17/248	Sample Ref. No.	: SL-148
Issued To	: M/s. ITD-CEM INDIA JV.	Report Date	: 22.05.16
Address	: [illegible] Water Treatment Plant, [illegible] 24 Pgs (N), Kolkata [illegible]	Date of Monitoring	: 27.05.16
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 9989:1981, Reaffirm 2001		
Location	: Near WTP		
Limit	: Industrial Area Night Time : 70 dB (A); Commercial Area Night Time : 55 dB (A); Residential Area Night Time : 45 dB (A); [illegible]		

Monitoring Details :

Height from the floor	: [illegible]	Starting Time	: [illegible] PM
Distance of Source	: [illegible]	Total Time (T)	: 18 Min
		Difference (dt)	: 2 Min

Sl. No.	Noise Level (Li)	ti = dt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	52.5	0.1111111	[illegible]	147095.512
2	50.6		[illegible]	
3	51.2		[illegible]	
4	52.8		[illegible]	
5	51		[illegible]	
6	53		[illegible]	
7	51.4		[illegible]	
8	52.5		[illegible]	
9	52.6		[illegible]	
10	52.4		[illegible]	

* The equivalent Noise Level Leq. 51.67 dB(A)

Maximum dB(A) : 52.8

Minimum dB(A) : 50.6

……… End of Report ………

Checked By

For, INDICATIVE CONSULTANT INDIA

(Manager-Laboratory)

Signatory Authority

Note: [illegible]

Kolkata Lab: [illegible]

Corp. Office: [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

CONSULTANT SURVEYOR & RMGS TEST HOUSE

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

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SL/[illegible]	Sample Ref. No.	: [illegible]
Issued To	: M/s [illegible] CRM INDIA JV,	Report Date	: [illegible]
Address	: [illegible] Water Treatment Plant, [illegible], 24 Pgs (N), Kolkata - [illegible]	Date of Monitoring	: [illegible]
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 10399 1981 Reaffirm 2005		
Location	: Near Intake Jetty No. - 3		
Limit	: Industrial Area Day Time : 75 dB(A); Commercial Area Day Time : 65 dB(A); Residential Area Day Time : 55 dB(A); [illegible]		

Monitoring Details :

Height from the floor	:	1.5 M	Starting Time		[illegible] AM
Distance of the wall	:	2.0 M	Total Time (T)		18 Min
			Difference (Δt)		2 Min

Sl. No.	Noise Level (Li)	ti = Δt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	[illegible]	0.111[illegible]	[illegible]	672712.[illegible]
2	52.5		[illegible]	
3	[illegible]		[illegible]	
4	56.6		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

Equivalent Noise Level Leq: 58.29 dB(A)

Maximum dB(A): 66.5

Minimum dB(A): 52.5

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Authorised Signatory

Note: 1. [illegible]

2. [illegible]

Kolkata Lab: [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

CONSULTANT, SURVEYOR & REGD. TEST HOUSE

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

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No	: ICS/KOL/16-17/150	Sample Ref. No.	: [illegible]
Issued To	: M/s. LLB-CFM INDIA JV	Report Date	: [illegible]
Address	: [illegible]	Date of Monitoring	: [illegible]
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 9989:1981, Reaffirm 2003		
Location	: Near [illegible] No. - 2		
Limit	: Industrial Area Night Time : 70 dB (A)		
	: Commercial Area Night Time : 55 dB (A)		
	: Residential Area Night Time : 45 dB (A)		

[illegible]

Monitoring Results :

Height Position of Meter	: 1.5 M	Starting Time	: [illegible]
Distance of Source	: [illegible]	Total Time (T)	: [illegible] Min
		Difference (dt)	: [illegible] Min

Sl. No.	Noise Level (Li)	θ = dt/T	θ X 10^(Li/10)	Sum of θ X 10^(Li/10)
1	[illegible]	0.1111111	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	51.8		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

= The equivalent Noise Level Leq. [illegible] dB(A)

Maximum dB(A): [illegible]

Minimum dB(A): [illegible]

[illegible]

For, INDICATIVE CONSULTANT INDIA

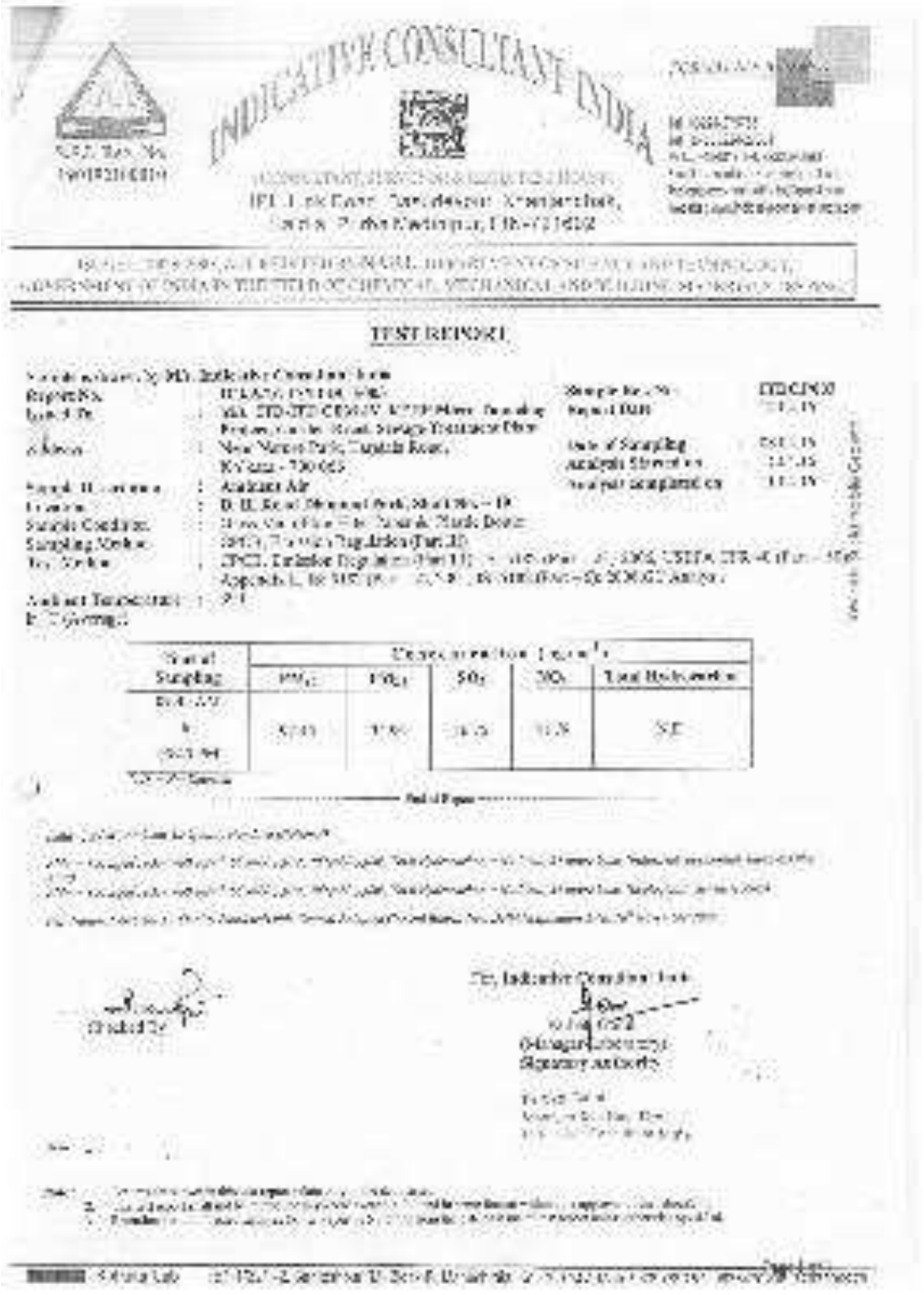
Checked By

Authorised Signatory

[illegible]

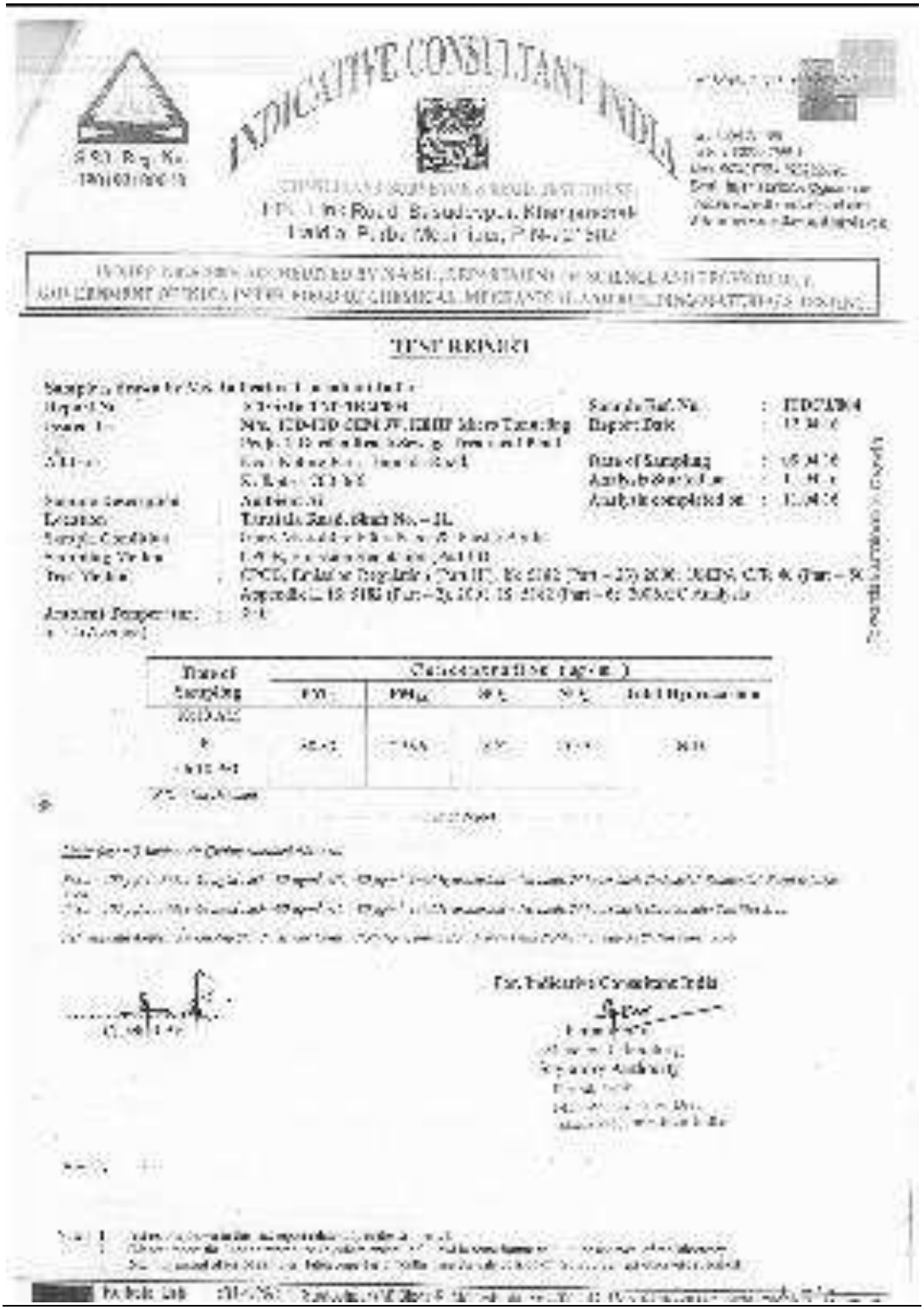
Kolkata Lab [illegible]

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



TEST REPORT

Sampling	$PM_{2.5}$	PM_{10}	SO_2	NO_x	Total Hydrocarbon

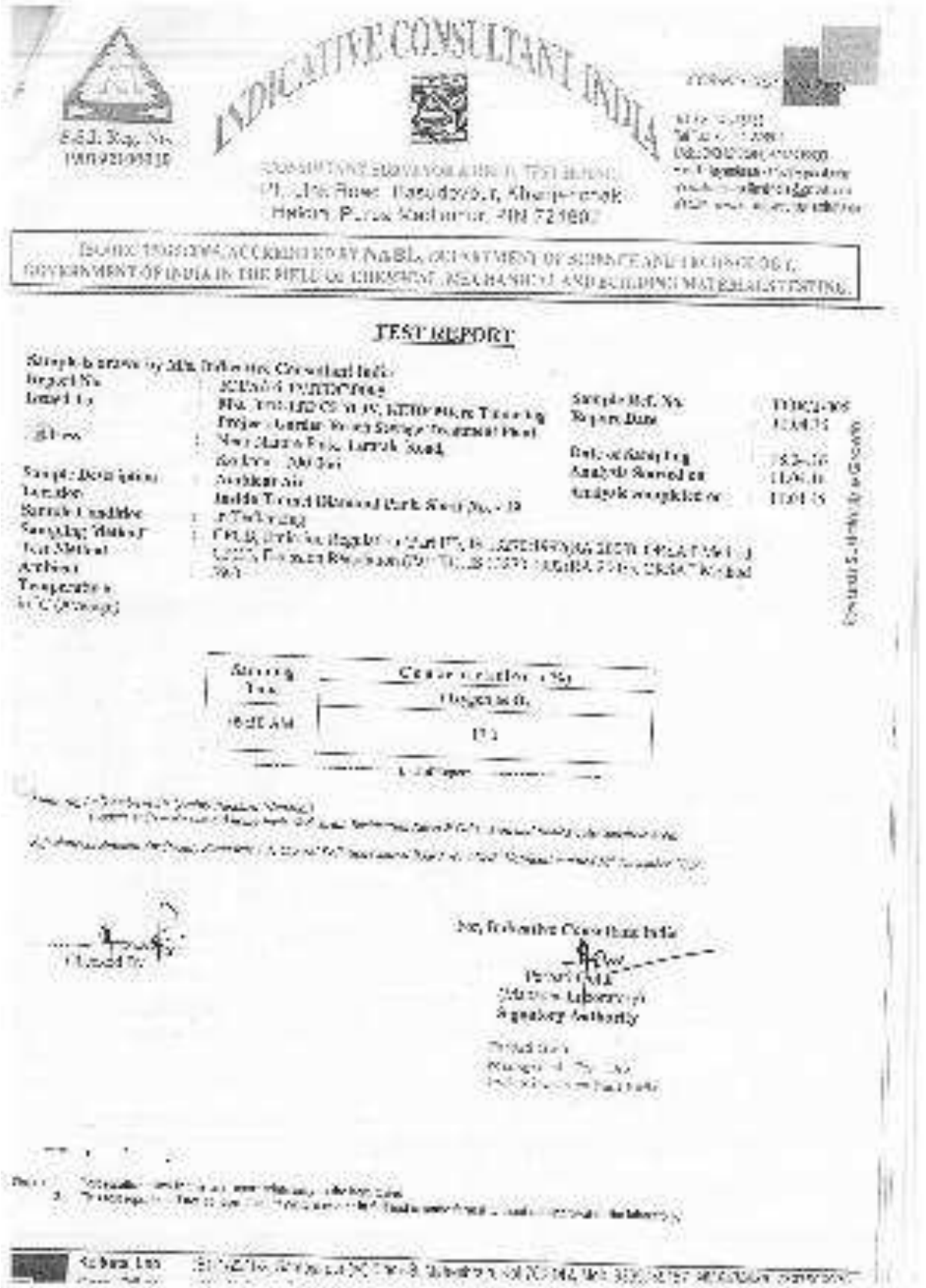


INDICATIVE CONSULTANT INDIA

TEST REPORT

Name of Sampling	Concentration in (µg/m³)				
	SO_2	PM_{10}	NO_2	NH_3	Total Hydrocarbon
8					

For Indicative Consultant India



INDICATIVE CONSULTANT INDIA

TEST REPORT

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

[illegible] (CONSULTANT LABORATORY & BUILD TEST HOUSE)

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

[illegible]

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

TEST REPORT

Sample [illegible] by M/s. Indicative Consultant India

Report No.	: [illegible]	Sample Ref. No.	: [illegible]
Issued To	: [illegible] KEIIP [illegible]	Report Date	: [illegible]
	[illegible]	Date of Monitoring	: [illegible]
Address	: [illegible]		
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS [illegible]		
Location	: [illegible]		
Limit	: [illegible] Zone : 75 dB (A)		
	[illegible]		

Monitoring Details :

Height from the floor	1.2 M	Starting Time	[illegible]
Distance of Source	2.0 M	[illegible]	[illegible]
		Difference [illegible]	[illegible]

Sl. No.	Noise Level dB(A)	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	[illegible]		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

* The equivalent Noise Level Leq. [illegible] [illegible]

Maximum dB(A): [illegible]

Minimum dB(A): [illegible]

[illegible]

For INDICATIVE CONSULTANT INDIA

[illegible]

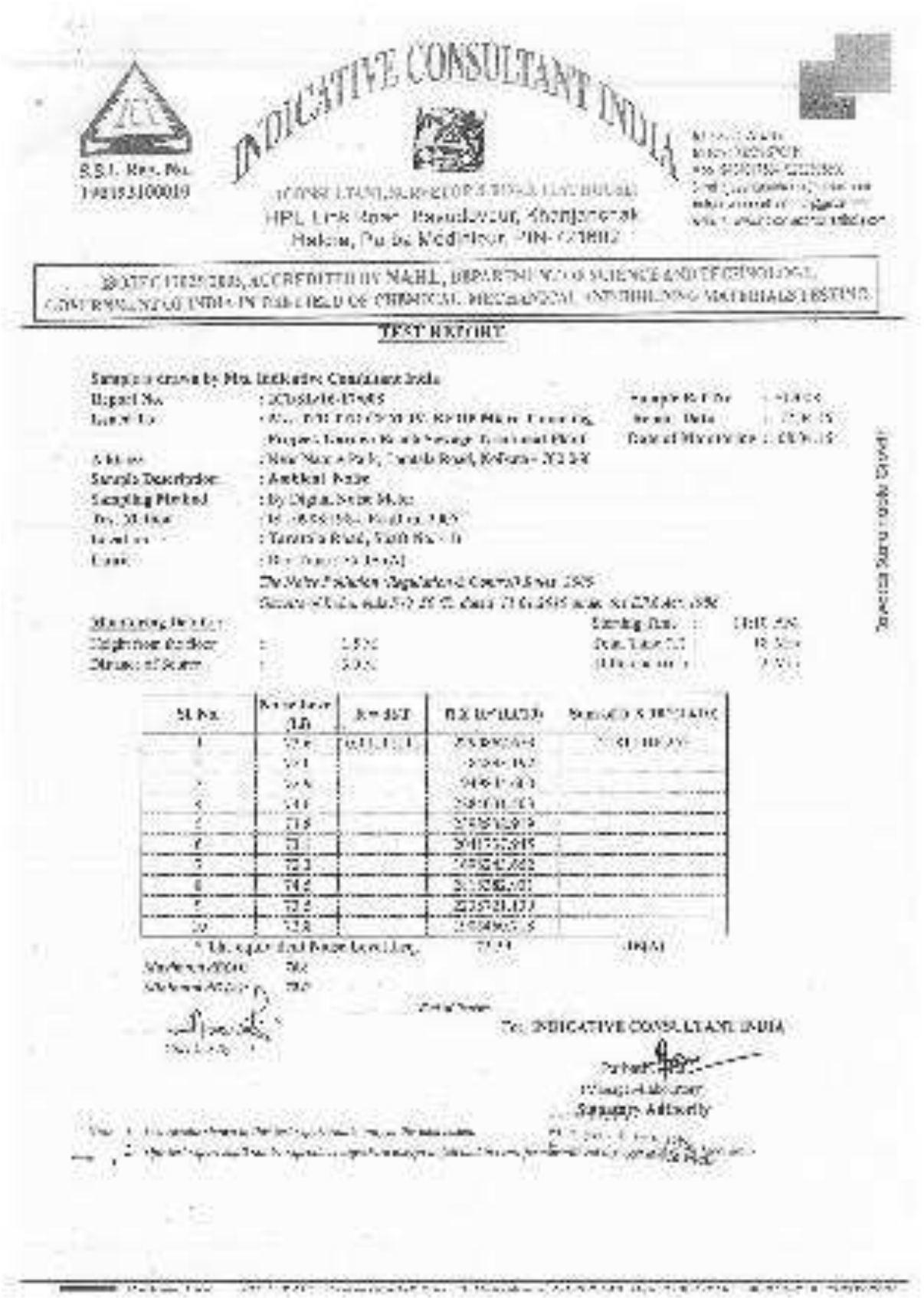
In-charge-Laboratory

Signatory Authority

Note: 1. [illegible]

2. [illegible]

[illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT

Sl. No.				
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INDUSTRIAL CONSULTANT INDIA

TEST REPORT

INDICATIVE CONSULTANT INDIA

HPL Link Road, [illegible], [illegible],
[illegible], Purba Medinipur, PIN-721602

[illegible]

TEST REPORT

Sample Collected by M/s. Indicative Consultant India

Report No.	: [illegible]	Sample Ref. No.	:	[illegible]
Issued To	: [illegible]	Report Date	:	[illegible]
Address	: [illegible], Kolkata - [illegible]	Date of Sampling	:	[illegible]
		Analysis Started on	:	[illegible]
		Analysis completed on	:	[illegible]
Sample Description	: Ambient Air			
Location	: [illegible]			
Sample Condition	: [illegible]			
Sampling Method	: [illegible]			
Test Method	: [illegible]			
Ambient Temperature in °C (Average)	: [illegible]			

Time of Sampling	PM_{10}	CO	SO_2	NO_2	Total Hydrocarbon
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

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

[illegible]

Indicative Consultant India

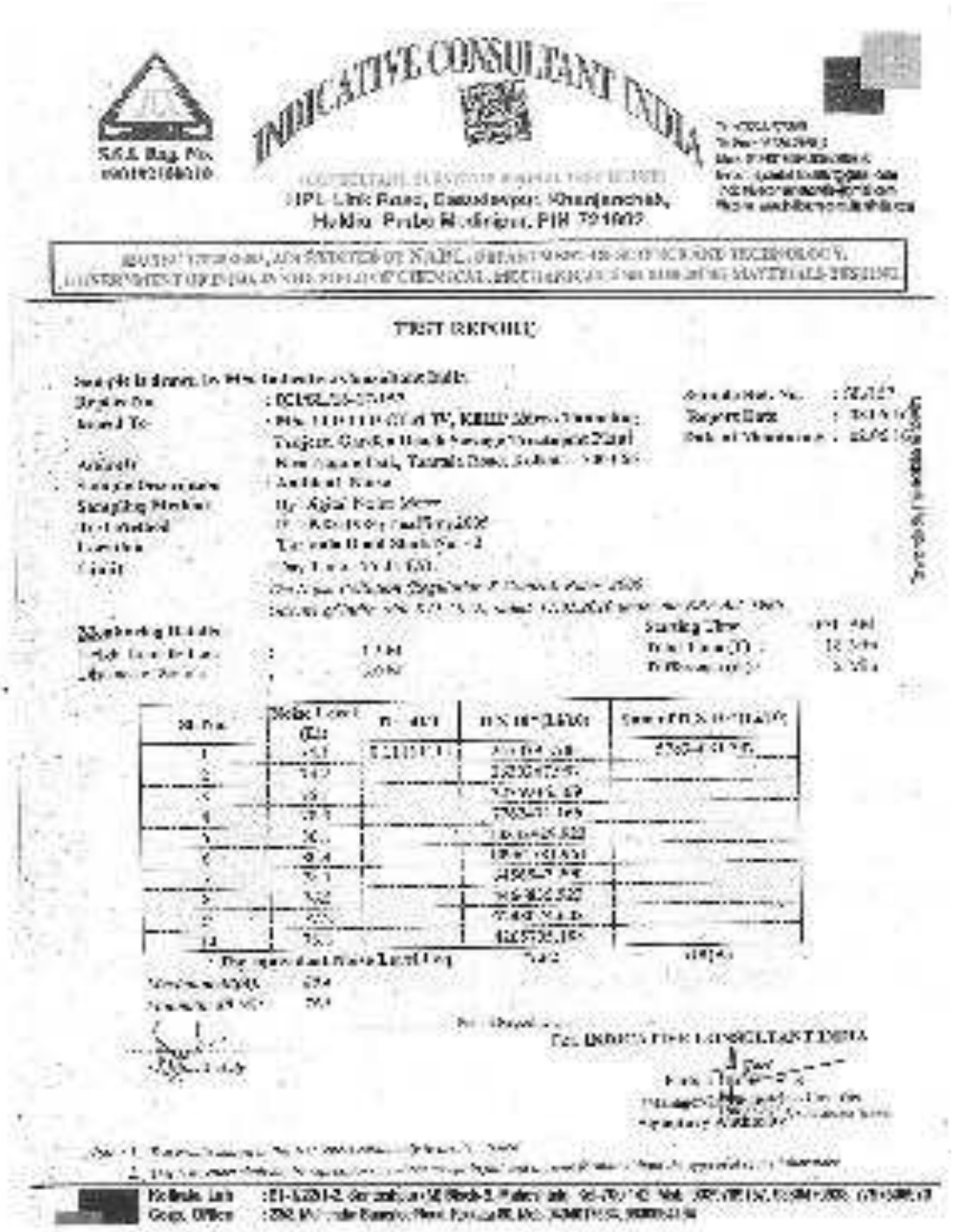
[illegible]

Signatory Authority

[illegible]

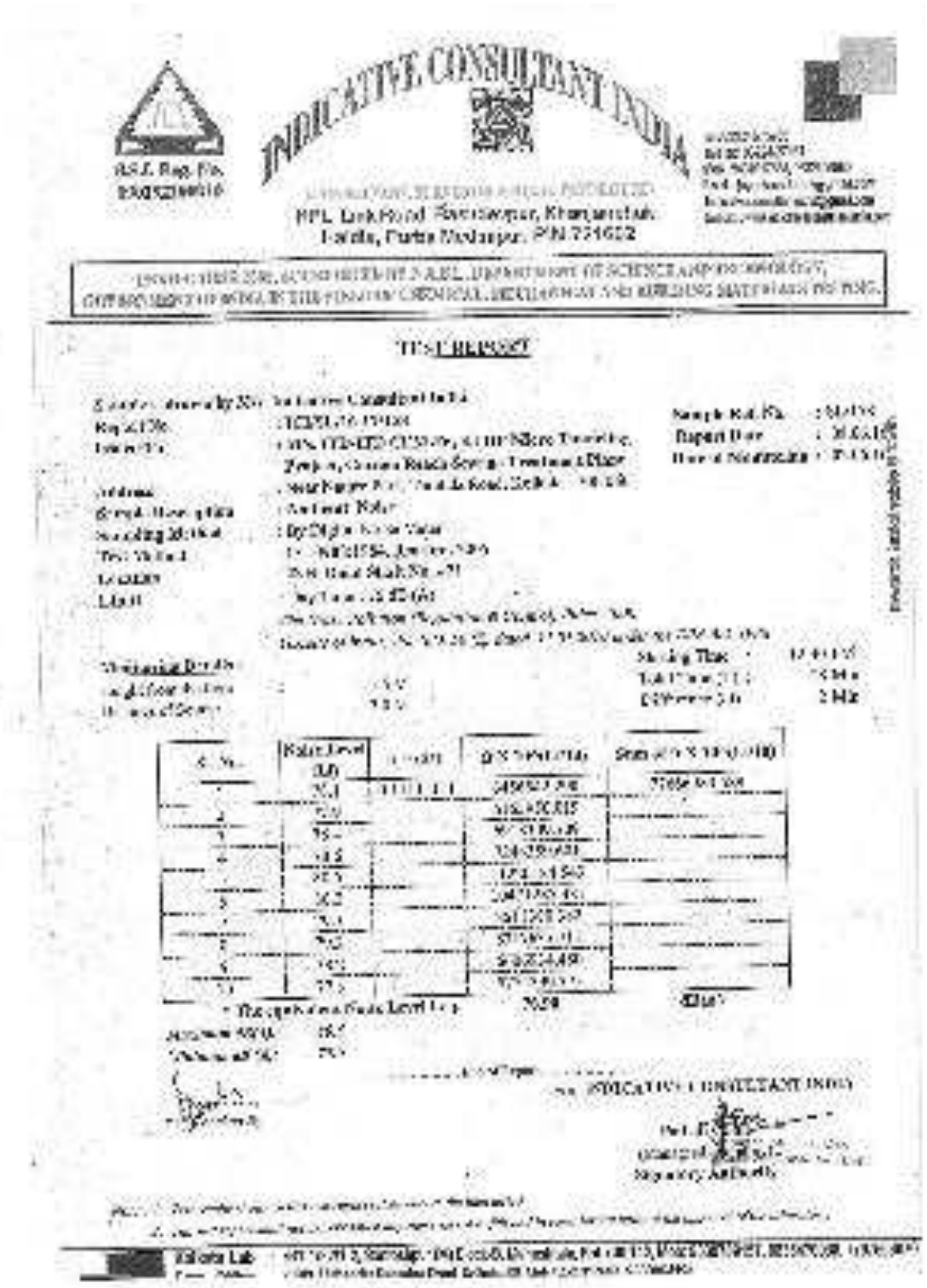
Kolkata Lab : [illegible]

Corp. Office : [illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT



INDICATIVE CONSULTANT INDIA

TEST REPORT

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

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

CONSULTANT, SURVEYOR & MATL. TEST HOUSE

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

[illegible] ACCREDITED BY N.A.B.L., DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA IN THE FIELD OF CHEMICAL, MECHANICAL AND BUILDING MATERIALS TESTING

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	[illegible]	Sample Ref. No.	[illegible]
Issued To	M/s. Tantia [illegible] JV	Report Date	[illegible]
Address	Joka Tram Depot, Gate No. - 3, Kolkata - 700 104	Date of Sampling	[illegible]
		Analysis Started on	[illegible]
		Analysis Completed on	[illegible]
Sample Description	Ambient Air		
Location	Begore Khal Pumping Station		
Sample Condition	[illegible]		
Sampling Method	CPCB, Emission Regulation (Part III)		
Test Method	[illegible]		
Ambient Temperature in °C (Average)	[illegible]		

Time of sampling	Concentration (µg/m³)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_x	Total Hydrocarbon
[illegible] AM to [illegible] PM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

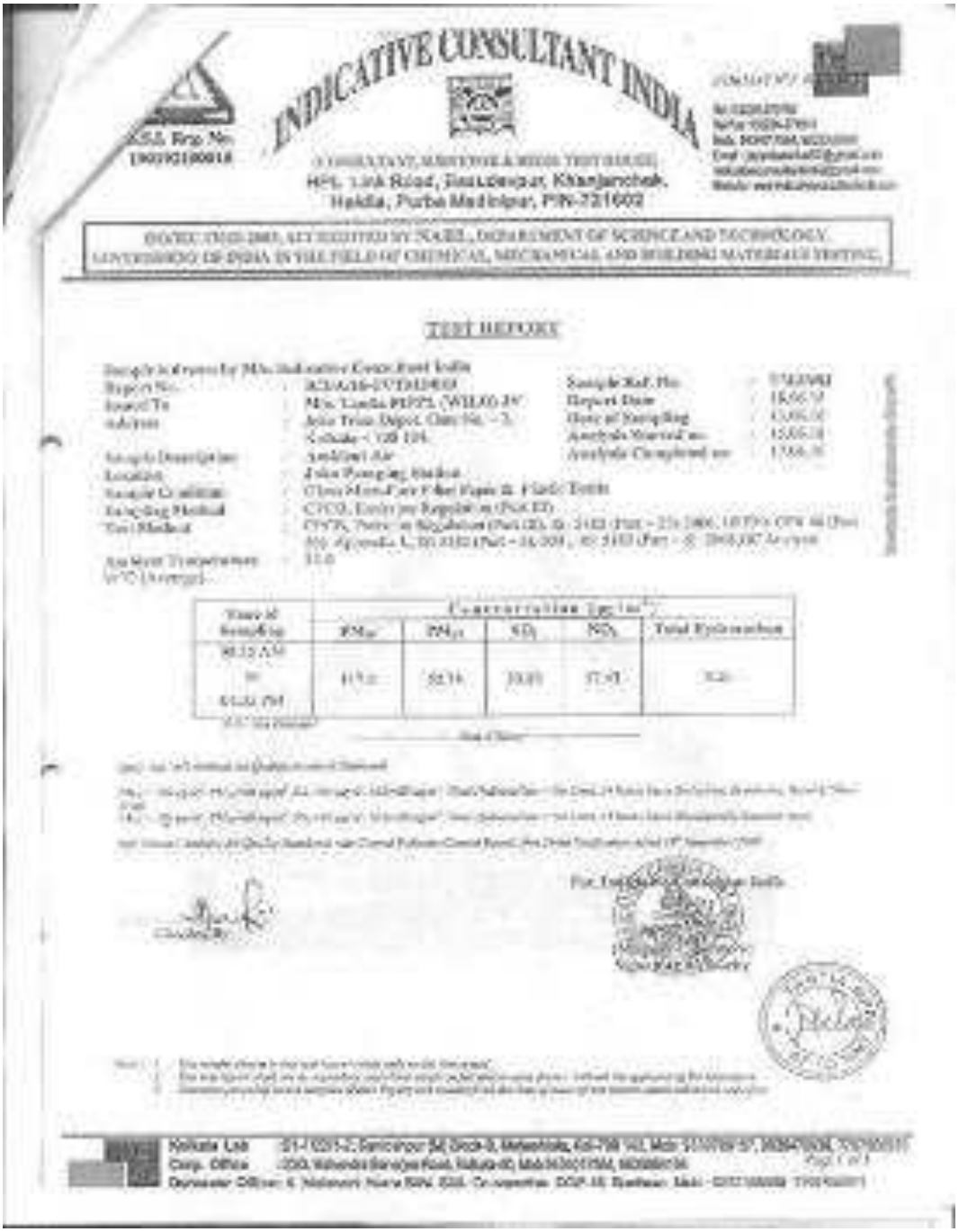
For, Indicative Consultant India

[illegible]

Kolkata Lab: [illegible]

Corp. Office: [illegible]

Page 1 of 1



INDICATIVE CONSULTANT INDIA

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

TEST REPORT

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & NEGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/NL/16-17/175	Sample Ref. No.	: NL/175
Issued To	: M/s. Tantia MPPL (WILO) JV	Report Date	: 18.06.16
Address	: Joka Tram Depot, Gate No. - 3, Kolkata - 700 104	Date of Monitoring	: 17.06.16
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 9989:1981 (RA 2001)		
Location	: Bagjola Khal Pumping Station		
Limit	: Day Time : 75 dB(A) The Noise Pollution (Regulation & Control) Rules, 2000 Gazette of India, vide G.S.R. 50 (E) dated 11.01.2010 under the EPA Act, 1986		

Monitoring Details:

Height from the floor	: 1.5 M	Starting Time	: 1:00 PM
Distance of Source	: 3.0 M	Total Time (T)	: 18 Min
		Difference (dt)	: 2 Min

Sl. No.	Noise Level (Li)	ti = dt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	48.1	0.111111111	6459.542	105954.857
2	48.7		7413.162	
3	46.5		7979.458	
4	49.3		8912.509	
5	51.5		14125.375	
6	50.3		10715.193	
7	51.3		13488.629	
8	52.8		13848.992	
9	51.5		13498.165	
10	47.8		6165.950	

* The equivalent Noise Level Leq: 50.24 dB(A)

Maximum of (Li): 52.8

Minimum of (Li): 47.8

——— End of Report ———

Checked By

For, INDICATIVE CONSULTANT INDIA

Signatory Authority

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

Kolkata Lab : 81-5/20/1-2, [illegible]
Corp. Office : 733, [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & GOOD TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

[illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No : ICI/NL/16-17/178

Issued To : M/s. Tantia MPPL (WILCO) JV

Address : [illegible] Depot, Gate No. – 3, Kolkata – 700 [illegible]

Sample Description : Ambient Noise

Sampling Method : By Digital Noise Meter

Test Method : IS 9989 [illegible] (RA 2008)

Location : Bagjola Khal Pumping Station

Limit : Night Time : 70 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000

Gazette of India vide S.O. [illegible] under the EPA Act, 1986

Sample Ref. No. : [illegible]

Report Date : [illegible]

Date of Monitoring : [illegible]

Starting Time : 10.30 P.M.

Total Time (T) : 10 Min

Difference (dt) : 1 Min

Measurement Details :

Height from the floor : 1.5 M

Distance of Source : 3.0 M

Sl. No.	Noise Level (Li)	ti = dt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	[illegible]	0.1[illegible]	4677.351	55221.835
2	47.5		5623.413	
3	47.1		5128.515	
4	48.8		7585.776	
5	45.3		3388.442	
6	49.3		8511.380	
7	47.8		6025.596	
8	46.7		4677.351	
9	46.8		4786.301	
10	50.0		10000.000	
The equivalent Noise Level (Leq)			47.42	[illegible]

Maximum dB(A) : 50.0

Minimum dB(A) : 45.3

——— End of Report ———

Checked By

For, INDICATIVE CONSULTANT INDIA

Authorised Signatory

Note : 1. [illegible]

2. [illegible]

Kolkata Lab : [illegible]

Corp. Office : [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 19692/200030

CONSULTANT, SURVEYOR & MECH. TEST HOUSE

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

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India.

Report No.	: ICI/NL/16-17/177	Sample Ref. No.	: SL/177
Issued To	: M/s. Tantia MPPL (WILO) JV	Report Date	: 13.06.16
Address	: Jalia Tram Depot, Gate No. – 1, Kolkata – 700 106	Date of Monitoring	: 13.06.16
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS : 9989:1981 (RA 2005)		
Location	: Jalia Pumping Station		
Limit	: Day Time : 75 dB (A)		

The Noise Pollution (Regulation & Control) Rules, 2000

Gazette of India vide S.O. 50 (E) dated 11.01.2000 under the E.P.A. Act, 1986

Monitoring Details :

Height from the floor	: 1.5 M	Starting Time	: 12.00 PM
Distance of Source	: 2.0 M	Total Time (T)	: 18 Min
		Difference (Δt)	: 2 Min

Sl. No.	Noise Level (Li)	B = Δt/T	B X 10^(Li/10)	Sum of B X 10^(Li/10)
1	58.2	0.1111111	66069.345	1019674.307
2	58.5		70794.578	
3	58.9		77624.712	
4	58.4		69183.097	
5	60.1		102329.299	
6	59.9		97723.722	
7	61.7		147910.839	
8	62.0		158489.319	
9	61.2		131825.674	
10	59.9		97723.722	

*The equivalent Noise Level Leq. 60.08 dB(A)

Maximum dB(A) : 62.0

Minimum dB(A) : 58.2

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Signatory Authority

Note : 1. The results shown in this report refer only to the sample tested.

Corp. Office : 23/3 Narendra Banerjee Road, Kolkata-03

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & [illegible] TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/178
Issued To : M/s. Tanda MPPL (WILJ) JV
Address : Joka Tram Depot, Camp No. – 3, Kolkata – 700 104

Sample Ref. No. : SL/178
Report Date : 18.06.16
Date of Monitoring : [illegible]

Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 9989:1981 (RA 2008)
Location : Joka Pumping Station
Limit : Night Time : 70 ± 2 (A)
The Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India vide S.O. 123(E) dated [illegible] under the EPA Act 1986

Monitoring Details :
Height from the floor : 1.5 M
Distance of Source : 3.0 M
Starting Time : [illegible]
Total Time (T) : 10 Min
Difference (Δt) : 2 Min

Sl. No.	Noise Level (Li)	$ti = \Delta t/T$	$ti \times 10^{0.1Li}$	Sum of $ti \times 10^{0.1Li}$
1	52.7	[illegible]	18628.371	369573.324
2	54.8		30199.517	
3	55.9		38547.888	
4	54.2		26915.348	
5	55.8		38018.940	
6	55.9		38904.514	
7	56.2		41686.938	
8	56.8		47863.009	
9	57.4		54954.087	
10	56.8		47863.009	

* The equivalent Noise Level Leq. 55.68 dB(A)
Maximum dB(A) : 57.4
Minimum dB(A) : 52.7

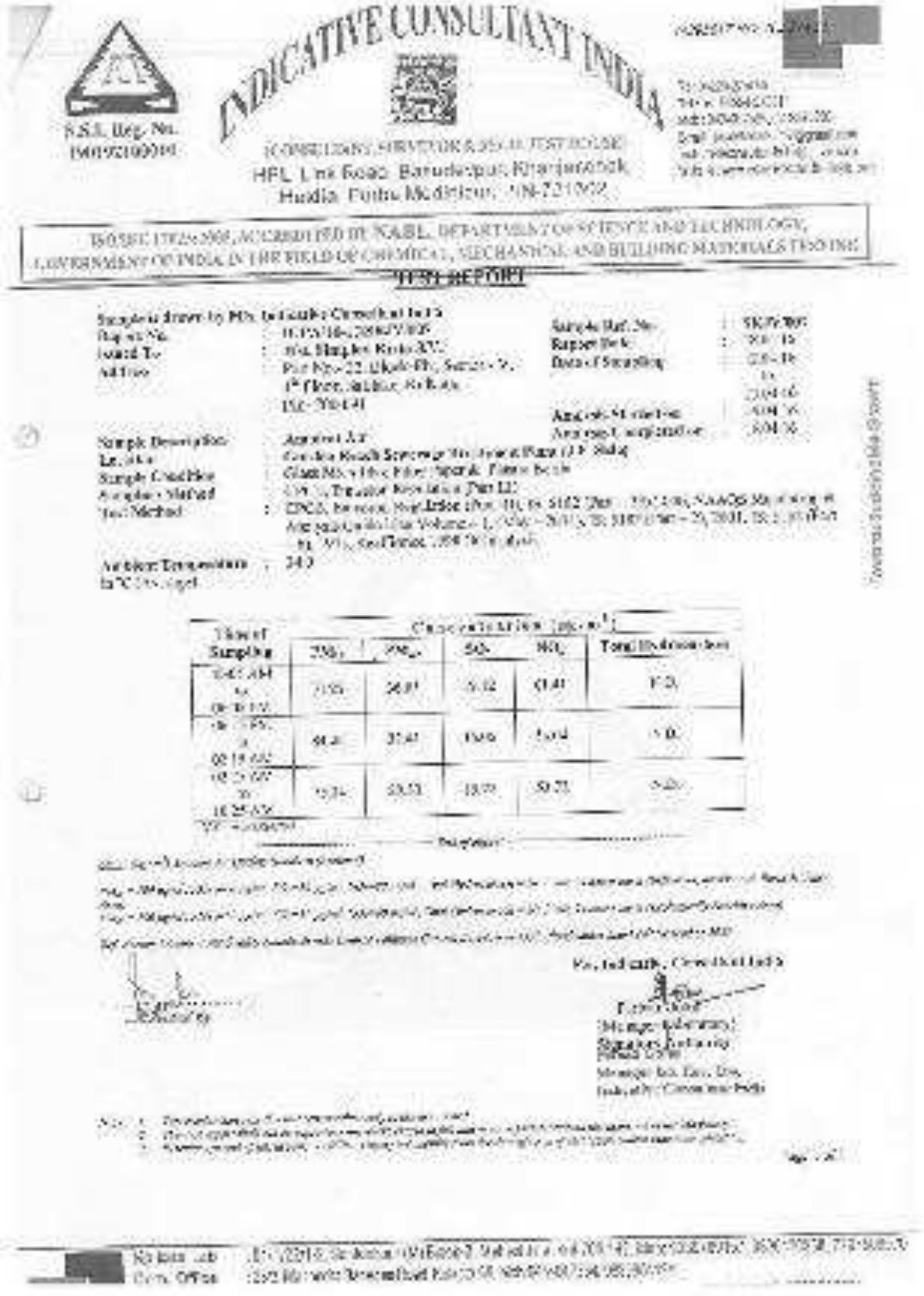
----- End of Report -----

Checked By

For, INDICATIVE CONSULTANT INDIA

Signature: [illegible]

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



INDICATIVE CONSULTANT INDIA

TEST REPORT

Time of Sampling	SO_2	NO_x	SO	NO	Total Hydrocarbon

Engineer

INDICATIVE CONSULTANT INDIA

N.A.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

HPL Link Road, [illegible], Purba Medinipur, PIN-[illegible]

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

TEST REPORT

Sample collected by M/s. Indicative Consultant India

Report No.	: [illegible]		Sample Ref. No.	[illegible]
Issued To	: M/s. [illegible] J.V.		Report Date	[illegible]
Address	: [illegible] Kolkata [illegible]		Date of Sampling	[illegible]
			Analysis Started on	[illegible]
			Analysis Completed on	[illegible]
Sample Description	: Ambient Air			
Location	: [illegible] Pumping Station (R.P. [illegible])			
Sample Condition	: [illegible]			
Sampling Method	: CPCB, [illegible]			
Test Method	: CPCB, [illegible]			
Ambient Temperature in °C (Average)	: 24 [illegible]			

Time of Sampling	Concentration in ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Lead Hydrocarbon
[illegible]	[illegible]	[illegible]	[illegible]	62.[illegible]	[illegible]
[illegible]	[illegible]	31.[illegible]	18.[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

For Indicative Consultant India

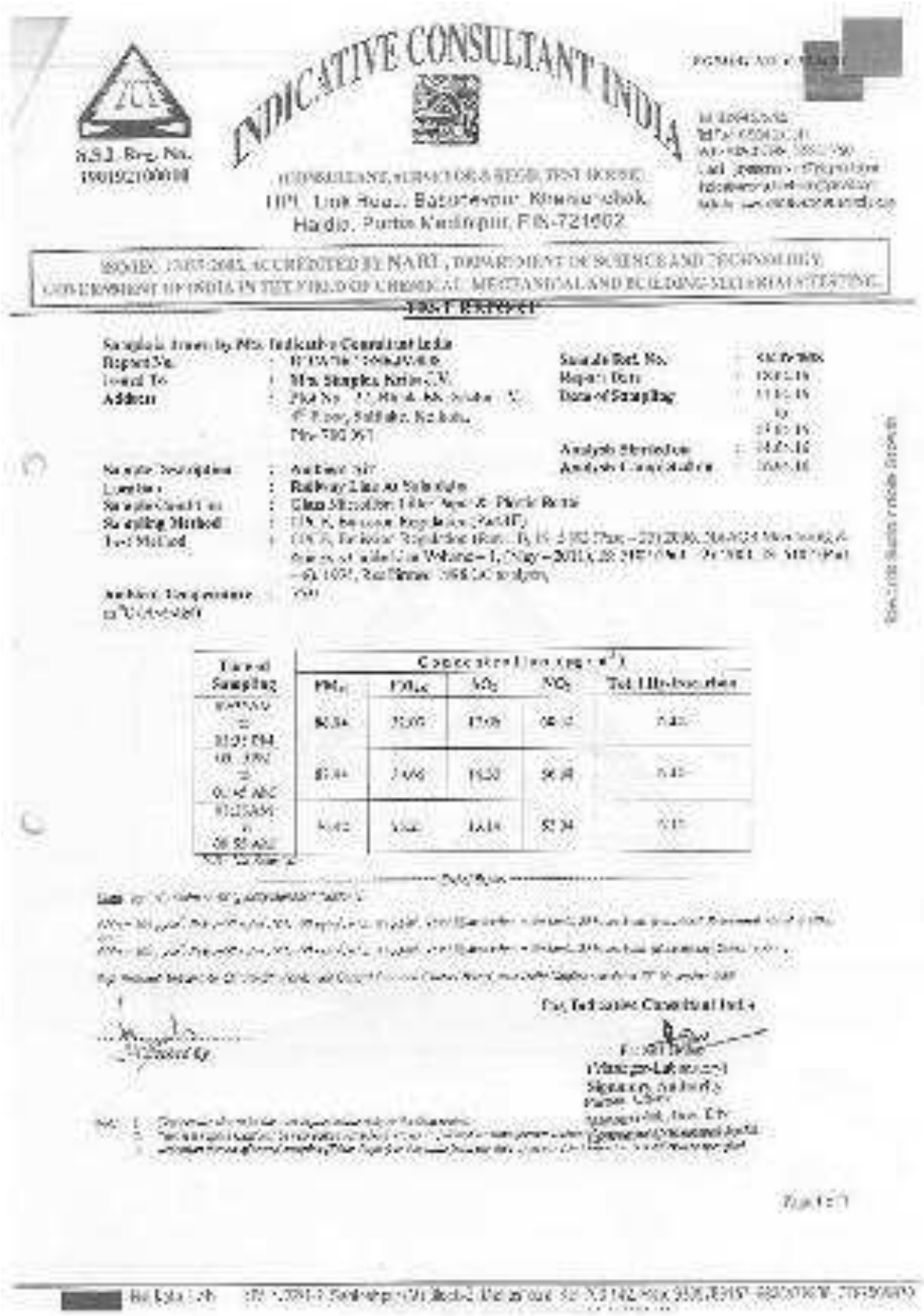
Authorised Signatory

[illegible]

Page [illegible]

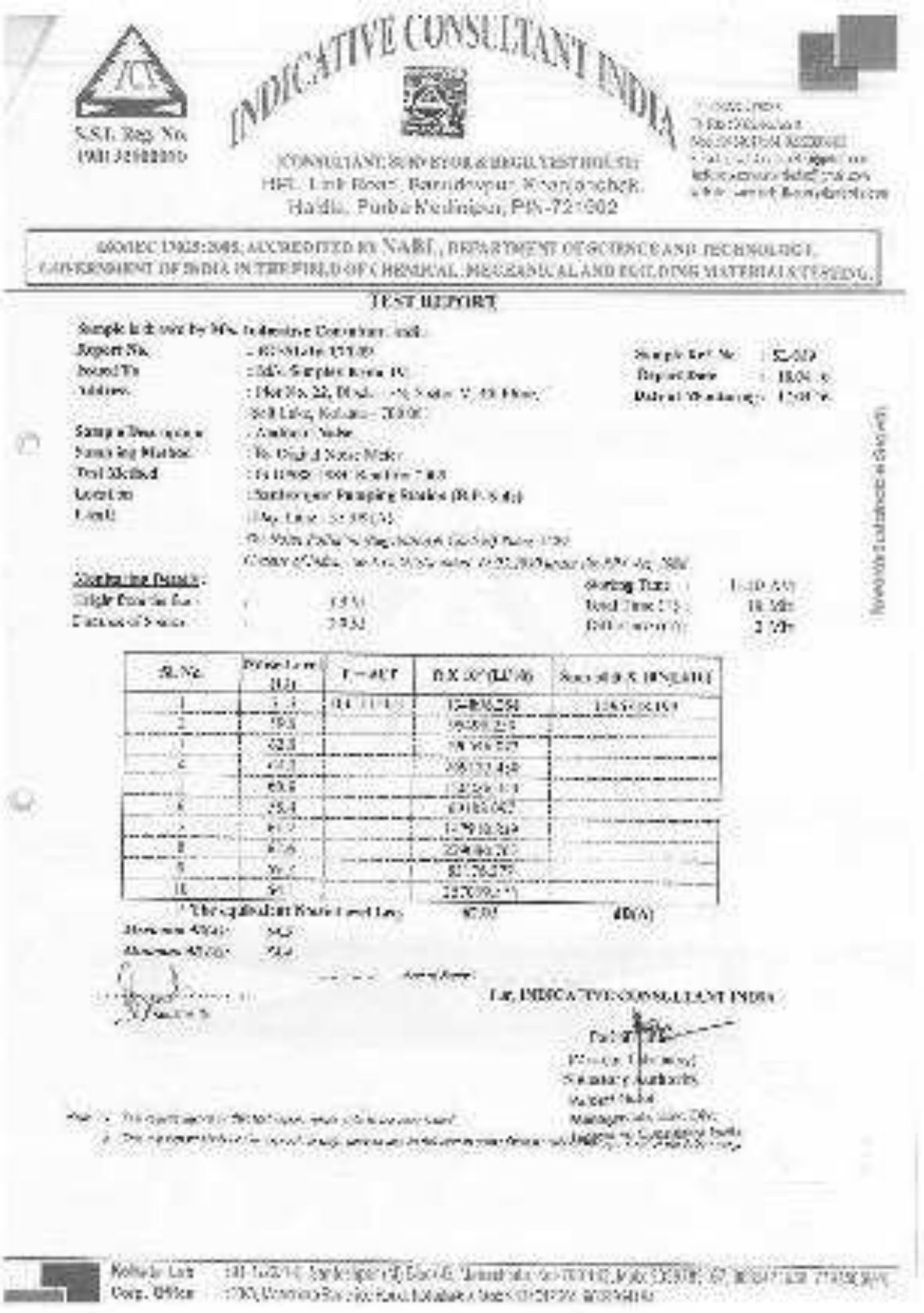
Kolkata Lab: [illegible]

Head Office: [illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT



S.S.I. Reg. No.

INDICATIVE CONSULTANT INDIA

CONSULTANT, SURVEYOR & INSPECTION HOUSE

Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

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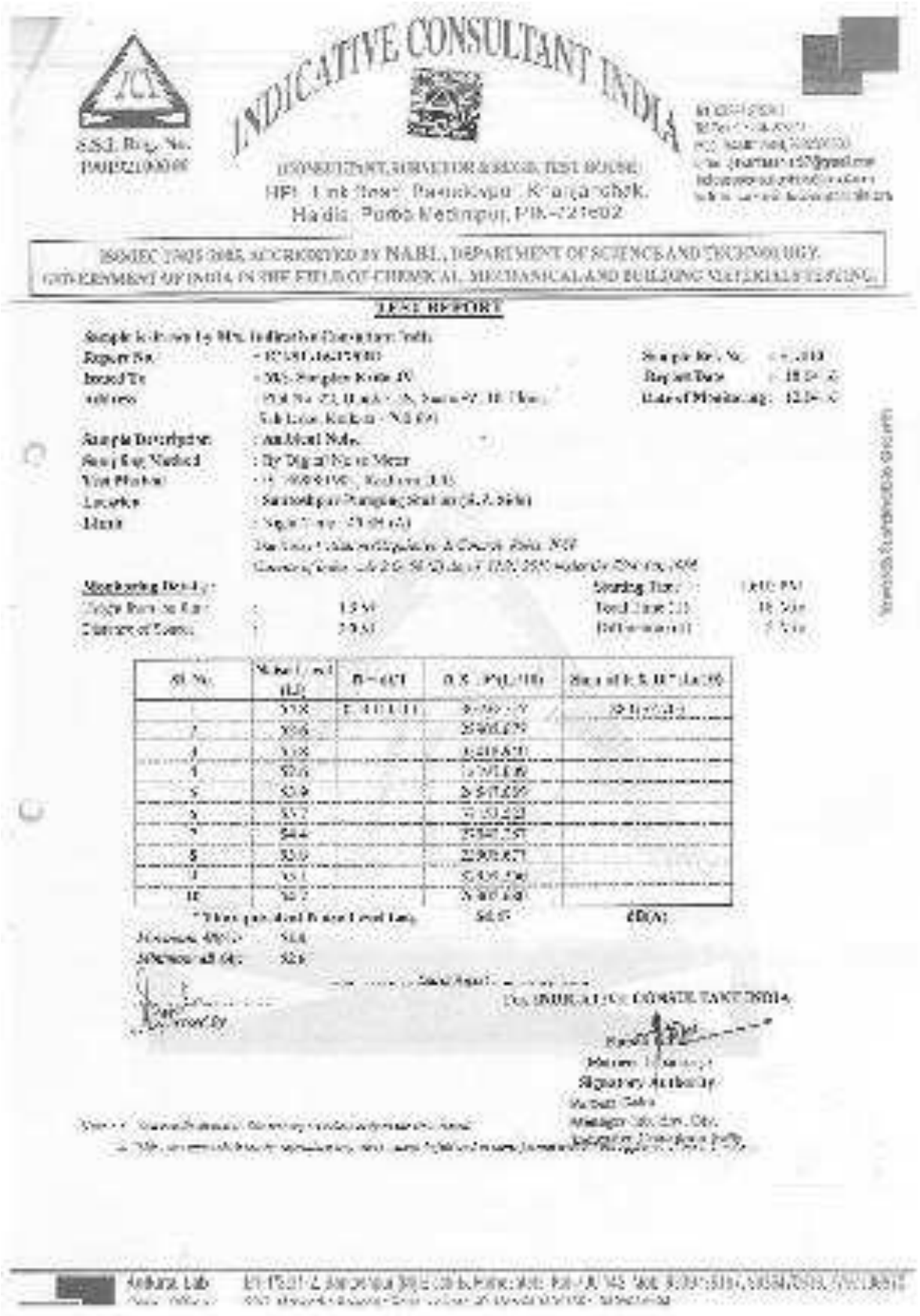
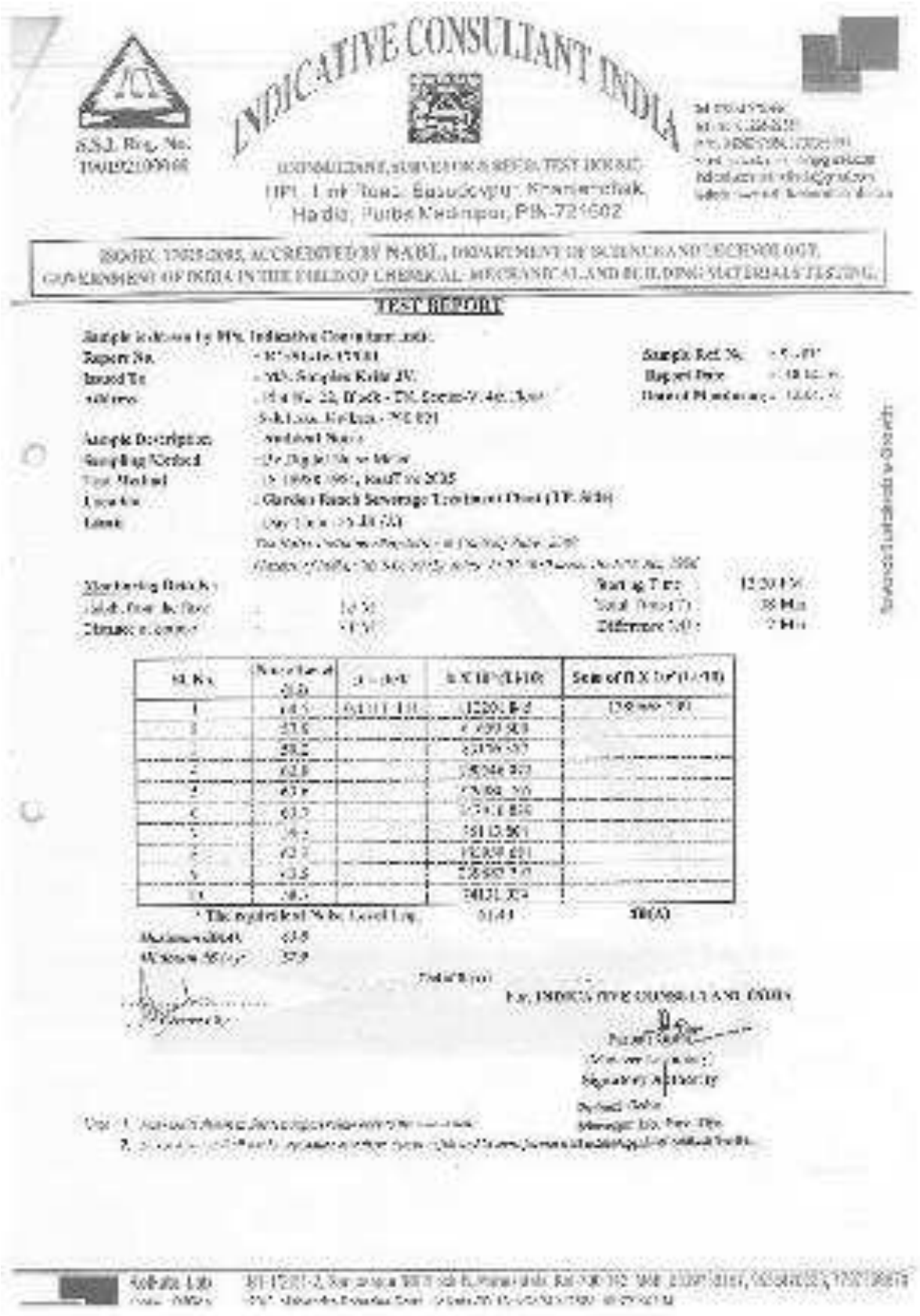
For INDICATIVE CONSULTANT INDIA

Authorised Signatory



INDICATIVE CONSULTANT INDIA

TEST REPORT



INDICATIVE CONSULTANT INDIA

TEST REPORT

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 19[illegible]

CONSULTANT, SURVEYORS & RESULT TESTING [illegible]
H.P. Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN- 721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-[illegible] | Sample I.D. No. : [illegible]
Issued To : M/s. Shapoorji Pallonji [illegible] | Report Date : [illegible]
Address : [illegible], Block - EN, Sector-V, [illegible] | Date of Monitoring : [illegible]
Salt Lake, Kolkata - 700 091

Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 9989:1981, Reaffirmed [illegible]
Location : Garden Reach Sewerage Treatment Plant (STP Site)
Limit : Night Time: 45 dB (A)
The Noise Pollution (Regulation & Control) Rules, 2000
[illegible]

Monitoring Details :
Height from the floor : [illegible] | Starting Time : [illegible] PM
[illegible] : [illegible] | Total Time (T) : [illegible] Min
 | Difference (t) : [illegible] Min

Sl. No.	Noise Level (L)	(t – t)/T	[illegible]	Sum of [illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	[illegible]		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		14234.155	
6	[illegible]		[illegible]	
7	54.1		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

* The equivalent Noise Level Leq. [illegible] dB(A)

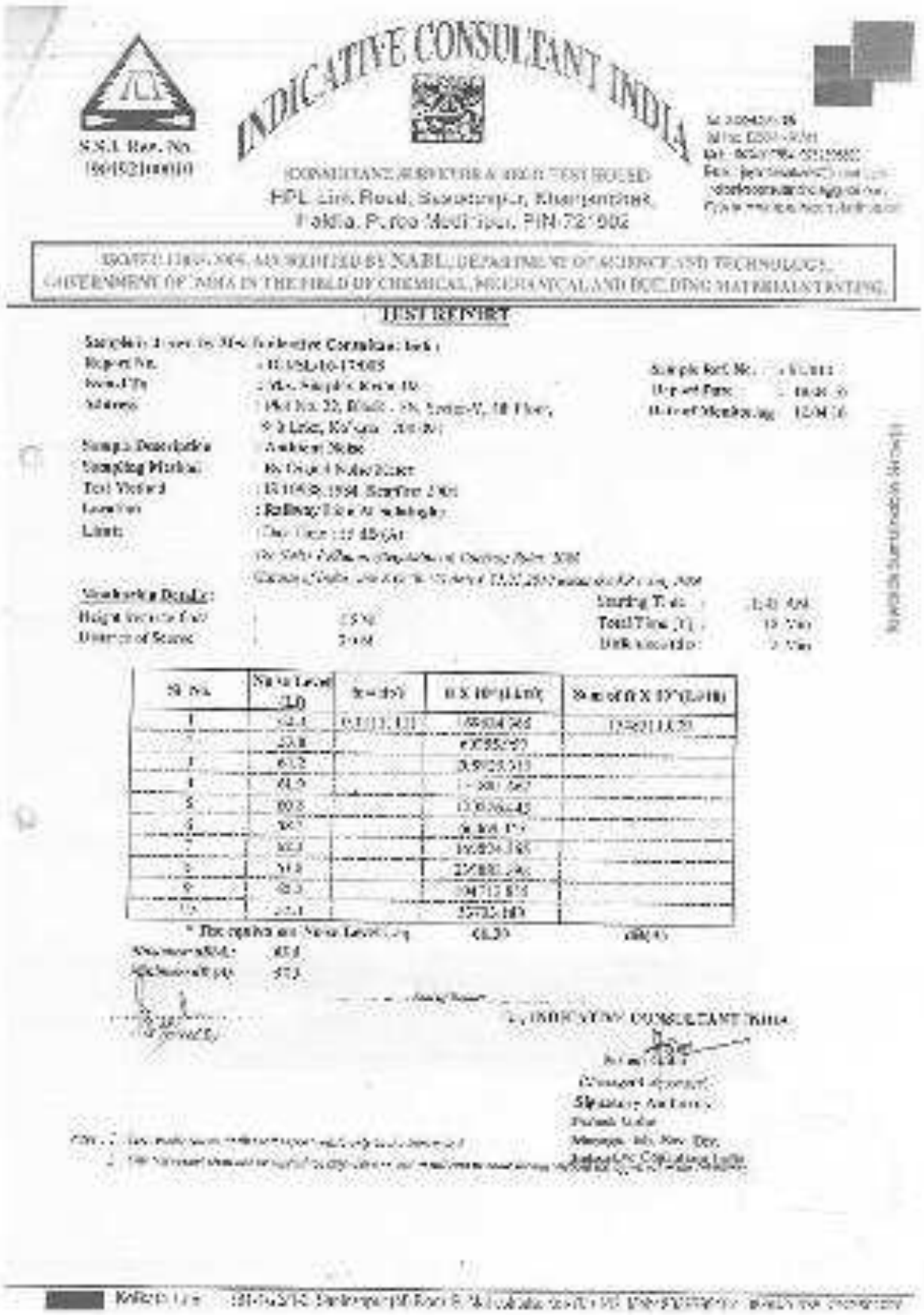
Maximum dB(A) [illegible]
Minimum dB(A) [illegible]

For INDICATIVE CONSULTANT INDIA

[illegible]
Manager (Laboratory)
[illegible]
Indicative Consultant India

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

Kolkata Lab : [illegible]



INDICATIVE CONSULTANT INDIA

TEST REPORT

N.S.I. Reg. No. [illegible]

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SERVICES & REGD. TEST HOUSE)
[illegible] Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

[illegible]

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

TEST REPORT

Sample collected by M/s. Indicative Consultant India

Report No.	: ICI[illegible]	Sample Ref. No.	: [illegible]
Issued To	: M/s. [illegible]	Report Date	: [illegible]
Address	: [illegible], Salt Lake, Kolkata - 700 0[illegible]	Date of Monitoring	: [illegible]
Sample Description	: Ambient Noise		
Sampling Method	: [illegible]		
Test Method	: IS 9[illegible]		
Location	: Railway Line At Sealdaha		
Limit	: Night Time [illegible]		
	[illegible]		
	[illegible]		

Monitoring Details:

Height from the floor	: 1.5 M	Starting Time	10.45 PM
Distance of Source	: > 2 M	[illegible]	15 Min
		[illegible]	[illegible]

Sl. No.	Noise Level (dB)	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]		[illegible]	
3	[illegible]		[illegible]	
4	[illegible]		[illegible]	
5	[illegible]		[illegible]	
6	[illegible]		[illegible]	
7	[illegible]		[illegible]	
8	[illegible]		[illegible]	
9	[illegible]		[illegible]	
10	[illegible]		[illegible]	

* The equivalent Noise Level Leq. [illegible] [illegible]

Maximum [illegible] [illegible]
Minimum [illegible] [illegible]

[illegible]

For, INDICATIVE CONSULTANT INDIA

[illegible]
Signatory Authority

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

[illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190182110010

HPL Link Road, Basudevpur, Kharjanchak, Haldia, Purba Medinipur, PIN 721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: [illegible]	Sample Ref. No.	: [illegible]
Issued To	: M/s. [illegible] Kolkata J.V.	Report Date	: [illegible]
Address	: Plot No. [illegible], Block-EN, Sector - V, [illegible] Floor, Salt Lake, Kolkata, Pin - 700 091	Date of Sampling	: [illegible] to [illegible]
		Analysis Started on	: [illegible]
		Analysis Completed on	: [illegible]

Sample Description : Ambient Air

Location : [illegible] Pumping Station (R.P. [illegible])

Sample Condition : [illegible]

Sampling Method : CPCB Emission Regulation (Part III)

Test Method : CPCB Emission Regulation (Part III), IS 5182 (Part – [illegible]) 2006, NAAQS Monitoring & Analysis Guide Line, Volume – I, (May – 2011), IS 5182 (Part – [illegible]) 2001, IS: 5182 (Pt. 6), 1975, Reaffirmed [illegible]

Ambient Temperature (°C) (Average) : [illegible]

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
[illegible] AM to [illegible] PM	[illegible]	[illegible]	20.24	[illegible]	[illegible]
[illegible] PM to [illegible] AM	[illegible]	23.[illegible]	[illegible]	[illegible]	N.D.
[illegible] AM to [illegible] AM	[illegible]	[illegible]	[illegible]	[illegible]	N.D.

[illegible]

--- End of Report ---

[illegible]

For, Indicative Consultant India

Checked By

(Manager-[illegible])

Signatory Authority

Manager-[illegible]

Kolkata Lab : [illegible]

Corp. Office : [illegible] Road, Kolkata [illegible]

Durgapur Office : [illegible]

S.S.I. Reg. No. 190192100019

INDICATIVE CONSULTANT INDIA

CONSULTANT, SURVEYOR & REGD. TEST HOUSE:
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	:	ICI/[illegible]/SKJV/897	Sample Ref. No.	:	[illegible]
Issued To	:	M/s. Simplex Kritu J.V.	Report Date	:	28.04.15
Address	:	Flat No - [illegible], Block-[illegible], Sector - V, 4th Floor, Salt Lake, Kolkata, Pin- 700 091	Date of Sampling	:	[illegible] to [illegible]
			Analysis Started on	:	[illegible]
Sample Description	:	Ambient Air	Analysis Completed on	:	[illegible]
Location	:	Garden Reach Sewerage Treatment Plant (I.P. Site)			
Sample Condition	:	Glass Microfibre Filter Paper & [illegible] Bottle			
Sampling Method	:	CPCB, Emission Regulation (Part III)			
Test Method	:	CPCB, Emission Regulation (Part III), IS: 5182 (Part – [illegible]) [illegible] Monitoring & Analysis Under Low Volume – [illegible] (May – 2011), IS: 5182 (Part – 2), 2001, IS: 5182 (Part – 6), 1975, Reaffirmed [illegible]			
Ambient Temperature (°C) (Average)	:	[illegible]			

Time of Sampling	Concentration ($\mu g/m^3$) PM$_{10}$	PM$_{2.5}$	SO_2	NO_2	Total Hydrocarbon
[illegible] AM to [illegible] PM	97.53	38.[illegible]	[illegible]	[illegible]	N.D.
[illegible] PM to [illegible] AM	96.71	28.[illegible]	[illegible]	[illegible]	N.D.
[illegible] AM to [illegible] AM	86.36	[illegible]	18.[illegible]	38.74	N.D.

N.D.: Not Detected

———— End of Report ————

[illegible]

[illegible]

[illegible]

For, Indicative Consultant India

Pritam Goel
(Manager-Laboratory)
Signatory Authority

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

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190193100010

CONSULTANCY, SURVEYOR & REGD. TEST HOUSE
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample Collected by M/s. Indicative Consultant India

Report No.	:	ICI/A/16-17/SKJV/068	Sample Ref. No.	:	SKJV/068
Issued To	:	M/s. Simplex Knits J.V.	Report Date	:	25.05.16
Address	:	Plot No.- 22, Block-DN, Sector - V, 4th Floor, Salt lake, Kolkata, Pin- 700 091	Date of Sampling	:	[illegible] to [illegible]
			Analysis Started on	:	[illegible]
			Analysis Completed on	:	[illegible]

Sample Description	:	Ambient Air
Location	:	Railway Line At Sobhighat
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 [illegible]), 2005, [illegible] Monitoring & Analysis Guide Line Volume – I, [illegible], IS: 5182 (Part [illegible]), 2001, IS: 5182 (Part [illegible]), 1975, Reaffirmed 1998/GC analysis.
Ambient Temperature in °C (Average)	:	32.0

Time of Sampling	Concentration ($\mu g/m^3$)				
	PM_{10}	$PM_{2.5}$	SO_2	NO_2	Total Hydrocarbon
[illegible] to [illegible]	32.58	[illegible]	[illegible]	[illegible]	N.D.
[illegible] to 02.30 AM	71.94	[illegible]	12.58	[illegible]	N.D.
[illegible] to 10.25 AM	[illegible]	34.55	17.42	55.11	N.D.

N.D. = Not Detected

—— End of Report ——

[illegible]

For, Indicative Consultant India

(Manager Laboratory)
Signatory Authority

Note: [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

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

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-15/195 — Sample Ref. No. : SL/195

Issued To : M/s. Simplex Kolkata JV. — Report Date : 27.05.16

Address : [illegible] — Date of Monitoring : 22.05.16

Salt Lake, Kolkata - 700 091

Sample Description : Ambient Noise

Sampling Method : By Digital Noise Meter

Test Method : IS : 9989 : [illegible]

Location : Santoshpur Pumping Station (R.P. Side)

Limit : Day Time : 55 dB (A)

[illegible]

[illegible]

Monitoring Details :

Height from the floor : 1.5 M — Starting Time : 12:05 PM

Distance of Source : 3.0 M — Total Time (T) : 18 Min

Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	ti = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	67.5	[illegible].1111	[illegible]	4393609.156
2	65.4		[illegible]	
3	66.5		[illegible]	
4	67.9		[illegible]	
5	66.2		[illegible]	
6	65.1		[illegible]	
7	66.4		[illegible]	
8	62.4		[illegible]	
9	66.9		[illegible]	
10	64.5		[illegible]	

* The equivalent Noise Level Leq. 66.11 dB(A)

Maximum dB(A) : 67.9

Minimum dB(A) : 62.4

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

For, INDICATIVE CONSULTANT INDIA

Signatory Authority

Note : [illegible]

S.S.I. Reg. No. 190192100001D

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak
Haldia, Purba Medinipur, PIN-721602

[illegible]

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

TEST REPORT

Sample is drawn by M/S. Indicative Consultant India

Report No.	: ICI/[illegible]/16 17/196	Sample Ref. No.	: SL/7/96
Issued To	: M/s. Simplex Kolta JV,	Report Date	: 27.0[illegible].16
Address	: Plot No. 77, Block – [illegible], Sector-V, [illegible]	Date of Monitoring	: 22.06.16
	[illegible], Kolkata – 700 1[illegible]		
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 10988:1984, Reaffirm 2005		
Location	: Santoshpur Pumping Station (R.P. Side)		
Limit	: Night Time : 45 dB (A)		
	[illegible] Pollution (Regulation & Control) Rules, 2000		
	[illegible] dated [illegible] under the EPA Act 1986		

Monitoring Details :

Height from the Base	: 1.5 M	Starting Time :	10:[illegible] PM
Distance of Source	: 3.0 M	Total Time (T) :	18 Min
		Difference (t) :	2 Min

Sl. No.	Noise Level (Li)	fi = t/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	58.6	0.1111111	7[illegible]	802532.567
2	57.4		[illegible]	
3	56.3		[illegible]	
4	57.[illegible]		[illegible]	
5	55.4		[illegible]	
6	56.0		497[illegible]	
7	44.5		3[illegible]	
8	57.1		[illegible]	
9	57.9		61699.[illegible]	
10	55.5		[illegible]	

* The equivalent Noise Level Leq. 57.0[illegible] dB(A)

Maximum dB(A): 58.6

Minimum dB(A): 44.5

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

For INDICATIVE CONSULTANT INDIA

[illegible]

(Manager-Laboratory)

Signatory Authority

[illegible]

[illegible]

ICI

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

HPL Link Road, Basudevpur, Khanjanchak

Haldia, Purba Medinipur, PIN-721602

[illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SL/16-17/197	Sample Ref. No.	: SL/197
Issued To	: M/s. Simplex Kriti JV,	Report Date	: [illegible]
Address	Plot No. 22, Block - 2N, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	Date of Monitoring	: [illegible]
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 9989:1981, Reaffirm 2010		
Location	: Garden Reach Sewerage Treatment Plant (J.P. Side)		
Limit	: Day Time : 55 dB (A)		
	The Noise Pollution (Regulation & Control) Rules, 2000		
	Gazette of India [illegible] under the EP Act 1986		

Monitoring Details:

Height from the floor	: 1.2 M	Starting Time	: [illegible] PM
Distance of Source	: 3.0 M	Total Time (T)	: 15 Min
		Difference (dt)	: 2 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	63.2	0.1111111	233296.224	2032456.291
2	63.9		245471.852	
3	62.8		181570.186	
4	62.7		208473.382	
5	62.2		162581.693	
6	62.3		190064.590	
7	61.7		147910.659	
8	63.5		238487.542	
9	57.6		81970.286	
10	63.6		223336.765	

* The equivalent Noise Level Leq. 63.08 dB(A)

Maximum dB(A): 63.9

Minimum dB(A): 62.7

.... End of Report ....

Checked by

For, INDICATIVE CONSULTANT INDIA

Partha Ghosh

(Chemist Laboratory)

Signatory Authority

Manager Lab. Env. Div.

Indicative Consultant India

Note: 1. The results relate only to the items tested.

2. [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

CONSULTANT, SURVEYOR & REGD. TEST HOUSE
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SE/16-17/198	Sample Ref. No.	: SL/133
Issued To	: M/s. Simplex Krebs JV.	Report Date	: 23.06.16
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	Date of Monitoring	: 22.06.16
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS 12988 1984, Reaffirm 2005		
Location	: Garden Reach Sewerage Treatment Plant (J.F. Site)		
Limit	: Night Time : 45 dB (A)		

[illegible] Noise Pollution (Regulation & Control) Rules, 2000
Gazette of India, [illegible] dated [illegible] under [illegible]

Monitoring Details :

Height from the floor	: 1.5 M	Starting Time	: 11.02 PM
Distance of Source	: 31 M	Total Time (T)	: 15 Min
		Difference (dt)	: 7 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	51.2	0.11111111	12182.567	191062.527
2	52.3		27443.788	
3	50.2		30057.961	
4	52.8		19924.897	
5	52.4		17378.908	
6	53.7		21579.821	
7	51.9		24347.389	
8	52.6		13197.339	
9	51.7		14291.396	
10	52.6		18197.339	

* The equivalent Noise Level Leq. 52.81 dB(A)

Maximum dB(A) : 53.7
Minimum dB(A) : 50.2

End of Report

For, INDICATIVE CONSULTANT INDIA

Parbati Ghosh
[illegible]
Signatory Authority

Note : 1. [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

CONSULTANT SURVEYOR & REGD. TEST HOUSE
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

[illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/NL/16-17/199	Sample Ref. No.	: [illegible]
Issued To	: M/s. Simplex Kriti JV.	Report Date	: 22.05.16
Address	: Plot No. 22, Block - EN, Sector-V, 4th Floor, Salt Lake, Kolkata - 700 091	Date of Monitoring	: 22.05.16
Sample Description	: Ambient Noise		
Sampling Method	: By Digital Noise Meter		
Test Method	: IS : 9989 1981, Reaffirm 2005		
Location	: Railway Line At Sobabazar		
Limit	: Day Time : 55 dB (A)		

The Noise Pollution (Regulation & Control) Rules, 2000

[illegible] under the EPA Act, 1986

Monitoring Details :

Height from the floor	1.5 M	Starting Time :	12:30 PM
Distance of Source	[illegible] M	Total Time (T) :	18 Min
		Difference (dt) :	2 Min

Sl. No.	Noise Level (Li)	ti = dt/T	ti X 10^(Li/10)	Sum of ti X 10^(Li/10)
1	66.5	0.111111111	44555.572	2596583.267
2	67.8		21455.232	
3	67.7		189203.714	
4	64.6		275422.879	
5	65.1		323593.657	
6	61.8		151356.125	
7	65.7		214422.882	
8	64.8		317893.192	
9	62.3		169546.673	
10	65.9		245470.952	

* The equivalent Noise Level Leq. 66.14 dB(A)

Maximum dB (A) : 66.4

Minimum dB (A) : 65.6

--- End of Report ---

Checked By

For, INDICATIVE CONSULTANT INDIA

Barun Giri
(Bio-tech Laboratory)
Signatory Authority

[illegible]

Note : 1. [illegible]

2. [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

TEST REPORT

Sample is drawn by M/S. Indicative Consultant India

Report No. : ICI/SD/16-17/288

Issued To : M/s. Simplex Kritis JV.

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

Sample Ref. No. : [illegible]

Report Date : [illegible]

Date of Monitoring : [illegible].06.16

Sample Description : Ambient Noise

Sampling Method : By Digital Noise Meter

Test Method : IS 10988:1984, Reaffirm 2008

Location : Railway Line At Subdaghe

Limit : Night Time : 45 dB (A)

The Noise Pollution (Regulation & Control) Rules, 2000

Gazette of India vide S.O. [illegible] dated 14.02.2000 [illegible]

Starting Time : 10:12 PM

Total Time (T) : 18 Min

Difference (dt) : 2 Min

Monitoring Details :

Height from the floor : 1.5 M

Distance of Source : 3.1 M

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	51.8	0.1111111	15155.612	193521.565
2	51.3		14953.829	
3	52.6		18137.068	
4	52.9		19490.246	
5	53.4		21871.516	
6	52.7		18559.871	
7	54.8		30199.517	
8	52.5		22863.211	
9	51.8		15155.612	
12	52.2		16492.437	

The equivalent Noise Level Leq. 52.83 dB(A)

Maximum dB(A): 54.8

Minimum dB(A): 51.2

For, INDICATIVE CONSULTANT INDIA

Manager (Laboratory)

Signatory Authority

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

N.S.I. Reg. No. [illegible]

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & MATERIAL TEST HOUSE)

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

[illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: [illegible]	Sample Ref. No.	: [illegible]
Issued To	: M/s. S. N. Envirotech Pvt. Ltd.	Report Date	: 23.06.16
Address	: Koomepukur, S.T.P. Project, Dhalipara Road, Kol - 104	Date of Sampling	: 21.06.16
		Analysis Started on	: 22.06.16
Sample Description	: Ambient Air	Analysis Completed on	: 22.06.16
Location	: Sodepur Brickfield Road, (Row – 1) Doctor Bagan		
Sample Condition	: Glass Microfibre Filter Paper & Plastic Bottle		
Sampling Method	: CPCB, Emission Regulation (Part III)		
Test Method	: CPCB, Emission Regulation (Part III), [illegible]		
Ambient Temperature in °C (Average)	: [illegible]		

Time of Sampling	Concentration ($\mu g/m^3$)			
	PM_{10}	$PM_{2.5}$	SO_2	NO_2
09:40 AM to 05:30 PM	59.54	29.78	11.35	26.11

—End of Report—

[illegible]

For, Indicative Consultant India

Checked By

(Manager-Laboratory)

Signatory Authority

[illegible]

Note: [illegible]

Kolkata Lab : [illegible]

Corp. Office : [illegible]

[illegible] Office : [illegible]

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & RECD TEST HOUSE)

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

Tel: [illegible]
Tel/Fax: [illegible]
Mob: [illegible]
E-mail: [illegible]@gmail.com
Website: [illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/EA/16-17/SNEPL/100	Sample Ref. No.	: SNEPL/100
Issued To	: M/s S. N. Envirotech Pvt. Ltd.	Report Date	: 23.06.16
Address	: Keorapukur, S.T.P. Project, Dhalipara Road, Kol - 104	Date of Sampling	: 21.06.16
		Analysis Started on	: 22.06.16
Sample Description	: Ambient Air	Analysis Completed on	: 22.06.16
Location	: Keorapukur S.T.P. and Pump House		
Sample Condition	: Glass Microfibre Filter Paper & Plastic Bottle		
Sampling Method	: CPCB, Emission Regulation (Part II)		
Test Method	: CPCB, Emission Regulation (Part III), IS: 5182 (Part - 23) 2006, USEPA CFR 40 (Part - 50) Appendix L, IS: 5182 (Part - 2), 2001, IS: 5182 (Part - 6) 2006.		
Ambient Temperature in °C (Average)	: 33.0		

Time of Sampling	Concentration ($\mu g/m^3$)			
	PM_{10}	$PM_{2.5}$	SO_2	NO_2
09:15 AM to 05:15 PM	65.48	23.75	10.42	22.18

End of Report

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

[illegible]

[illegible]

[illegible]

Checked By

For, Indicative Consultant India

Parbati Ghosh
(Manager-Laboratory)
Signatory Authority

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

Kolkata Lab: [illegible]
Corp. Office: 123/3, Mahendra Banerjee Road, Kolkata-60, Mob: [illegible]
Durgapur Office: [illegible], DGP-16, Burdwan, Mob: [illegible]

S.S.I. Reg. No. 190192100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT,SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

Tel: [illegible]
E-mail: [illegible]
Website: [illegible]

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/202
Issued To : M/s. S. N. Envirotech Pvt. Ltd.
Address : Kamarpukur, S.T.P. Project, Dhalipara Road, Kol – 105

Sample Ref. No : SL/202
Report Date : 21.06.16
Date of Monitoring : 21.06.16

Sample Description : Ambient Noise
Sampling Method : By Digital Noise Meter
Test Method : IS 10900:1984, Reaffirm 2005
Location : Sodepur Brickfield Road, (Zone – 1) Doctor Bagan
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
Distance of Source : 1.0 M
Starting Time : 10:25 AM
Total Time (T) : 18 Min
Difference (dt) : 2 Min

Sl. No.	Noise Level (L2)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	67.3	0.11111111	211796.209	3858755.606
2	65.5		354813.389	
3	66.4		436515.832	
4	67.1		512861.384	
5	64.1		257039.578	
6	65.8		380189.396	
7	65.8		398107.171	
8	67.2		524807.460	
9	64.8		301995.172	
10	66.5		478630.092	

* The equivalent Noise Level Leq. 65.86 dB(A)

Maximum dB(A): 67.3
Minimum dB (A): 65.5

Remarks : During Sampling time Motor was in running Condition.

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA
Partha Goiti
(Manager Laboratory)
Signatory Authority

Note : 1. Test results shown in this test report relate only to the item tested.
2. This test report shall not be reproduced in full or in part [illegible] without the written approval of the laboratory.

Kolkata Lab : [illegible]
Corp. Office : [illegible], Mahendra Banerjee Road, Kolkata-60, [illegible]
Durgapur Office : [illegible]

S.S.I. Reg. No. 190152100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & BUILD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak, Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/NL/16-17/203

Issued To : M/s. S. N. Envirotech Pvt. Ltd.

Address : Kamarpukur, S.T.P. Project, Dhalipara Road, Kol - 104

Sample Description : Ambient Noise

Sampling Method : By Digital Noise Meter

Test Method : IS 10998:1984, Reaffirm 2003

Location : Sodepur Brickfield Road, (Zone – 1) Doctor Bagan

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

Sample Ref. No. : SL/202

Report Date : 23.06.16

Date of Monitoring : 21.06.16

Monitoring Details :

Height from the Floor : 1.5 M

Distance of Source : 3.0 M

Starting Time : 10:13 PM

Total Time (T) : 18 Min

Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	50.5	0.1111111	11220.185	143877.382
2	52.3		18982.437	
3	51.6		16454.398	
4	50.6		11481.538	
5	49.8		9549.926	
6	50.0		10000.000	
7	51.4		13803.843	
8	52.4		17378.008	
9	53.8		16982.823	
10	52.8		19054.607	

* The equivalent Noise Level Leq. 51.58 dB(A)

Maximum dB (A): 53.8

Minimum dB (A): 49.8

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Gorai

(Manager-Laboratory)

Signatory Authority

Note : 1. Test results shown in the test report relate only to the item tested.

2. This test report shall not be reproduced anywhere except in full and in case of such without the approval of the laboratory.

Kolkata Lab : 81-1/22/1-3, Sardarpur (M) Block-B, Maheshtala, Kol-700 142

Corp. Office : 33/3, Mahendra Banerjee Road, Kolkata-60

Durgapur Office : 4, Matangini Hazra Bithi, SAIL Co-operative, DGP-16, Burdwan

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 190192100010

(CONSULTANT, SURVEYOR & REIIL TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No. : ICI/SL/16-17/204

Issued To : M/s. S. N. Envirotech Pvt. Ltd.

Address : Keorapukur, S.T.P. Project, Dhalipara Road, Kol - 104

Sample Ref. No. : SL/205

Report Date : 23.06.16

Date of Monitoring : 21.06.16

Sample Description : Ambient Noise

Sampling Method : By Digital Noise Meter

Test Method : IS-10588:1984, Reaffirm 2003

Location : Keorapukur S.T.P. and Pump House

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

Distance of Source : 2.0 M

Starting Time : 11:40 AM

Total Time (T) : 18 Min

Difference (dt) : 2 Min

Sl. No.	Noise Level (Li)	fi = dt/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	56.3	0.11111111	42657.552	699815.176
2	57.8		56118.725	
3	58.1		64565.423	
4	59.0		87096.359	
5	60.1		102329.299	
6	60.0		100000.000	
7	59.4		87096.359	
8	57.5		56234.133	
9	56.4		43651.583	
10	58.2		66069.345	

* The equivalent Noise Level Leq. 58.45 dB(A)

Maximum dB(A) : 60.1

Minimum dB (A) : 56.3

——— End of Report ———

Checked By

For INDICATIVE CONSULTANT INDIA

Farhan Gojol

(Manager-Laboratory)

Signatory Authority

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

Kolkata Lab : [illegible]

Corp. Office : 23/3, Mahendra Banerjee Road, Kolkata-60, [illegible]

Durgapur Office : [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. 19019210004

CONSULTANT, SURVEYOR & REGD. TEST HOUSE

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

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	: ICI/SL/16-17/205
Issued To	: M/s. S. N. Envirotech Pvt. Ltd.
Address	: Keorapukur, S.T.P. Project, Dhalipara Road, Kol - 104
Sample Description	: Ambient Noise
Sampling Method	: By Digital Noise Meter
Test Method	: IS 10988:1984, Reaffirm 2003
Location	: Keorapukur S.T.P. and Pump House
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

Sample Ref. No. : SL/205

Report Date : 23.06.16

Date of Monitoring : 21.06.16

Monitoring Details :

Height from the floor : 1.5 M

Distance of Source : 3.0 M

Starting Time : 10:35 PM

Total Time (T) : 18 Min.

Difference (d) : 2 Min

Sl. No.	Noise Level (Li)	fi = (d)/T	fi X 10^(Li/10)	Sum of fi X 10^(Li/10)
1	51.9	0.11111111	15803.843	103995.316
2	50.6		11481.536	
3	49.3		8511.380	
4	49.1		8128.305	
5	45.7		3415.197	
6	50.1		10232.930	
7	49.5		8912.509	
8	50.6		11481.536	
9	51.6		14454.398	
10	48.8		7585.776	

* The equivalent Noise Level Leq 50.09 dB(A)

Maximum dB (A) : 51.9

Minimum dB (A) : 45.7

End of Report

Checked By

For, INDICATIVE CONSULTANT INDIA

Parbati Ghosh

(Manager-Laboratory)

Signatory Authority

Note : 1. Test results shown in this test report relate only to the item tested.

2. This test report shall not be reproduced anywhere except in full and in same format without the approval of the laboratory.

Kolkata Lab : BI-1/22/1-3, Santoshpur (M) Block-B, Maheshtala, Kol-700 142

Corp. Office : 53/2 Mahendra Banerjee Road, Kolkata-60

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

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT, SURVEYOR & HIGH TEST HOUSE)
[illegible] Link Road, Basudevpur, Khanjanchak
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample collected by	M/s. Indicative Consultant India			
Report No.	ICI-A/KEIIP/15-16/[illegible]		Sample Ref. No.	[illegible]
Issued To	M/s. Kolkata Environmental Improvement Investment Program (KEIIP)		Report Date	[illegible]
Address	206, A.J.C. Bose Road, Business Tower, Kolkata, Pin - 700017		Date of Sampling	[illegible]
			Analysis Started on	[illegible]
Sample Description	Workplace Air		Analysis completed on	[illegible]
Location	Business Tower 2nd Floor			
Sample Condition	[illegible]			
Sampling Method	CPCB, Guidelines [illegible]			
Test Method	[illegible]			

Time	Concentration (µg/m³)				Total Hydrocarbon as Methane	Ambient Temperature [illegible]
	PM_{10}	$PM_{2.5}$	SO_2	NO_2		
[illegible] AM to [illegible] PM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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

For, Indicative Consultant India

Checked by

[illegible]
(Manager Laboratory)
Signatory Authority

[illegible]
Manager [illegible]
Indicative Consultant India

S.S.I. Reg. No. 190193100010

INDICATIVE CONSULTANT INDIA

(CONSULTANT, SURVEYOR & REGD. TEST HOUSE)

HPL Link Road, [illegible], Khanjanchak, Haldia, Purba Medinipur, PIN 721 602

[illegible]

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

TEST REPORT

Sample drawn by M/S. Indicative Consultant India

Report No. : [illegible]

Issued To : [illegible] Investment Program (KEIIP)

Address : [illegible]

Sample Description : [illegible]

Sampling Method : [illegible]

Test Method : [illegible]

Location : [illegible]

Limit : [illegible]

Sample Ref. No. : [illegible]

Report Date : [illegible]

Date of Monitoring : [illegible]

Monitoring Details :

[illegible]

Starting Time : [illegible]

Total Time (T) : [illegible]

Sl. No.	Noise Level (Li)	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Maximum : [illegible]

Minimum : [illegible]

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

For INDICATIVE CONSULTANT INDIA

Signatory Authority

[illegible]

Note : [illegible]

INDICATIVE CONSULTANT INDIA

S.S.I. Reg. No. [illegible]

(CONSULTANT SURVEYOR & REGD. TEST HOUSE)
HPL Link Road, Basudevpur, Khanjanchak,
Haldia, Purba Medinipur, PIN-721602

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

TEST REPORT

Sample is drawn by M/s. Indicative Consultant India

Report No.	[illegible]	Sample Ref. No.	[illegible]
Issued To	M/s. Kolkata Environmental Improvement Investment Program (KEIIP)	Report Date	[illegible]
Address	[illegible] Road, [illegible] Tower, Kolkata, Pin - 700 017	Date of sampling	[illegible]
		Analysis started on	[illegible]
Sample Description	Workzone Air	Analysis completed on	[illegible]
Location	[illegible] Tower 4th Floor		
Sample Condition	[illegible]		
Sampling Method	[illegible]		
Test Method	[illegible]		

Time	Concentration ($\mu g/m^3$)					Ambient Temperature (°C) (Average)
	$PM_{2.5}$	PM_{10}	SO_2	NO_2	Total Hydrocarbon as Methane	
[illegible] AM to [illegible] PM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

End of Report

[illegible]

For, Indicative Consultant India

(Manager (Operations))
Signatory, Indicative

Manager, [illegible]
Indicative Consultant India

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

S.S.I. Reg. No. 19019210081[illegible]

INDICATIVE CONSULTANT INDIA

CONSULTANT, SURVEYOR & [illegible] TEST HOUSE

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

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

TEST REPORT

Sample collected by M/s. Indicative Consultant India

Report No. : ICI/SL/15-16/1847 — Sample Ref. No. : SL-1847

Issued To : M/s. Kolkata Environmental Improvement Investment Program (KEIIP) — Report Date : [illegible]

Date of Monitoring : [illegible]

Address : [illegible], Kolkata, Pin - 700 0[illegible]

Sample Description : [illegible] Noise

Sampling Method : By Digital Noise Meter

Test Method : IS [illegible]

Location : [illegible]

Limit : [illegible]

[illegible]

Monitoring Details :

[illegible]	: 12.54	Starting Time :	[illegible]
[illegible]	: 2.0.34	Total Time (T) :	[illegible]
		Difference (ti) :	[illegible]

Sl. No.	Noise Level (Li)	[illegible]	[illegible]	[illegible]
1	77.2	[illegible]	[illegible]	[illegible]
2	70.2		[illegible]	
3	62.2		[illegible]	
4	80.1		[illegible]	
5	72.2		[illegible]	
6	77.4		[illegible]	
7	74.8		[illegible]	
8	67.1		[illegible]	
9	72.5		[illegible]	
10	7[illegible].2		[illegible]	

* The equivalent Noise Level Leq. 77.55 dB(A)

Maximum dB(A) : 8[illegible]

Minimum dB(A) : 67.1

[illegible]

Checked By

For, INDICATIVE CONSULTANT INDIA

Manager [illegible]

Signatory Authority

Note : [illegible]

[illegible]

INDICATIVE CONSULTANT INDIA

TEST REPORT

APPENDIX 8: 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:

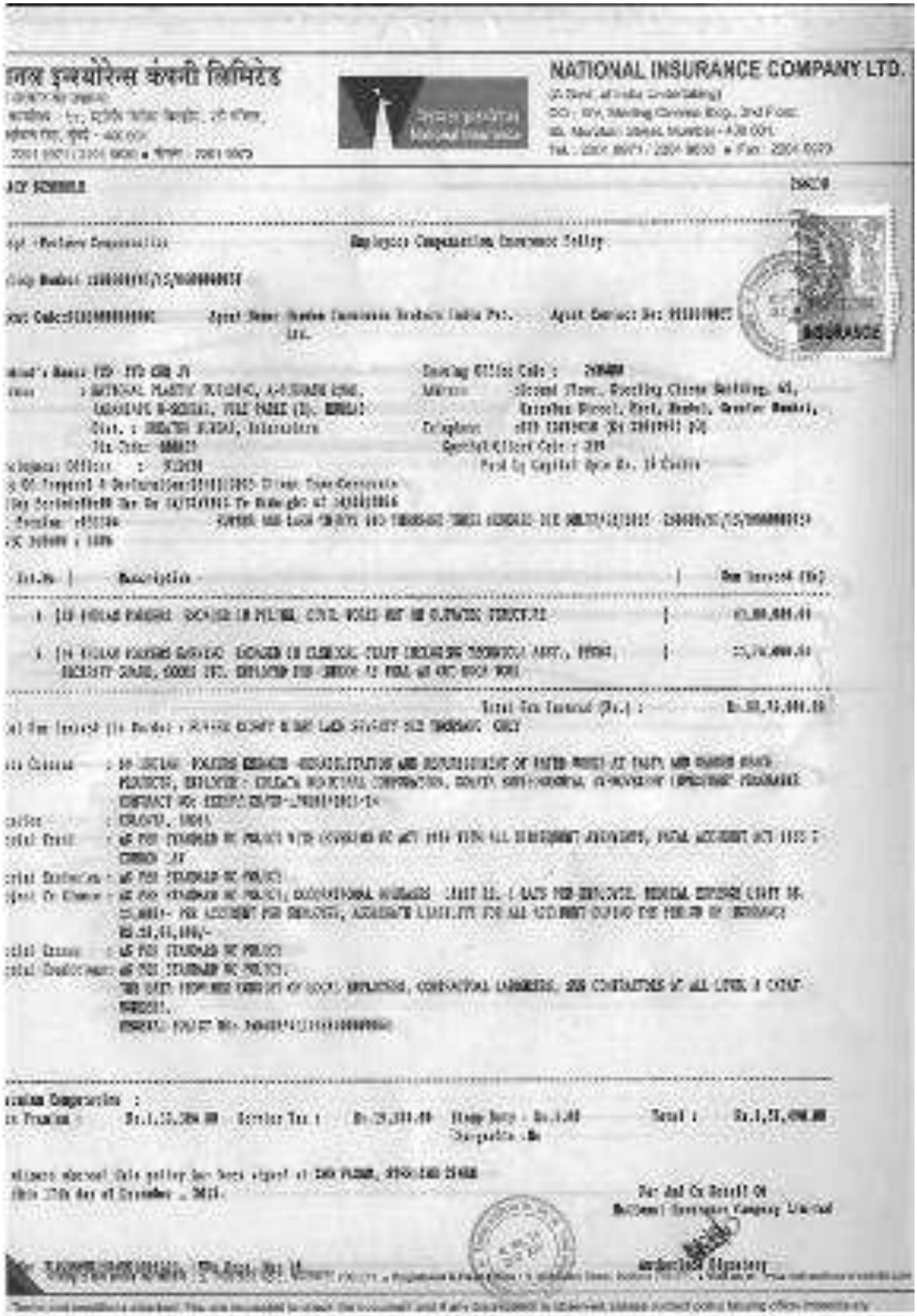
- ☞ All the buildings and structures are well supplied with fire fighting devices.
- ☞ Proper security arrangements are functioning round the clock.
- ☞ There is quick and efficient transport as well as communication system.
- ☞ Smoking is prohibited throughout the flammable premises.

- 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

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

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



NATIONAL INSURANCE COMPANY LTD.

(A Govt. of India Undertaking)

DO - XIV, Sterling Cinema Bldg., 2nd Floor,

65, Murzban Street, Mumbai - 400 001.

[illegible]

C.D. Debit/Credit Advice

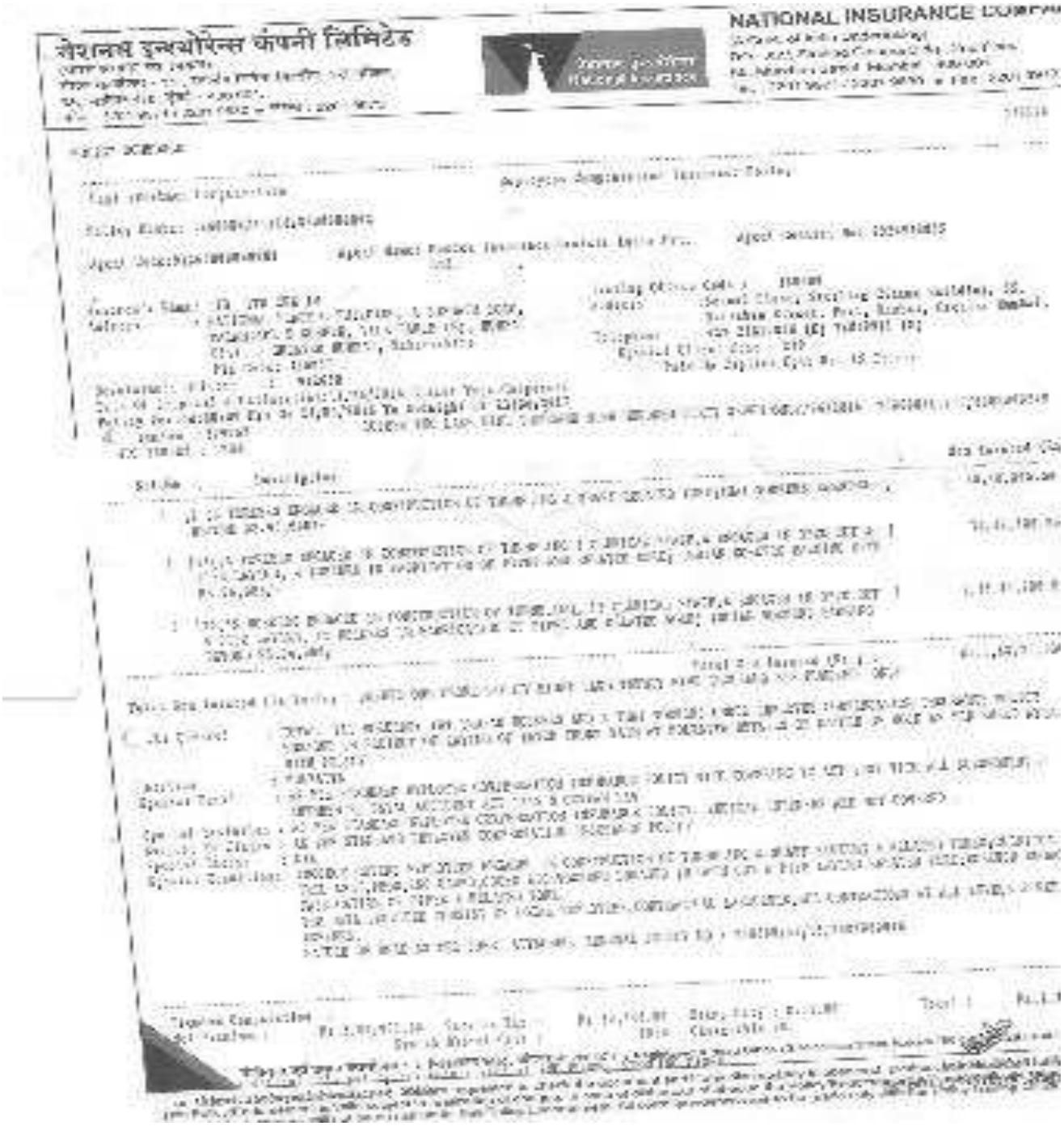
[illegible]

Policy Number	TR Code	End/Claim/Rec/Cln Number	Particulars	Credit Amount (Rs.)	Debit Amount (Rs.)	Amount Received (Rs.)	A/C Head
[illegible]	11		CASH PREMIUM A/C	1,32,[illegible]		1,32,[illegible]	[illegible]
[illegible]	11		SERVICE TAX	19,[illegible]		19,[illegible]	[illegible]
[illegible]	11		EDUCATION CESS				[illegible]
[illegible]	11		C.D. CONTROL A/C		1,51,[illegible]	-1,51,[illegible]	[illegible]
			Total(In Rs.) :	1,51,[illegible]	1,51,[illegible]	1,51,[illegible]	

For National Insurance Company Limited

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



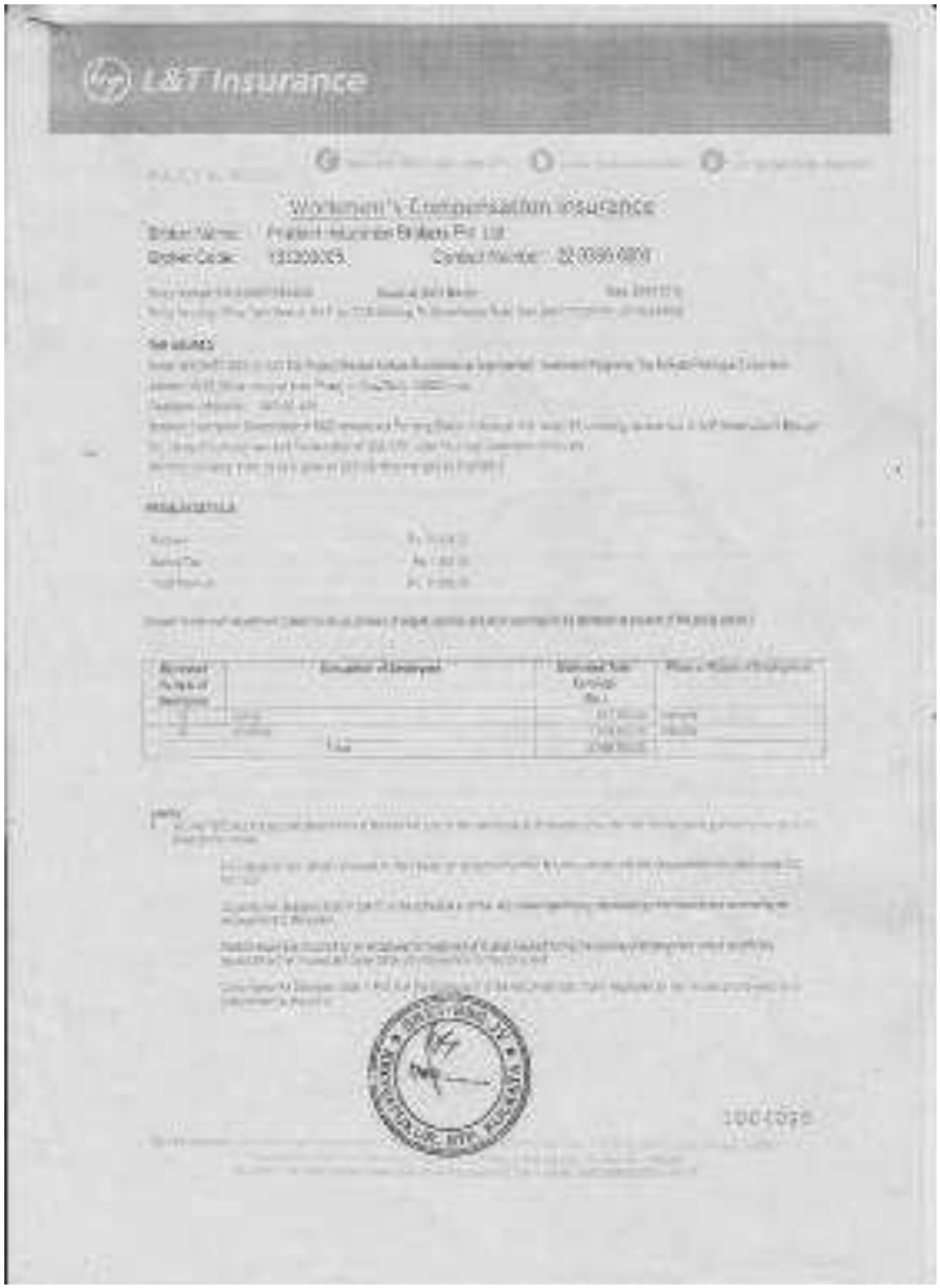
Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment

EMPLOYERS LIABILITY-OTHER THAN COLLIERIES POLICY SCHEDULE

LEAS

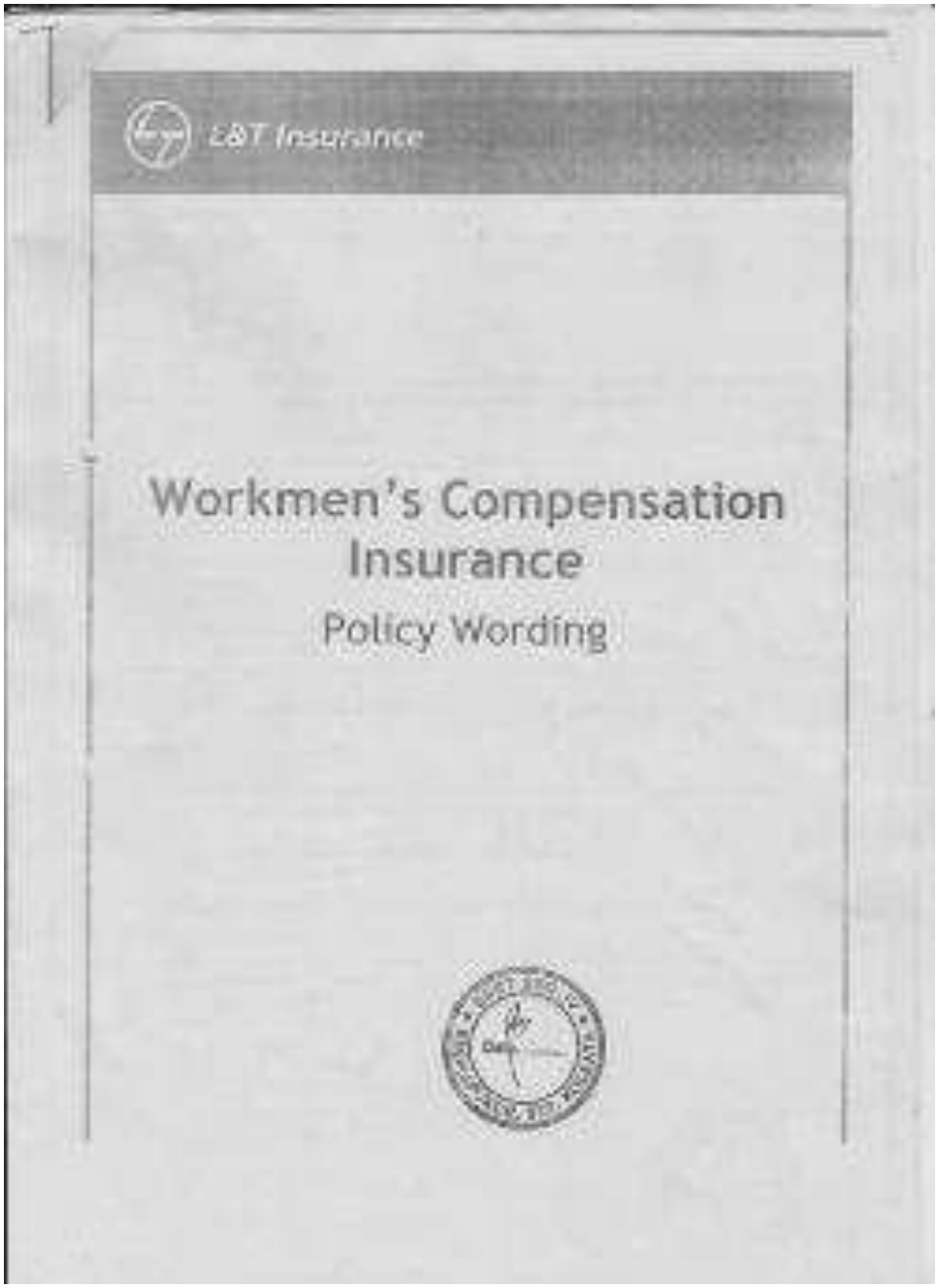
Package: Micro-tunneling works on pressure main from Santoshpur Pumping Station to Garden Reach Sewage Treatment Plant

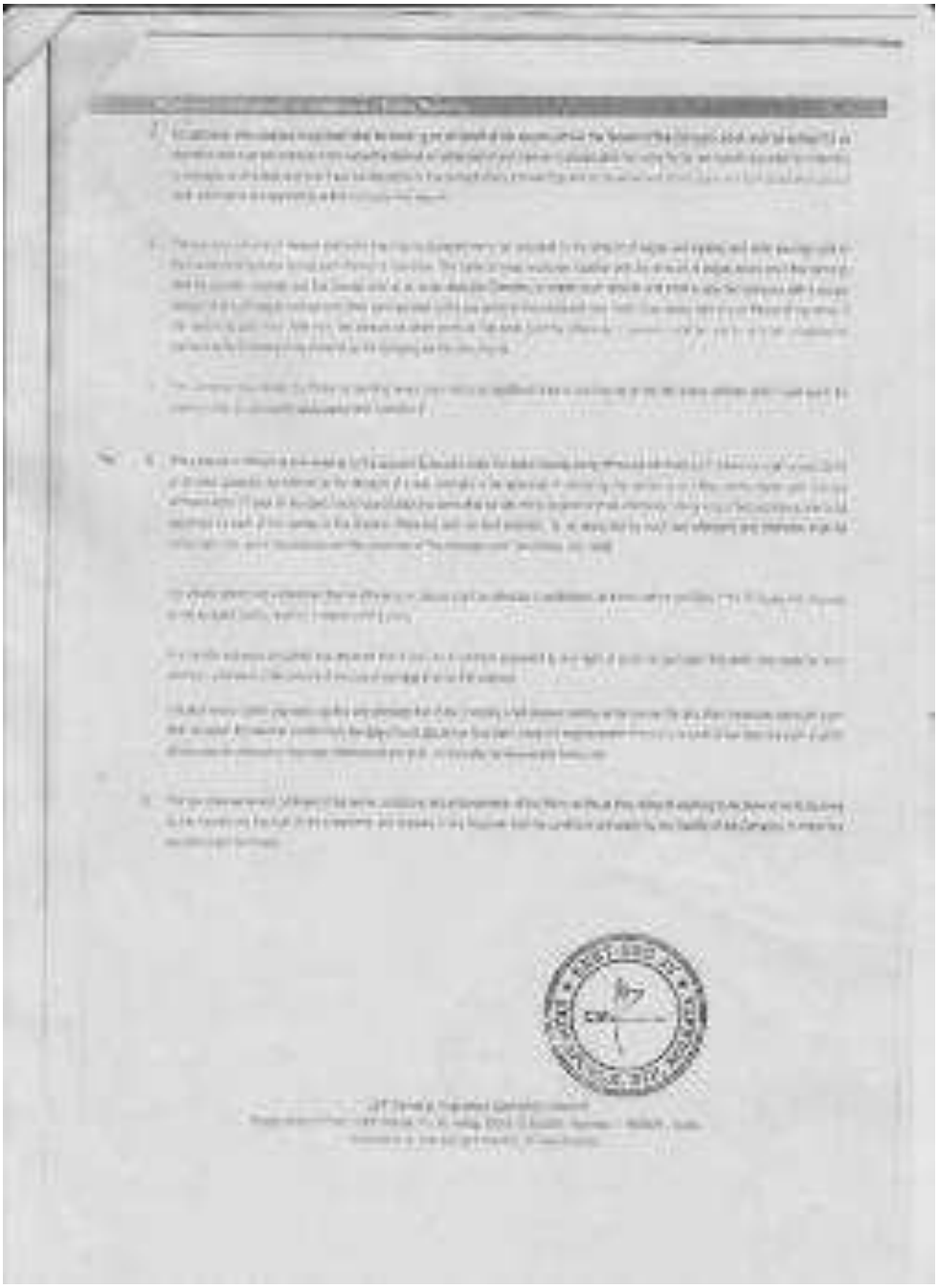
Package: Rehabilitation of GAP sewer and Allied Works

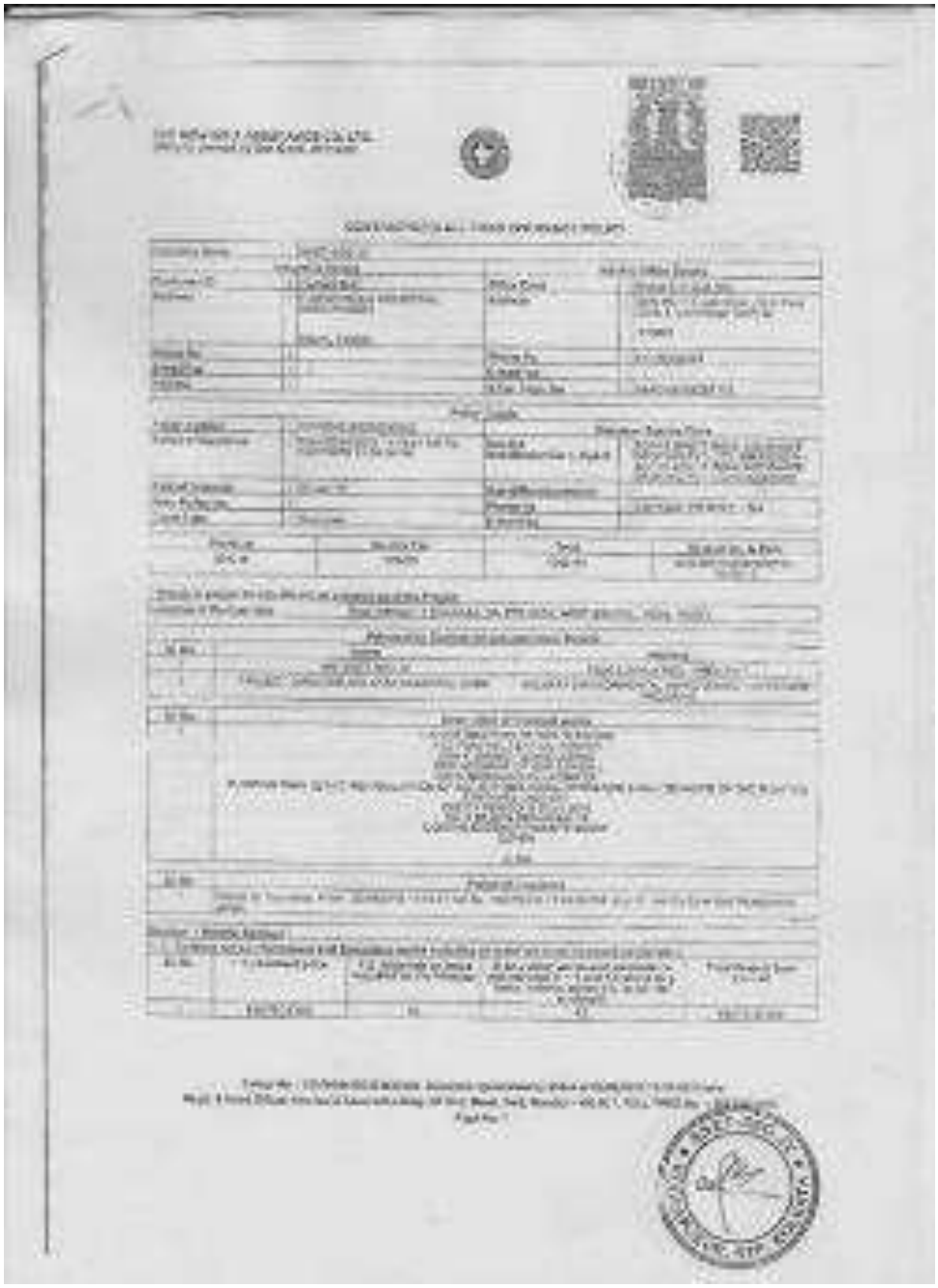


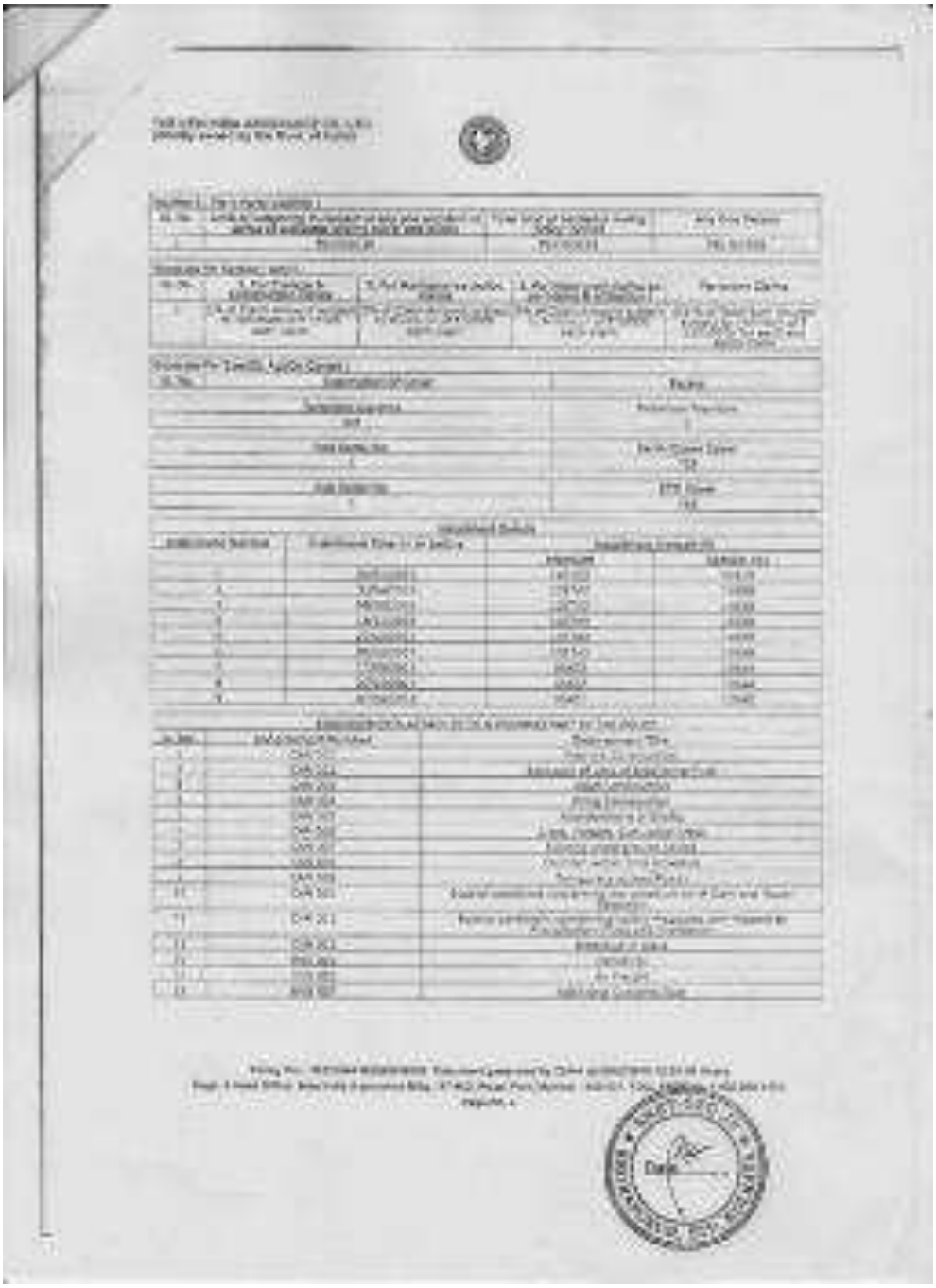

L&T Insurance

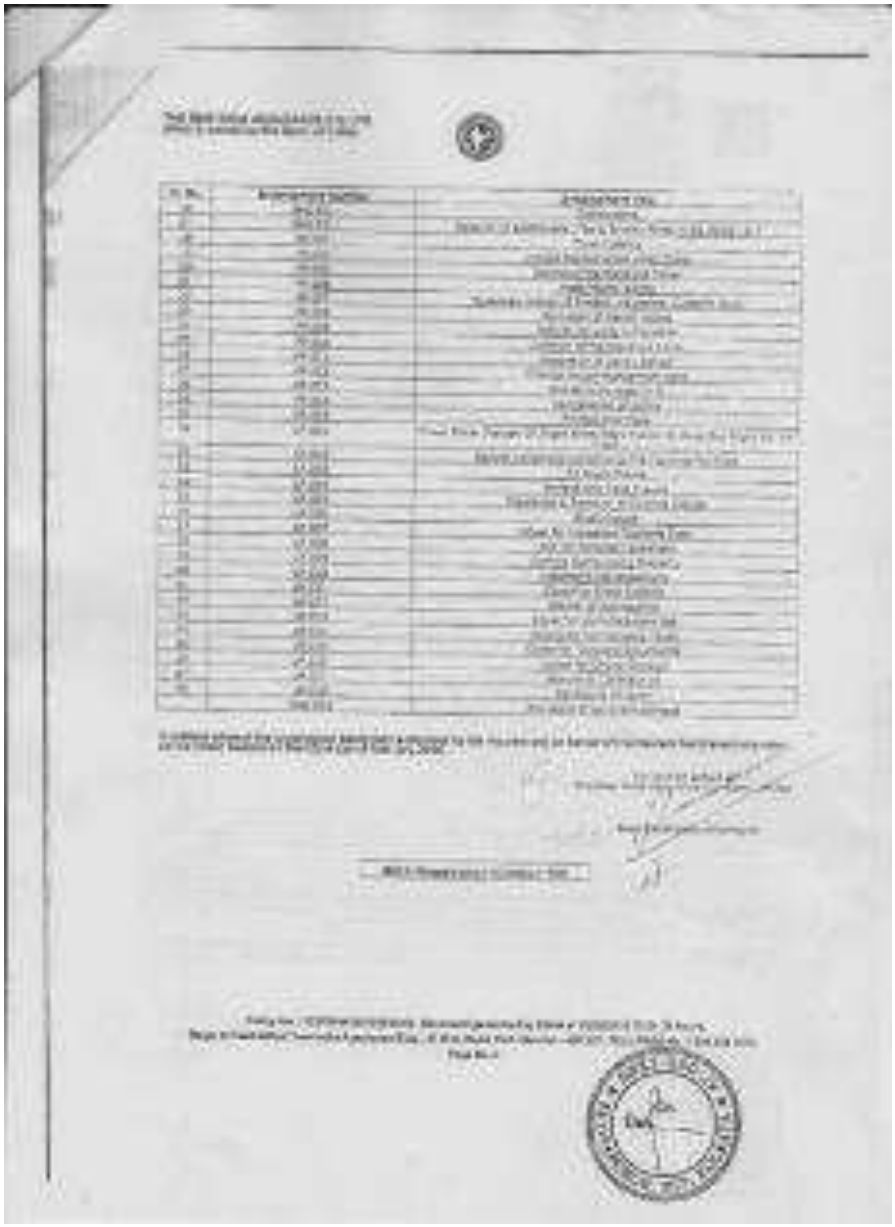

L&T Insurance


L&T Insurance
Workmen's Compensation Insurance
Policy Wording









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


THE ORIENTAL INSURANCE COMPANY LIMITED

THE ORIENTAL INSURANCE COMPANY LIMITED

AS ABOVE

128300

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

For and on behalf of
The Oriental Insurance Company Limited

Authorised Signatory

Page 2 of 2

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	50	Nil	30
Laying of water trunk main from Garden Reach waterworks to Taratala valve station and laying of sewer line along Diamond Harbour Road by Micro tunneling method**(KEIIP/ICB/ Tr-1/WS & SD 04/2013-14)**	M/s ITD- ITD CEM Jv	Staff: 45 Workers: 405 Total- 450	Nil	52
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: 92 Workers: 122 Total- 198	Nil	121
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	15
Interior renovation of KEIIP office at Business Towers, including electrical & Air conditioning works **(KEIIP/NCB/ Tr-1/BR-08A/2015-16)**	S. Misra Infradev Pvt. Ltd.	Staff: 04 Workers:36 Total: 40	Nil	37
Rehabilitation and Replacement of GAP sewer and Allied Works **(KEIIP/ICB/Tr-1/SD-07/2015-16)**	SNet-SSG JV	Staff : 20 Workers: 62 Total 82	Nil	70

APPENDIX 11: TRAFFIC MANAGEMENT PLAN

ITD-ITD Cem Joint Venture

SAFETY & HEALTH OPERATION CONTROL PROCEDURES

Traffic Management Plan (TMP)

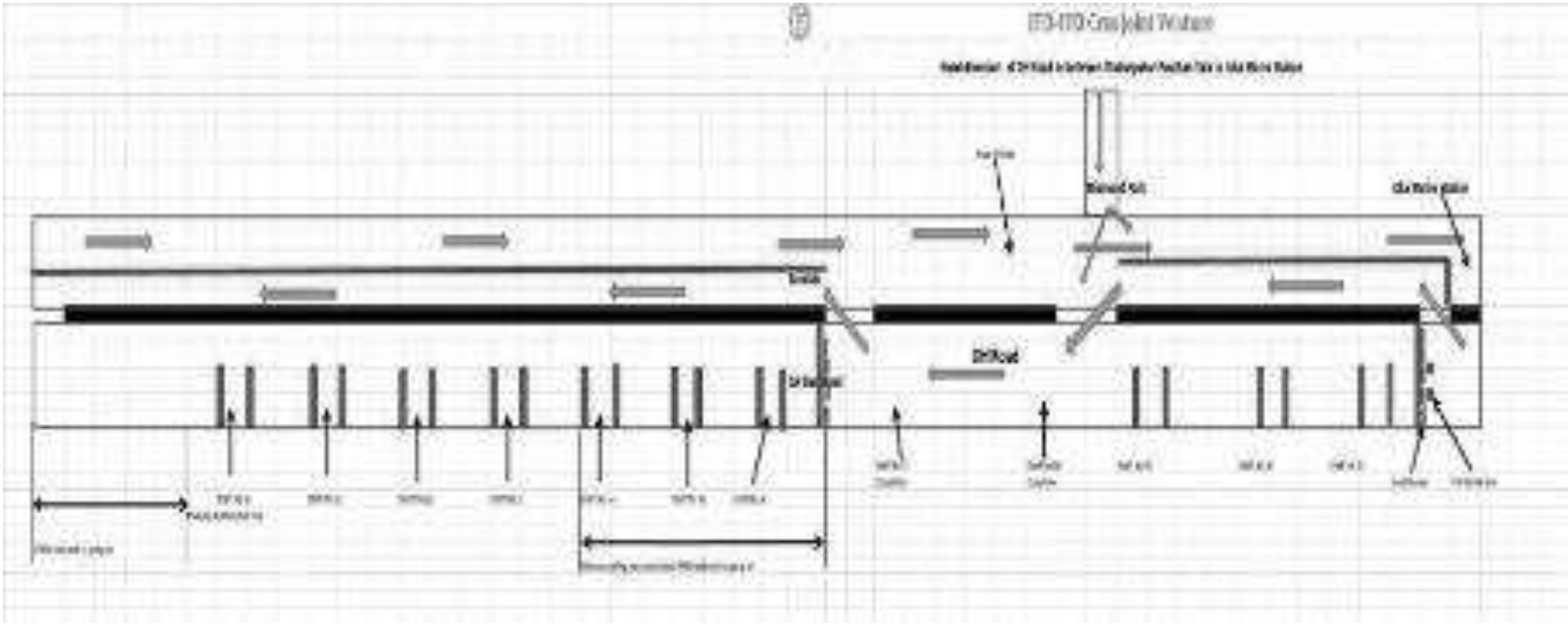
LOCATION (AS ON 3OTH JUNE'2016)

Traffic Diversion: From western Franken of Diamond harbour Road approximate 2000 Meters from Thakurpukur Panchanan Tala to Joka Metro Station (towards Joka). Shaft no 10 to Shaft no 21 – 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 Management Plan

JUNE 2016

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

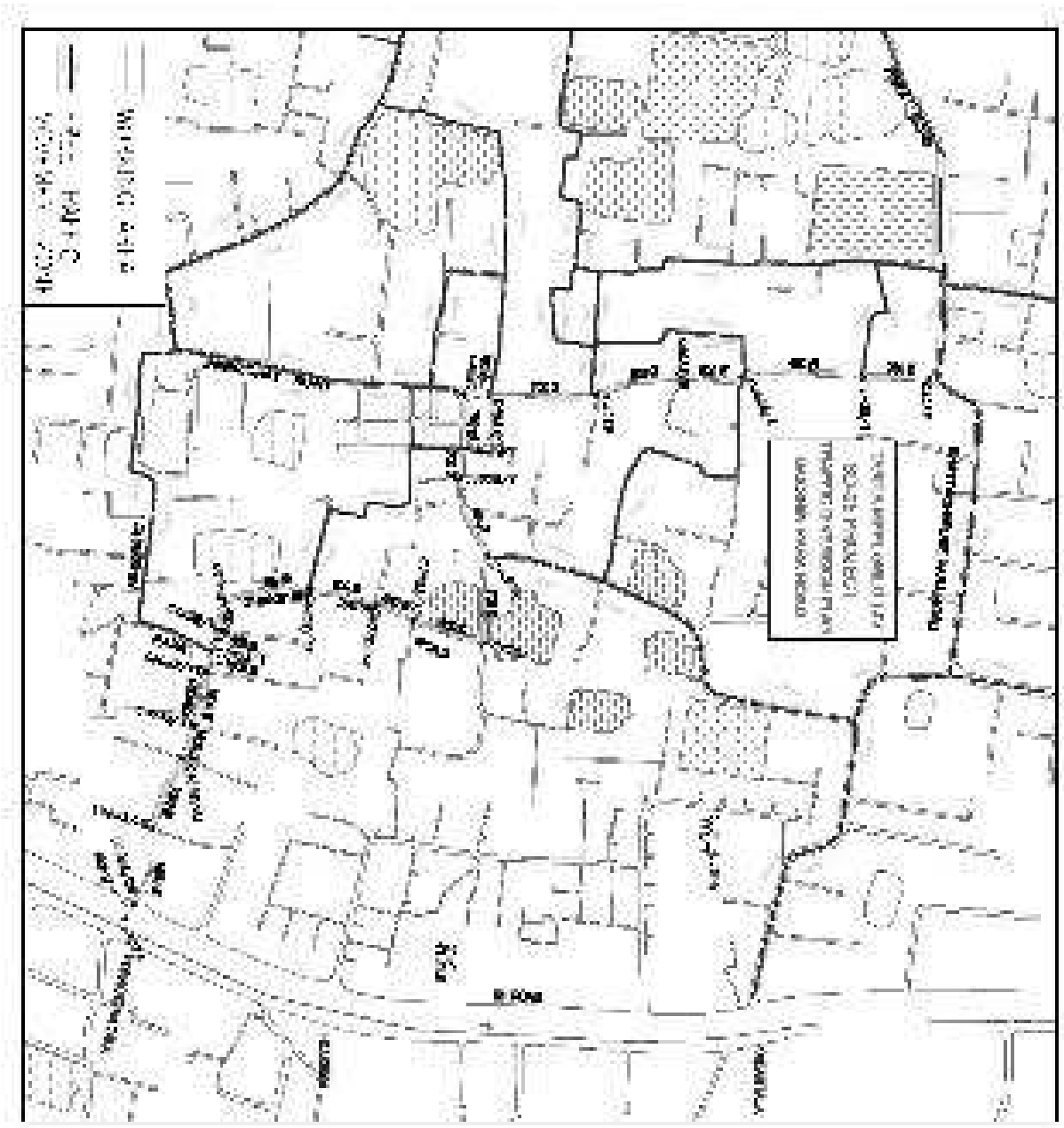
TANTIA-MPPL (WILO) JV

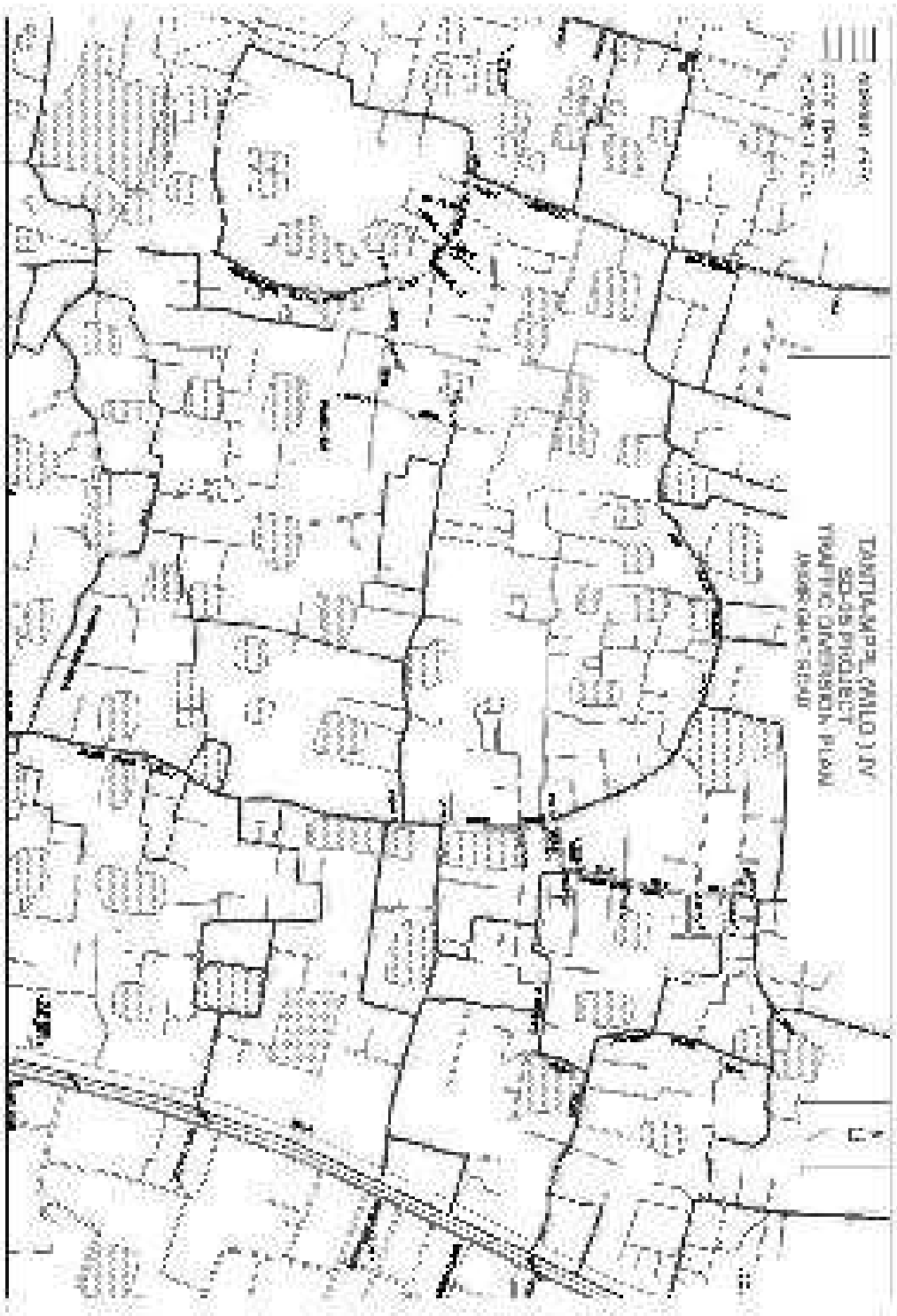
LOCATION (AS ON 15TH JUNE 2016)

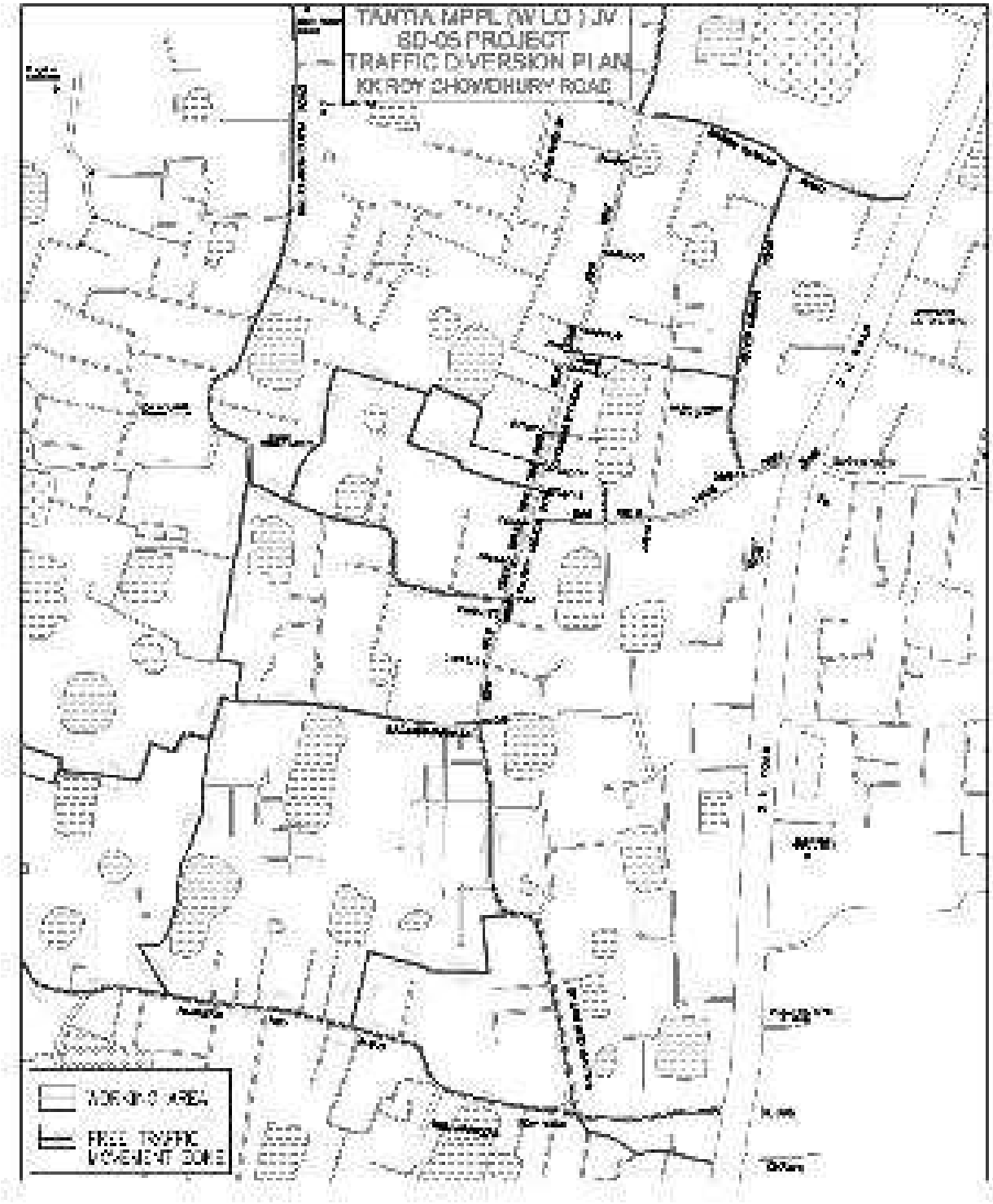
Traffic Diversion: Sashan Kalitala Road and K.K.Roy Choudhury Road of Ward no-126, Jaigir Ghat Road, Ranganathpur Road (3A Bus stand), Dakshin Para Road of Ward no-125 for RCC NP3 Pipe Laying Work

▪ 1.0	▪ Purpose
	To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
▪ 2.0	▪ Scope
	The procedure is applicable to TANTIA MPPL (WILO) JV sites and depots.
▪ 3.0	▪ Responsibility
	It is the responsibility of the Project In charge and Depot Head to implement this procedure and ensure that delegated staff under their supervision carries it out.
▪ 4.0	▪ Definitions
	Project In charge: Person responsible for the execution of the project.
▪ 5.0	▪ Legal Requirement
	The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule 48, 88 and 95, Motor Vehicle Act 1988
▪ 6.0	▪ Requirements
6.1	General
	• All road works create inconvenience and are a potential hazard to the safety of all road users and those employed in carrying out the work. • All the effects should be mitigated or reduced to the minimum, and to ensure that the works are properly guarded, lighted and signed. • A clear and early warning of any obstruction to all road users should be provided. • All areas where work is going on should be clearly demarcated by barricading and entry into these areas should be restricted to only authorized personnel.
6.2	Planning stage
	• The client and DSC's Engineer should be consulted as regards the execution of the works and the safety measures which would be put in place. • Particular attention should be given to : o traffic signs; o cones; o barriers; o road hazard warning lights; 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	On site
	• The working area in the live road/footway is defined. • The working space is defined – this includes the area of storage of tools and equipment and space to move around the job. • Provision of safety zone- it is kept clear of all work, material storage and people and is clear of working radius of all plant.
6.4	**Operators / Drivers**
	• **Experienced operators and drivers with valid licensed has been appointed.** • **One copy of license has been collected by Safety Department.**
6.5	Equipment
	• Drivers are made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, tyres and windshield wipers. • Safety Department along with Plant department has been checking the vehicles monthly

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



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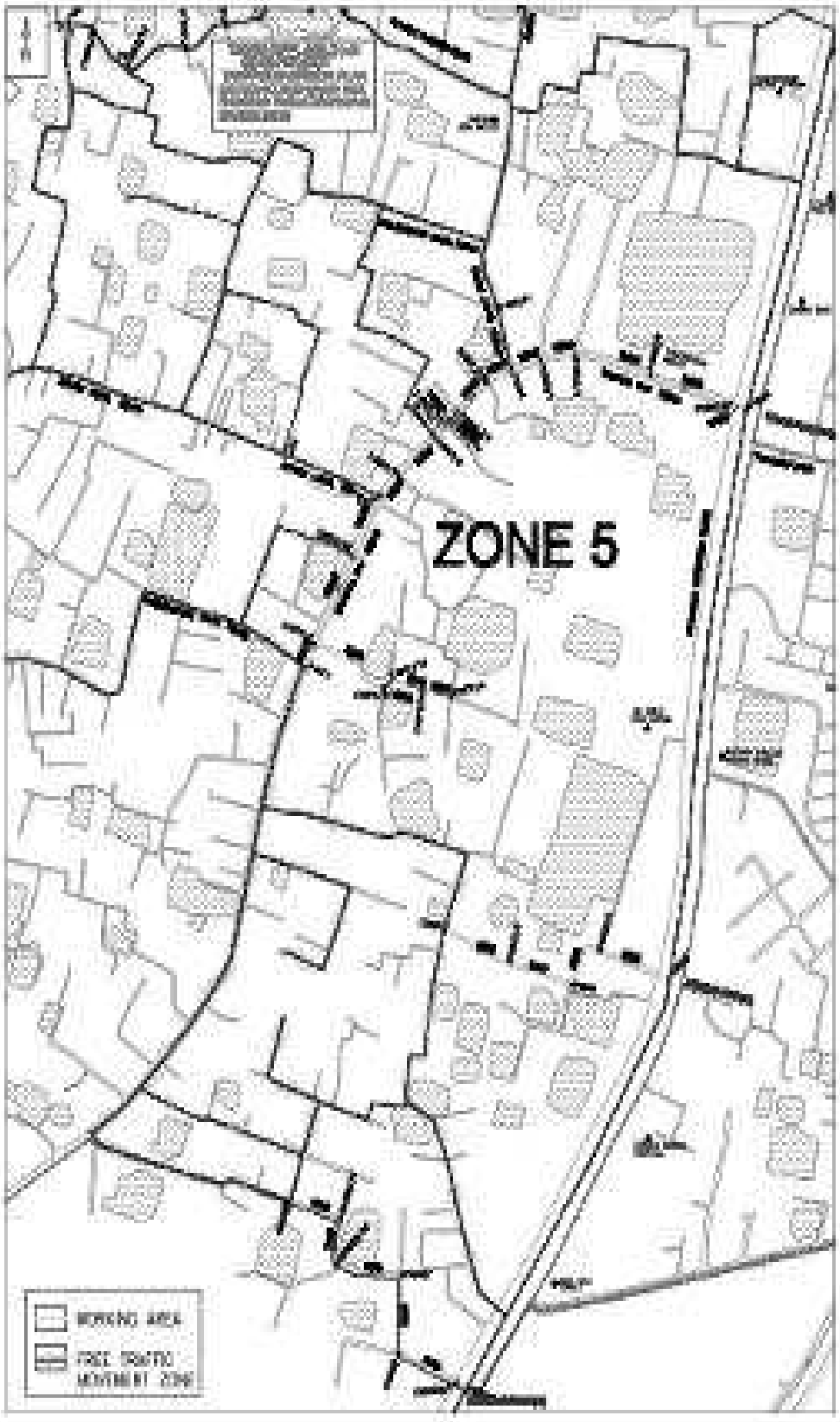
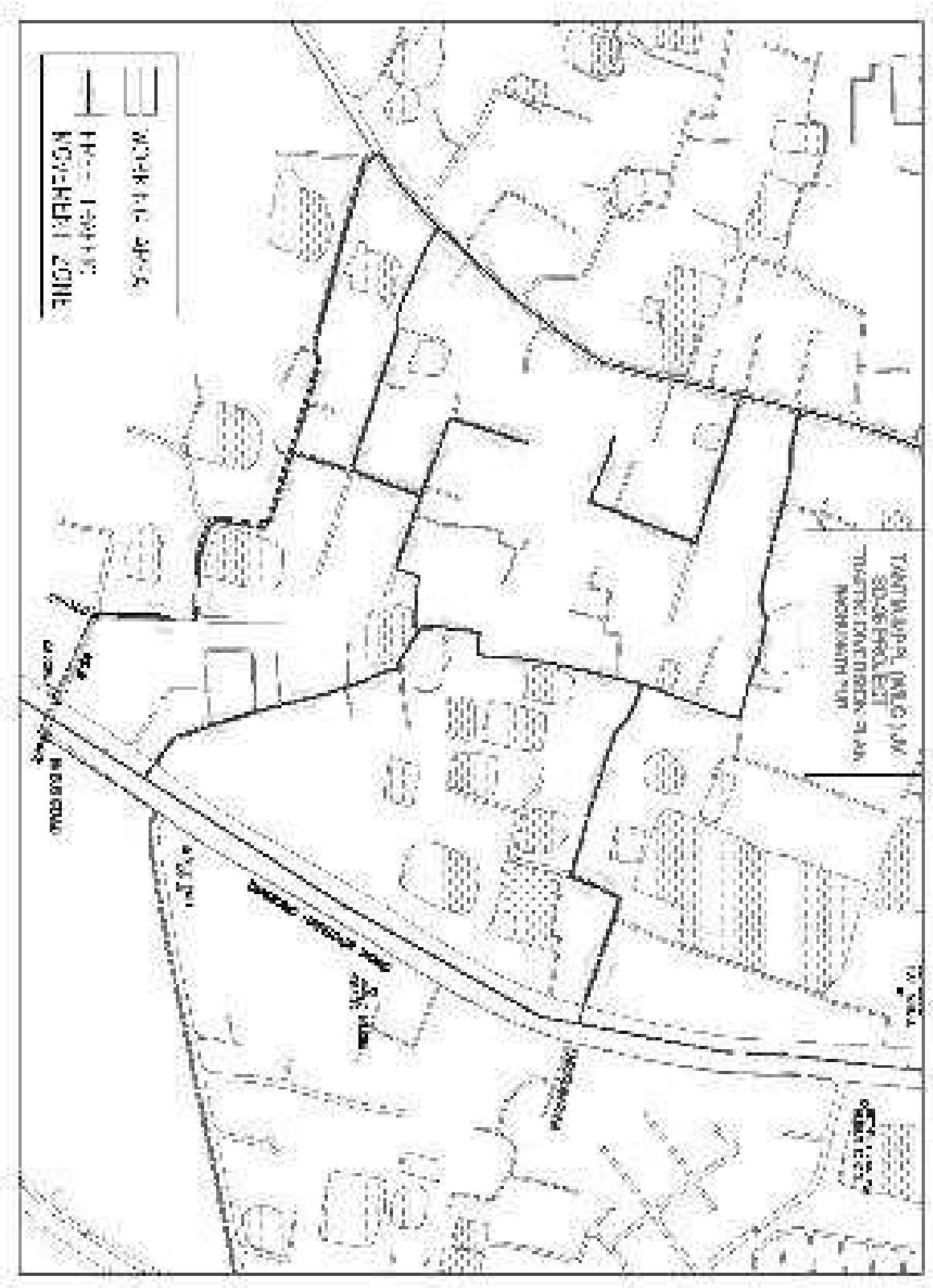
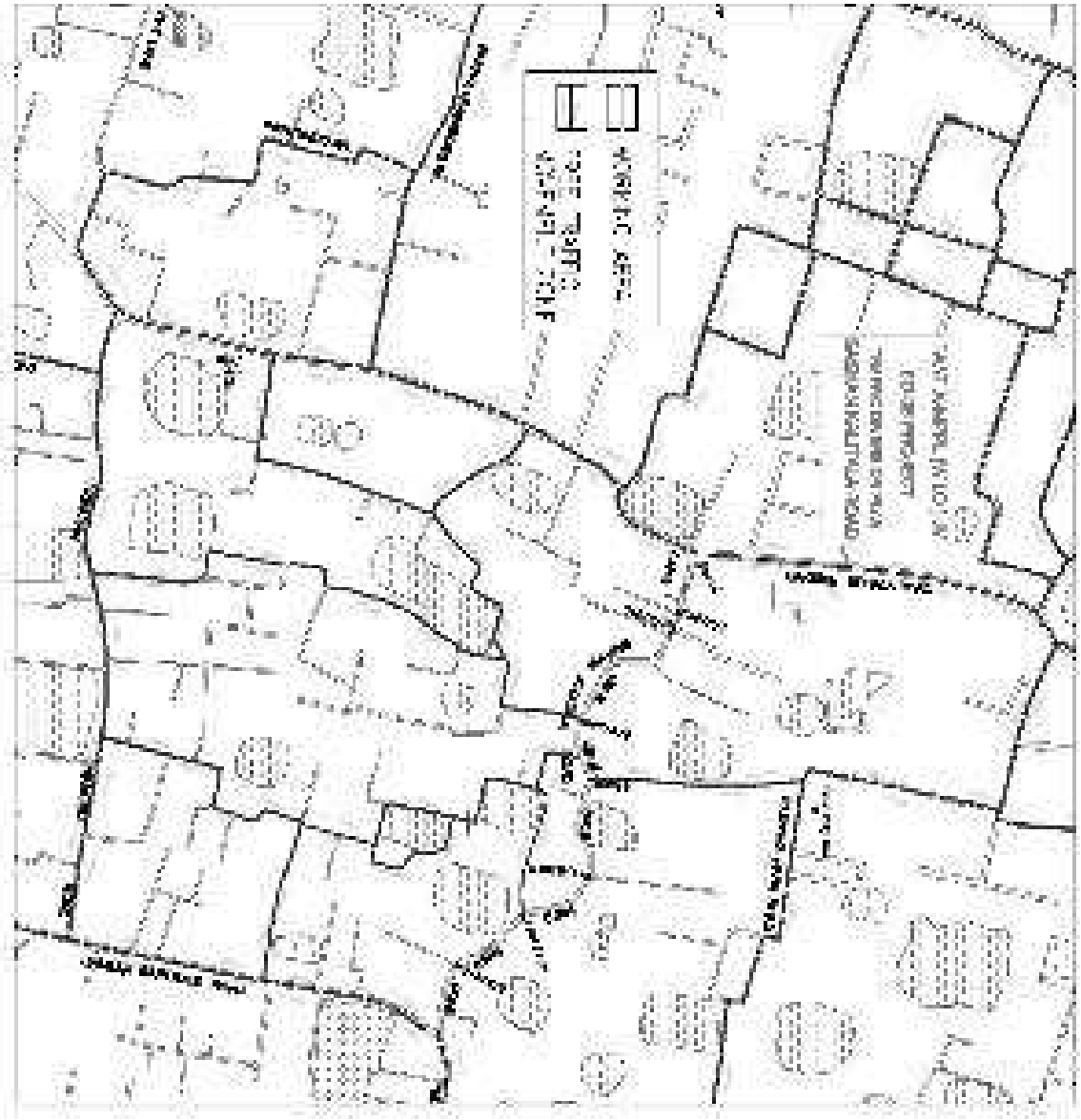
SD-05 PROJECT
TRAFFIC DIVERSION PLAN
KK ROY CHOWDHURY ROAD


ZONE 5





Traffic Management Plan

Package: Rehabilitation of GAP sewer and Allied Works

1.0	**PURPOSE**
	To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
2.0	**SCOPE**
	The procedure is applicable to SNET – SSG JV sites and depots.
3.0	**RESPONSIBILITY**
	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 (Regulation of employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule 48, 88, and 95, Motor Vehicle Act 1998
6.0	**REQUIREMENTS**
6.1	<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 necessary of traffic control systems such as temporary traffic lights or Stop/Go boards. ➢ Access should be planned to eliminate dangerous movements of site traffic (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 I 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 will be collected by safety department.
6.5	**Equipment**
	• Drivers will be made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, tyros and windshield wipers. • Safety Department along with plant department will be checking the vehicles monthly basis • All vehicles have reverse horns and it is in working property. • All vehicles, periodical maintenance will be conducted.
6.6	**Roads**
	For safe operation we are following the below 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. • Caution board has been placed in every location within the site. • During night alert light has been provided.

	• Workers are working with reflected jackets as well as required PPE's. • Conducting Toolbox training as regular basis. • Road diversion drawing has been submitted (Ref. Attached drawing)
6.7	**Loading and unloading**
	• Only authorized persons were engage for loading/ unloading. • Materials loaded within the permitted safe weigh limit for the truck. • Dimensions of loads carried on a vehicle in strict accordance with relevant provisions. • During Toolbox talks intimation has been delivered to all drivers/ operators that when the driver leaves the driving seat, the engine of the truck shall be switched off, the gear engaged and parking brakes applied .On slopes, wheel blocks shall be applied. • Helper has been provided with all vehicles.
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.

APPENDIX 12: ENVIRONMENT, HEALTH AND SAFETY BUDGET

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

ITD Cemindia Joint Venture

Environment, Health and Safety Management Plan

KEIIP Water works project at Palta and Garden Reach ,

HSE budgets for the year of 2016-17

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

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

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

ITD-ITD Cem Joint Venture

Environment, Health and Safety Management Plan

KEIIP Micro tunneling Project, Kolkata

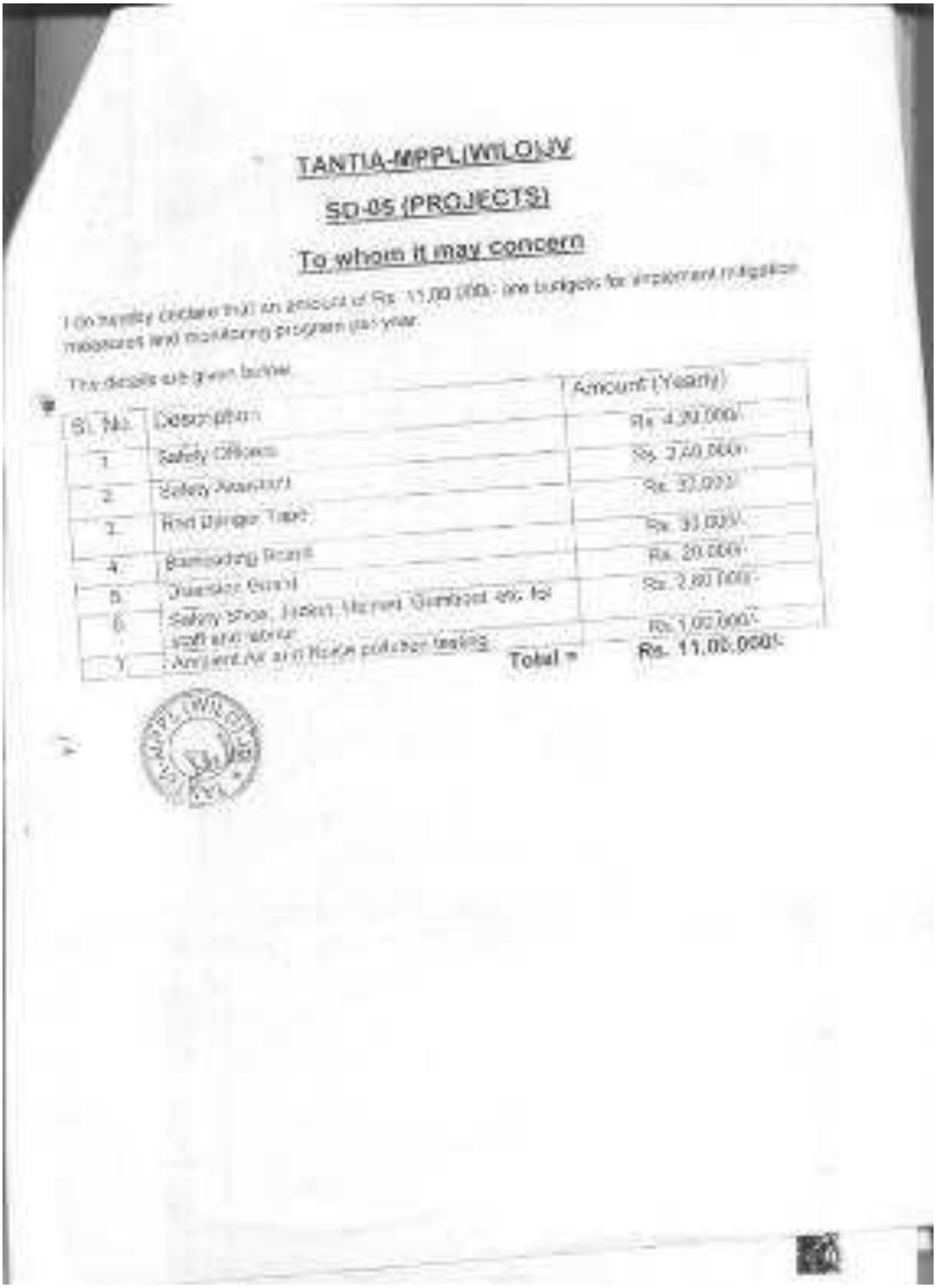
HSE budgets for the year of 2015-16

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

SD-05 (PROJECTS)

To whom it may concern

I do hereby declare that an amount of Rs. 11,00,000/- are budgetic for environment mitigation measures and monitoring program per year.

The details are given below:

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

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 2015-2016)

1.	**COST OF SAFTEY OFFICER (ANNUAL CTC) -**	**8.50 LAKH**
2.	**MONITORING CHARGES (NOISE,AIR,HYDROCARBON,WATER,POLLUTION)-**	**2.10 LAKH**
3.	**SAFTEY AND PPE EQUIPMENTS FOR SITE AND OFFICE-** (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.)	**8.40 LAKH**
	TOTAL-	**19.00 LAKH**

SNET-SSG JV

KEIIP/ICB/TR-1/SD07/2015-16 (Projects)

TO WHOM IT MAY CONCERN

I do hereby declare that an amount of Rs-7, 90,000.00 is budgets for implement mitigation measures and monitoring program for EHS/year.

- The details are given below:-

SL-NO.	DESCRIPTION	AMOUNT(YEARLY)
01	Safety Officers	Rs-5,04,000.00
02	Caution & Red Danger Tape	Rs-60,000.00
03	Barricading Board	Rs-25,000.00
04	Diversion Board	Rs-25,000.00
05	Safety Shoes, Helmet, High Light Jacket, Gumboot, Goggles & Hand Gloves(For Staff & Workers)	Rs-1,20,000.00
06	Ambient Air & Noise, Water monitoring	Rs-56,000.00
	TOTAL AMOUNT	RS-7,90,000.00

For, SNET-SSG JV.

(BIMALESH SARKAR)

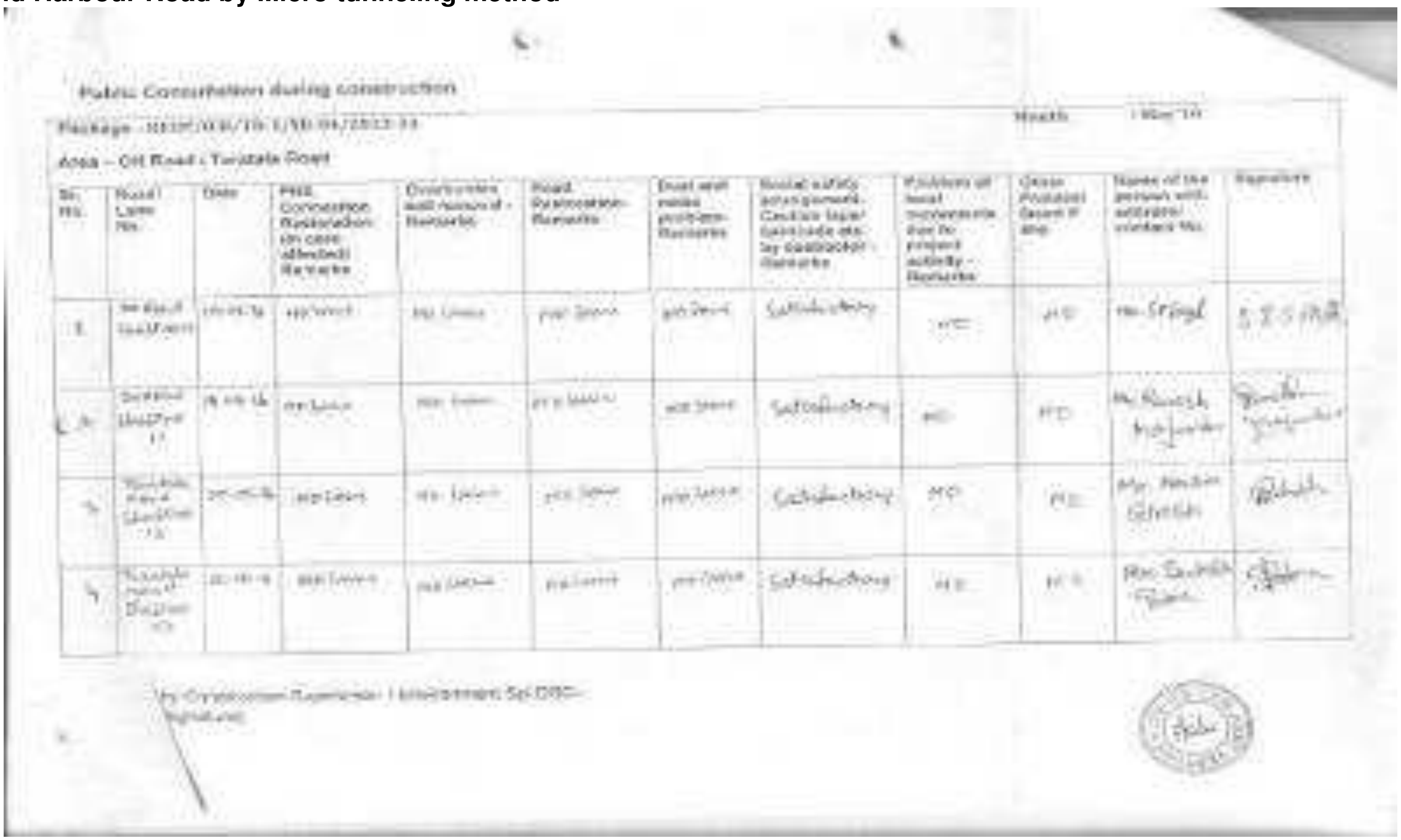
Package -Interior renovation of KEIIP office at Business Towers, 206 AJC Bose Road, Kolkata 700017 including Electrical works & Air-conditioning works

EHS Budget 2016-2017

Certificate monitoring Data for KEIIP site				
purpose	cost per month		annual cost	
Overhead	₹	60,000.00	₹	720,000.00
PPE	₹	3,000.00	₹	36,000.00
Insurance	₹	500.00	₹	6,000.00
Medicine	₹	1,000.00	₹	12,000.00
safety person	₹	300.00	₹	3,600.00
pool Vehicle	₹	8,000.00	₹	96,000.00
house keeping	₹	18,000.00	₹	216,000.00
toilets	₹	4,000.00	₹	48,000.00
Water	₹	1,000.00	₹	12,000.00
Total	₹	95,800.00	₹	1,149,600.00

APPENDIX 13: PUBLIC CONSULTATION ON ENVIRONMENTAL ISSUES DURING CONSTRUCTION/ IMPLEMENTATION – Sample filled format

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



Public Consultation during construction

Package: Replacement of GAP sewer and Allied Works

Public Consultation during construction

Package: [illegible]
Area: [illegible]

Sl. No.	Road/ Lane No.	Date	HH Connection Restoration (in case affected) Remarks	Overburden soil removal - Remarks	Road Restoration Remarks	Dust and noise problem Remarks	Social safety arrangement Caution tape/ barricade etc. by contractor - Remarks	Problem of local movements due to project activity - Remarks	Other Problem faced if any	Name of the person with address/ contact No.	Signature
01.	[illegible]	[illegible]	No	[illegible]	Temporary	manageable	Yes	manageable	[illegible]	[illegible] CHANDRA [illegible]	
02.	"	"	No	[illegible]	Temporary	manageable	Yes	manageable	[illegible]	SHIREN Roy 94335[illegible]	[illegible] Roy
03.	"	[illegible]	No	[illegible]	Temporary	manageable	Yes	manageable	[illegible]	[illegible] 983556[illegible]	
04.	"	"	No	[illegible]	Temporary	manageable	Yes	manageable	[illegible]	[illegible] (Shop) 9[illegible]5132	

Verified by Construction Supervisor / Environment Spl DSC
(Date & Signature)

[illegible signatures]

APPENDIX 14 FIELD LEVELTRAININGS CONDUCTED DURING REPORTING PERIOD

ENVIRONMENTAL SAFEGUARD – ORIENTATION REVIEW MEETING FOR CONTRACTOR, CONSTRUCTION MANAGER– KEIIP

Safeguard orientation review meeting has been conducted on safeguard issues and application of Environmental Management Plan (EMP) at DSC office of KEIIP on 21.05.2016

Team Leader of PMC and DSC, Dy. TL of PMC, Environment Specialist of PMU, Construction Managers of DSC and Safety Officer and of Contractor agency are participated in the review meeting.

The issues discussed like,

- Statutory compliance from Pollution Control Board
- Overall application of EMP and compliance of safety requirement
- Labour and Office Camp site management- requirement of proper sanitation and solid waste management
- Disposal / utilization of overburden earth , rocks, spoil materials after work
- Storage of construction materials
- Occupational and public safety during construction
- Community safety
- Traffic management and spoil 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

EMP application requirement and methodology have also been discussed.

Specific non compliance issues have been discussed with respective contractors for compliance within 10 days. The issues are,

WS 02 (KEIIP/ICB/ Tr-1/WS02/2013-14)

The site as per the monthly observation notes, prepared by DSC, shows more or less satisfactory environmental conditions. The only issues that need to be attended are those of the camp site management. The PMU environmental specialist and TL (PMC), stressed upon the points of good housekeeping, especially that of the substitution of the chullahs currently being used as the only cooking medium, with oil/ gas stoves, and also to ensure the availability of ample fire extinguishers at all work sites and labourer hutments. The DSC Environmental Specialist also reminded them to clear the bushes near the labourers' quarters, which could prove to be a nuisance during the monsoons.

Instruction has been given to the contractor for submission of revise EMP, health safety plan, spoil and traffic management plan and air, noise, water quality monitoring data by 15th of June.

WS & SD 04 (KEIIP/ICB/ Tr-1/WS & SD-04/13-14)

The site as per the monthly observation notes, prepared by DSC, shows more or less satisfactory environmental conditions. The only issues that need to be improved are that of the progress and nature of the shafting works at shaft 21 b. The respective CM however stated that the matter is in control currently and work is progressing smoothly. Instruction has been given to the contractor for submission of revise EMP, health safety plan, spoil and traffic management plan and air, noise monitoring data by 15th of June.

SD 05 (KEIIP/ICB/ Tr-1/SD-05/13-14)

The site as per the monthly observation notes, prepared by DSC shows partially satisfactory environmental conditions. Despite repeated reminders, the issues of proper barricading and good housekeeping still loom at large and remain mostly unresolved. TL (PMC) requested the site HSE officer

present to look into the matter and resolve it at the earliest. Instruction has been given to the contractor for submission of revise EMP, health safety plan, spoil and traffic management plan and air, noise monitoring data by 15th of June.

SD 06 (KEIIP/NCB/ Tr-1/SD-06/13-14)

The works at this site are mostly completed and is due for handing over to KMC on 21.5.2016. The site as per the monthly observation notes, prepared by DSC shows partially satisfactory environmental conditions. The Environmental Specialist (DSC) explained to the HSE officer of the site the post construction environmental site report that needs to be submitted to DSC. The TL (PMC) and the CM representing the site from DSC also emphasized on the need for the excess earth to be tilled out before final handing over.

SD 07 (KEIIP/ICB/ Tr-1/SD-07/15-16)

Only preliminary works have begun at the site as yet. The HSE officer was instructed by the respective CM and the Environment Specialist (DSC) to positively ensure submission of NOC for disposal of wastes, PUCC for vehicles used at site, updating of SEP, SMP on a quarterly basis and conduct a public consultation prior to proper commencement of works. The DTL (PMC) also emphasized on the need to conduct an Odour Quality analysis at the site. The Environmental Specialist (DSC) also instructed the contractor to submit a corrected version of the preliminary site specific EMP, submitted by the contractor on 18.5.20016. It was also instructed to contractor representative to complete base line (air, noise) monitoring work by 10th of June.

BR-08A (KEIIP/NCB/TR-1/BR-08A/2015-16)

The site as per the monthly observation notes prepared by DSC shows partially satisfactory environmental conditions. Despite repeated reminders by the Junior Environmental Scientist (DSC) and the Environmental Specialists (DSC and PMU) neither has the housekeeping issues been resolved, and nor have the Monthly monitoring report (MMR) been submitted on time. Since no one from the contractor's end was present at the meeting, the TL (PMC) instructed the respective Construction Manager in charge of the site, from DSC, to stop the work at the site, if environmental conditions are not improved at the earliest.

Attendance sheet attached as **Annex 1**

Photo: Safeguard Meeting

Photo: Safeguard Meeting

Photo: Safeguard Meeting

(Dr. Ardhendu Mitra)
Environment Specialist DSC

Kolkata Environmental Improvement Investment Program (KEIIP)

Environmental Safeguard Orientation/Training Program

Date : 21.06.2016

Venue : KEIIP Office

Name	Organisation	Designation	Contact Number	Signature
[illegible]	DSC	TL	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	TL	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
S. K. Mukherjee	DSC/KEIIP	C M	[illegible]	[illegible]
[illegible]	DSC/KEIIP	[illegible]	[illegible]	[illegible]
[illegible]	DSC/KEIIP	[illegible]	[illegible]	[illegible]
[illegible]	-do-	-do-	[illegible]	[illegible]

Kolkata Environmental Improvement Investment Program (KEIIP)

Name	Organisation	Designation	Contact Number	Signature
B. SARKAR	SNET- SEG JV	KEN	9038592835	[illegible]
Jayanta Kumar Saha	SNET - SSG JV. Safety Officer	Safety officer	8158810372	[illegible]
Mahadeb Maji	DSC/KEIIP	Construction Sub	9830959103	[illegible]
[illegible]	[illegible]	Dy. Project Manager	[illegible]	[illegible]
[illegible] Saha	[illegible]	[illegible] Safety	[illegible]	[illegible]
Arijit Dutta	FHC (KRS: AE-DH)	Dy. Team Leader	9920070455	[illegible]
Ruksana Chakraborti	DSC (Design Team Consultant)	Pumping Station Specialist	9007380908	[illegible]
[illegible] Sardar	DSC/KEIIP	Construction Engineer	[illegible]	[illegible]
[illegible] Shaw	[illegible]	Dy. Manager (E)	9831366912	[illegible]
[illegible]	DSC	CE	[illegible]	[illegible]
Ranajit Banerjee	PMC	TL	9831074177	[illegible]

[illegible] Mitra (Environmental [illegible] DSC) [illegible]

Environment Monitoring Training for Environment Monitor of PMU

KOLKATA ENVIRONMENTAL IMPROVEMENT INVESTMENT PROJECT (KEIIP)

Training on Environmental Safeguard for KEIIP

Attendance Sheet

Venue : KEIIP Conference Room

Date : 10.02.2016

Time : 3.00 P.M.

S. No.	Name of Representative	Name of Organisation	Contact no. & E mail	Signature
1.	Dr. C. [illegible]	Env. Specialist, PMU	[illegible]	[illegible]
2.				
3.	Pratik Banerjee	Project Assistant	9163202656	[illegible]
4.	[illegible] Rahaman Molla	Project Asst.	[illegible]	[illegible]
5.	Partha Datta	Project Asst.	98301921?0	P. Datta
6.	Abhimanyu Das	Project Assistant	[illegible]	[illegible]
7.	Md [illegible]	Project Assistant	[illegible]	[illegible]
8.	Ayan Jyoti Das	Jr. Project Assistant	9051859490	[illegible]
9.	Sumit Chowdhury	Jr. Project Assistant	9007942867	[illegible]

Sl. No.	Name of Representative	Name of Organisation	Contact no. & E mail	Signature
10	Subhankar Pari	Project Assistant	9874483301	[signature]
11	Dipak Goswami	Project Assistant	9088089301	[signature]
12	Jayanta Chatterjee	Project Assistant	8961299530	J Chatterjee
13	Chaitali Choudhury	Project Assistant	9874411137	C Choud
14	Madhumita Sen	—do—	9433477118	[signature]
15	Biman Maitra	—do—	9831734396	[signature]
16	Bikram Debnath	Jr. project assistant	9163932821	B Debnath
17				
18				
19				
20				
21				
22				
23				

Environment Health Safety Induction Training has been conducted for new Contractor SD 07 Package on 28th March 2016

Environment Safeguard Orientation / Training program
Date – 28.03.2016
Venue – KEIIP Office

Name	Organization	Designation	Contact Number	Signature

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

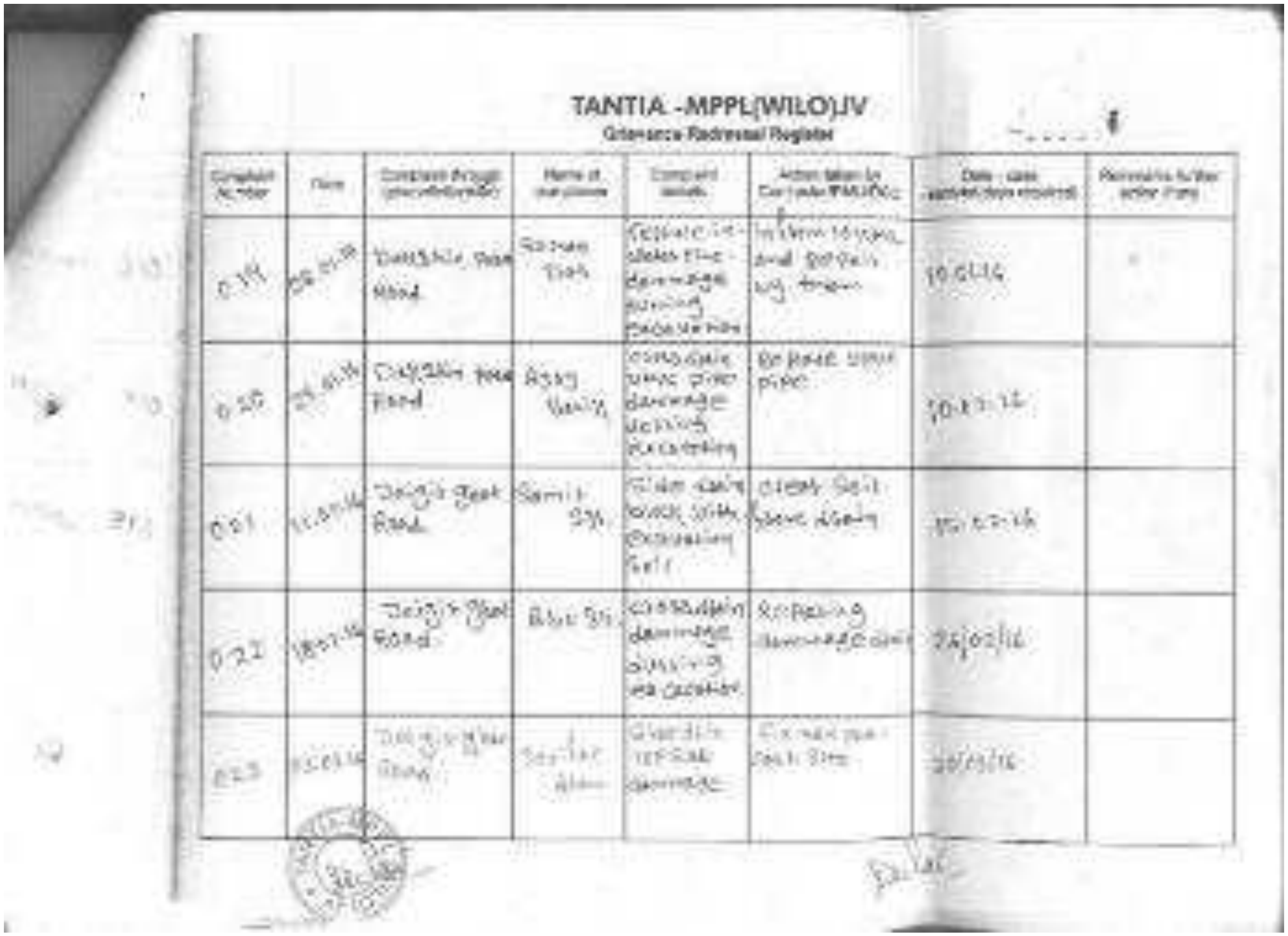
APPENDIX 16: Filled Grievance Redressal format

Package: Micro-tunneling works on pressure main for Santoshpur-Garden Reach

Grievance Redressal Register

Complaint Number	Date	Complaint through (phone/ letter/ site)	Name of complainer	Complaint details	Action taken by Contractor/ PMU/DSC	Date – case resolved (days required)	Remarks – further action if any
1) January 2016	14.01.2016	site	Sujan Roy	Regarding approach nearby road undulation near work site at Pit	Approach road restored immediately by rubbish and rolling done	On dated 22.01.2016 case resolved by contractor	Regularly maintained the road surface clean and used for car movement
2) March 2016	27.03.2016	site	Ashoke Sardar	Regarding damaged meter gate of building at near Pit	Immediately repairing started at the damaged portion	On dated 04.04.2016 case resolved by contractor	
3)April 2016	08.04.2016	site	Local people	Regarding damaged of public tap water near to Pit site	Immediately repairing started at the damaged water line by KMC enlisted plumber	On dated 08.04.2016 case resolved by contractor	

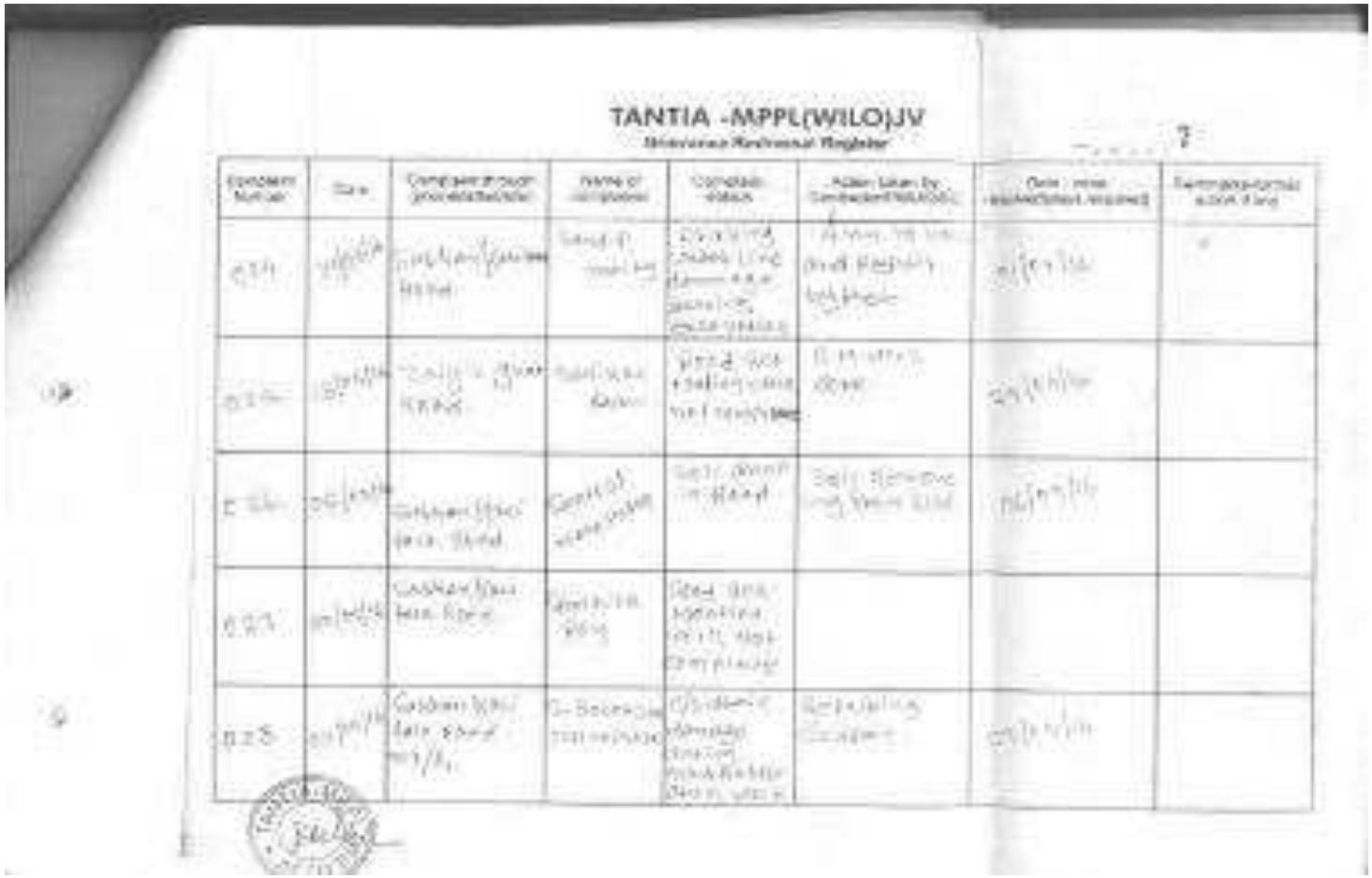
Package: Construction of pumping stations in Begore khal and in Joka Tram Depot and Construction of Sewerage and Drainage Network within Diamond Habour Road catchment



TANTIA -MPPL(WILO)JV

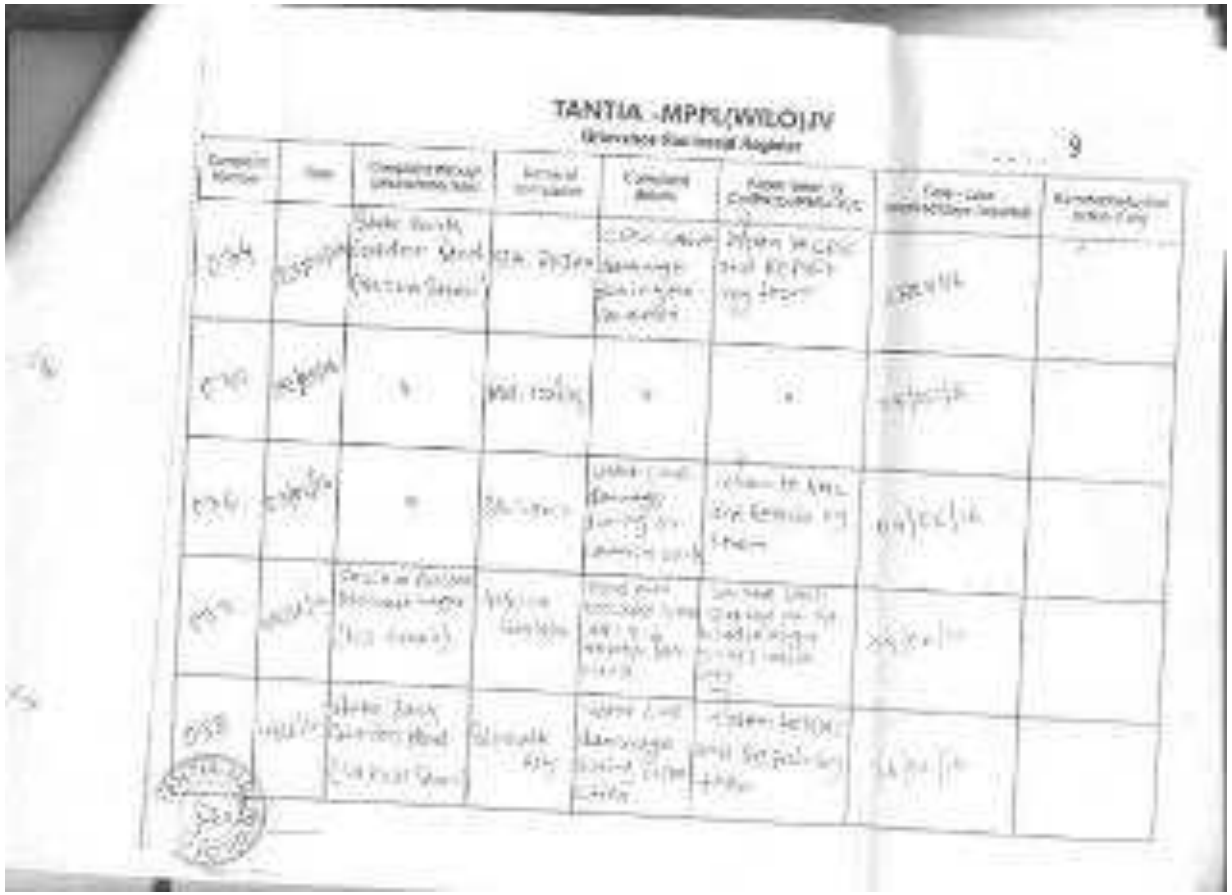
Grievance Redressal Register

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] Road	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible] Road	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible] Road	[illegible]	[illegible]	[illegible]	[illegible]	
0.22	[illegible]	[illegible] Road	[illegible]	[illegible]	[illegible]	23/02/16	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	



TANTIA -MPPL(WILO)JV

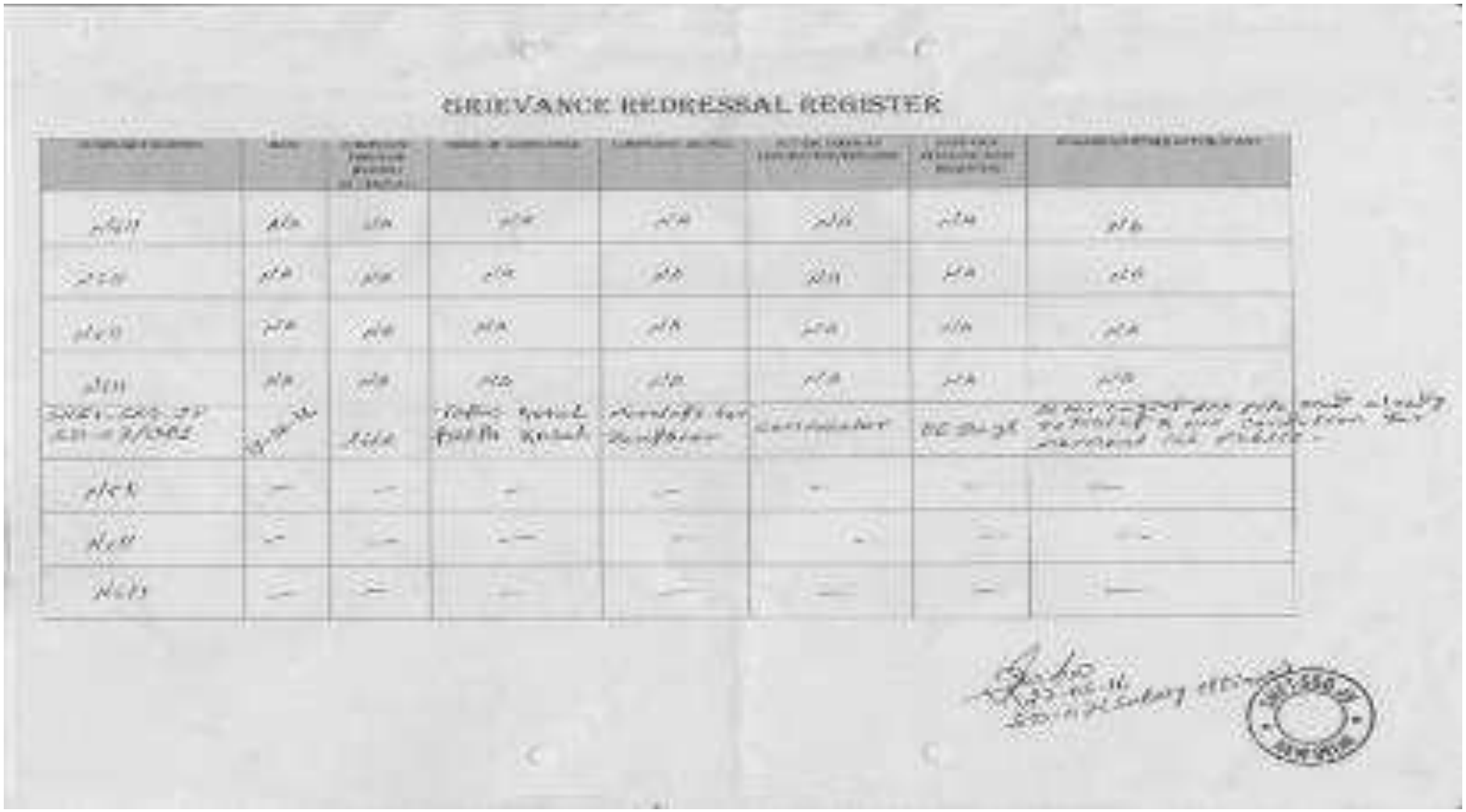

TANTIA -MPPL(WILO)JV


TANTIA -MPPI/WILO/JV

TANTIA -MPPL/WILCO)JV

10

Package: Replacement of GAP sewer and allied works



GRIEVANCE REDRESSAL REGISTER
