



Initial Environmental Examination

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June 2024

India: West Bengal Drinking Water Sector Improvement Project

Subproject : Water Distribution Systems for Bhangar II Block, South 24 Parganas

Prepared by Public Health Engineering Department, Government of West Bengal for the Asian Development Bank (ADB). This is an updated version of the draft originally posted in October 2021 on available <https://www.adb.org/projects/documents/ind-49107-006-iee-22>.

Asian Development Bank

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Initial Environmental Examination

Updated 4

SFG Log: 6087

Project Number: 49107- 006

March 2024

IND: West Bengal Drinking Water Sector Improvement Project – Water Distribution Systems for Bhangar II Block, South 24 Parganas

(OHR Zones: 1,2,3,4,5,6,7,8,9,10,11,12 13,14,15,16,17 and 18)

**(Pipe line Zones: 1, 2 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15,
16, 17 and 18)**

(Package No: WBDWSIP/DWW/N24P/02B)

Prepared by Public Health Engineering Department, Government of West Bengal for the
Asian Development Bank

CURRENCY EQUIVALENTS

(as of 11 July 2018)

| | | |
|---------------|---|------------------|
| Currency Unit | – | Indian rupee (₹) |
| ₹1.00 | – | \$0.014 |
| \$1.00 | = | ₹68.691 |

ABBREVIATIONS

| | | |
|---------|---|--|
| ADB | – | Asian Development Bank |
| DSISC | – | Design, Supervision and Institutional Support Consultant |
| EAC | – | Expert Appraisal Committee |
| EHS | – | Environmental Health and Safety |
| EIA | – | Environmental Impact Assessment |
| EMP | – | Environmental Management Plan |
| GESI | – | Gender Equality and Social Inclusion |
| GRM | – | Grievance Redress Mechanism |
| GOWB | – | Government of West Bengal |
| HSGO | – | Head, Safeguards and Gender Officer |
| IEE | – | Initial Environmental Examination |
| O&M | – | Operation and Maintenance |
| OHS | – | Occupational Health and Safety |
| OHR | – | Overhead Reservoir |
| MOEFCC | – | Ministry of Environment, Forest and Climate Change |
| WBPCB | – | West Bengal Pollution Control Board |
| NOC | – | No Objection Certificate |
| PHED | – | Public Health Engineering Department |
| PIU | – | Project Implementation Unit |
| PMC | – | Project Management Consultant |
| PMU | – | Project Management Unit |
| PPTA | – | Project Preparatory Technical Assistance |
| REA | – | Rapid environmental assessment |
| ROW | – | Right-of-Way |
| SEMP | – | Site Environmental Management Plan |
| SGC | – | Safeguards and Gender Cell |
| SPS | – | Safeguard Policy Statement |
| WHO | – | World Health Organization |
| WBDWSIP | – | West Bengal Drinking Water Sector Improvement Project |

WEIGHTS AND MEASURES

| | |
|--------------------------|---------------------------------------|
| Dia | diameter |
| C | degree Celsius |
| g/km | gram per kilometer |
| g/kmhr | gram per kilometer per hour kiloliter |
| km | kilometer |
| kph | kilometer per hour |
| lpcd | liter per capita per day |
| msl | mean sea level |
| m | meter |
| mbgl | meter below ground level |
| $\mu\text{g}/\text{m}^3$ | microgram per cubic meter |
| mg/l | milligrams per liter |
| mm | millimeter |
| ppb | parts per billion |
| ppm | parts per million |
| km^2 | square kilometer |

NOTE

In this report, "\$" refers to United States dollars.

Initial Environment Examination covers

OHR Zones: 1,2,3,4,5,6,7,8,9,10,11,12 13,14,15,16,17 and 18
Pipe line Zones: 1, 2 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18)

This initial environmental examination is a document of the borrower and has been updated considering all zones in the Bhangar-II Block of South 24-Parganas. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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EXECUTIVE SUMMARY

1. The proposed West Bengal Drinking Water Sector Improvement Project (WBDWSIP) aims to provide safe, reliable, and continuous drinking water as per Government of India's standard to about 2.6 million people in the Arsenic, Fluoride and Salinity affected selected areas of North 24 Parganas, South 24 Parganas, East Medinipur and Bankura districts of West Bengal. The Project will adopt a sector approach, and subprojects will be selected and proposed for funding adhering to the agreed Subproject Selection Criteria. Project districts are North 24 Parganas (with two blocks of South 24 Parganas included for distribution network), Bankura and East Medinipur, and subprojects to be covered under the Project will be within these districts only unless otherwise agreed with ADB. Subprojects proposed under the Project stem from a district-wide comprehensive water quality and sustainability planning and completion of the Drinking Water Quality Action Plan (DWQAP) for the concerned district. WBDWSIP will be implemented within a six-year period, 2018-2024. Specific package work will be implemented over period of 3 years after award of contract and total operate and maintenance period is of 2 years thereafter.

2. This document is updated considering addition of several new zones for both OHR and distribution network in Bhangar II block. This is updated IEE after finalization of design of all zones of the block. Further, updating will be required in case of any change in locations and design.

3. **The Subproject.** Provision of water supply distribution system in arsenic (groundwater) affected blocks of Bhangar II in South 24 Parganas district is taken up in this subproject under the WBDWSIP. A parallel subproject, implemented under WBDWSIP, will provide bulk water supply (treated water) to this subproject for further distribution to the households in the project area. Project blocks are located in the eastern side of Kolkata city. Subproject includes the following civil works components: (i) construction of 18 overhead reservoirs (OHRs) covering 18 zones in Bhangar II block; (ii) laying of approx. 923 kilometer (km) distribution network in 18 zones, and (iii) provision of 60,000 household water connections with water meters.

4. **Project implementation arrangements.** Public Health Engineering Department (PHED) of Government of West Bengal (GOWB) is the executing and implementing agency for the WBDWSIP. Project Management Unit (PMU) exclusively established in PHED for the WBDWSIP will implement the project. PMU is assisted by district level Project Implementation Units. Safeguard and Gender Cell (SGC) in the PMU is responsible for safeguards compliance. Project Management Consultant and Project Implementation Unit (PIU)-wise design, supervision and institutional support consultant (DSISC) will assist PMU and PIUs in implementation and management of the project.

Screening and Assessment of Potential Impacts. ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for environmental assessment are described in ADB's Safeguard Policy Statement (SPS), 2009. As per the Government of India, Environmental Impact Assessment (EIA) Notification, 2006, this subproject does not require EIA study or environmental clearance. The potential environmental impacts of the subproject have been assessed using ADB rapid environmental assessment checklist for water supply distribution system. The potential negative impacts were identified in relation to pre- construction, construction and operation. This IEE document of Bhangar II block has been updated covering the detail design of all the zones (OHR- zone 1, zone 2, zone 3, zone 4, zone 5, zone 6, zone 7, zone 8, zone 9, zone 10, zone 11, zone 12, zone 13, zone 14, zone 15, zone 16, zone 17, zone 18 and Pipeline- zone 1, zone 2, zone 3, zone 4, zone 5, zone 6, zone 7, zone 8, zone 9, zone 10, zone 11, zone 12, zone 13, zone 14, zone 15, zone 16, zone 17, zone 18). Site Specific Environment Management Plan (SEMP) have been prepared for the above zones under the projects.

5. **Categorization.** Environmental assessment has been conducted for the water supply subprojects based on (i) preliminary and zone wise completed detailed design, and (ii) most likely environmentally sensitive components. The environmental assessment used ADB's rapid environmental assessment (REA) checklists for water supply works. The environmental assessment of the Bhangar II block water supply distribution subprojects are not likely to have any significant adverse environmental impacts that are irreversible, diverse, or unprecedented. Potential impacts are mostly site-specific and few of them are irreversible. In most cases mitigation measures can be designed with uncomplicated measures commonly used at construction sites and known to civil works contractors.

6. Bhangar-II Water Supply Distribution Subproject is continued to be Category-B as Environment Safeguard as per the SPS 2009 since no significant impacts are envisaged. Accordingly, this updated Initial Environmental Examination (IEE) assesses the environmental impacts and provides mitigation and monitoring measures to ensure that there are no significant impacts as a result of the project.

7. **Description of the Environment.** The subproject components are located in Bhangar II block in South 24 Parganas districts, in the Ganga- Brahmaputra River Delta. 24 Parganas district was a single district before it was bifurcated into two districts – North 24 Parganas and south 24 Parganas in 1986. Topography of the districts is plain, gently sloping and altitude ranges from 1 meter (m) to 14 m above mean sea level (MSL). South districts are divided into 29 community development blocks, of which subproject covers 2 blocks. Being a deltaic district, major physiographic units are: natural levee areas, swamps area and older flood plain. Climate is humid and subtropical, characterized by a hot and dry summer from March to May/June, a south-west monsoon season from June to September, a pleasant post-monsoon from October to November and a cool winter from December to February. Project area is blessed with plenty of water bodies – rivers, streams and ponds, etc. South 24 Parganas district is home to environmental sensitive areas like Sundarbans Biosphere Reserve (SBR) and East Kolkata Wetland (EKW). Based on the detailed design and survey it has been found that water supply distribution pipes laying route will pass through EKW areas in zone 1, zone 2 and zone 18 under the jurisdiction of EKW Management Authority. Accordingly, no overground constructions to be done in these three distribution zones and application has been submitted to the EKW Management Authority (EKWMA) for granting permission for pipe laying works in the EKW area falling under. EKWMA has given NOC for pipe laying in these three EKW zones. Further, land for overhead reservoirs in zone 2 and zone 18 have been identified outside the EKW (procurement of those 2 lands completed) while reservoir in zone 1 constructed in same land adjacent to zone 18, outside EKW area.

8. Based on detailed designs, no work is being conducted in the Sundarban Biosphere Reserve areas. The project has not considered any components in the core or buffer areas. However, some civil works i.e construction of GLSR and laying of small pipes have been considered in Bhangar II block of 24 South Parganas, located in the outer periphery of the transition zone of Sundarban biosphere reserve. NOC from Sundarban Biosphere reserve has been obtained, Further, Chintamani Kar Bird Sanctuary is in the southwest direction at about 20-30 km from the project area.

9. OHR sites are located in small land parcels (~25m x 25m) - one in each zone and pipes (distribution system) will be laid along the public roads. Based on the land availability, OHR sites are selected in existing PHED premises, or other government land parcels, and in cases where there is no government land, private land parcels are selected. Project sites are mostly located in rural habitations, some of which are densely populated. OHR sites are mostly vacant or under agricultural use (private lands), and covered with few trees; measures are suggested to minimize, and conduct

compensatory tree plantation at a ratio of 1:5. Overall, there are no notable sensitive environmental features in the project OHR sites.

10. **Potential Environmental Impacts.** The subproject is unlikely to cause significant adverse impacts because: (i) the components will involve straightforward construction and operation, so impacts will be mainly localized; (ii) there are no notable sensitive environmental features in the project sites and (iii) predicted impacts are site-specific and likely to be associated with the construction process and are produced because the process is invasive, involving excavation and earth movements. The main design impacts of water supply system in general are due to abstraction of water. This subproject includes only provision of distribution system, and does not include source development or water abstraction or treatment. Treated water for the subproject will be provided from bulk water supply system that is being developed under a parallel subproject, and the environmental impacts of which are assessed through another Initial Environmental Examination (IEE).

11. Construction activities have been confined to the selected sites, and the interference with the general public and community around is minimal. There will be temporary negative impacts, arising mainly from construction dust and noise, hauling of construction material, waste and equipment on local roads (traffic, dust, safety etc.), mining of construction material, occupation health and safety aspects. During the construction phase of pipeline work along the public roads, impacts arise from the construction dust and noise; from the disturbance of residents, businesses, traffic by the construction work, and from the need to dispose of large quantities of waste soil. The social impacts (access disruptions) due to construction activities are minimal.

12. Anticipated impacts of water distribution system during operation and maintenance (O&M) will be related to detection and repair of leaks, pipe bursts. These are, however, likely to be minimal, as proper design and selection of good quality pipe material shall mean that leaks are minimal. Leak repair work will be similar to the pipe-laying work. Therefore, no notable operation phase impacts are anticipated from the subproject.

13. **Environmental Management Plan.** An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels. Locations and siting of the proposed infrastructures were considered to further reduce impacts. The EMP includes design and location related measures such as (i) minimizing tree cutting at OHR sites by proper planning; (ii) avoiding any disturbance / encroachment into ponds, water bodies at OHR sites; (iii) energy efficient pumping system, and (iv) noise controls.

14. During construction, the EMP includes mitigation measures such as (i) barricading, dust suppression and control measures (ii) traffic management measures for works along the roads and for hauling activities; (iii) provision of walkways and planks over trenches to ensure access will not be impeded; and (iv) finding beneficial use of excavated materials to extent possible to reduce the quantity that will be disposed of and (v) Implement all site-specific occupational health and safety (OHS) Plan as per the "Standard Operating Procedure for Prevention and Risk Minimization of Corona Virus Disease (COVID-19) at the Facilities and Work Sites" developed by PMU and implemented measures such as: (a) excluding public from the site; (b) personal hygiene, disinfection and maintaining social distancing; (c) ensuring all workers are provided with and use personal protective equipment including face mask; (d) OHS Training and COVID 19 awareness training for all site personnel. EMP guides the environmentally-sound construction of the subproject. EMP includes a monitoring program to measure the effectiveness of EMP implementation and include observations on- and off-site, document checks, and interview with workers and beneficiaries. Further, considering the COVID-19 pandemic, specific measures have been incorporated during construction phase and such mitigation actions have been included into SEMP.

15. The contractor is required to submit to PIU, for review and approval, a site Specific Environmental Management Plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; (iv) application of Health and Safety Plan for personal protection and protection from COVID 19 infection; and (v) budget for SEMP implementation to PIU, for review & approval. No work is allowed to commence prior to approval of SEMP. A copy of the EMP/ approved SMEP kept on site during the construction period at all times. The EMP is included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

16. **Consultation, Disclosure and Grievance Redress Mechanism.** The stakeholders were involved in developing the IEE through discussions on-site and public consultation at several places in the subproject area, after which views expressed were incorporated into the IEE and in the planning and development of the project. The updated IEE will be made available at public locations and will be disclosed to a wider audience via the ADB and PHED/PMU websites. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation. A grievance redress mechanism (GRM) is described within the IEE to ensure any public grievances are addressed quickly.

17. **Monitoring and Reporting.** The PMU, PIU and consultants are responsible for monitoring and reporting. During construction, results from internal monitoring by the contractor will be reflected in their monthly EMP implementation reports to the PIU. PIU with the assistance of DSISC, will monitor the compliance of Contractor, prepare a quarterly environmental monitoring report (QEMR) and submit to PMU. The PMU oversee the implementation and compliance and submit Semi-Annual Environmental Monitoring Reports (SEMR) to ADB. ADB will post the environmental monitoring reports on its website. PMU/PIUs to upload all the approved SEMP and updated IEEs in the project website and refer the link in SEMR.

18. **Conclusions and Recommendations.** The people of the Bhangar II block will be the major beneficiaries. The subproject is primarily designed to improve environmental quality and living conditions of Bhangar II block through provision of treated surface water. The benefits arising from this subproject include: (i) increased availability of potable water at appropriate pressure to all households including rural poor; (ii) reduced time and costs in accessing alternative sources of water. (iii) better public health particularly reduction in waterborne and infectious diseases; (iv) reduced risk of groundwater contamination; and (v) reduced risk of arsenic contamination.

19. The proposed project is therefore unlikely to cause significant adverse impacts. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the updated IEE, there are no significant impacts and the classification of the project as Category "B" is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009) or Gol EIA Notification (2006). This IEE has been updated with respect to land availability and completion of design elements for all zones as of February 2024. There is no additional impact is expected after finalization of design of all the zones

I. INTRODUCTION

A. Background

1. The West Bengal Drinking Water Sector Improvement Project (WBDWSIP) aims to provide safe, reliable and continuous drinking water as per Government of India's standard to about 2.6 million people in the Arsenic, Fluoride, and salinity affected selected areas of North 24 Parganas, South 24 Parganas, East Medinipur and Bankura districts of West Bengal.

2. The project has adopted a sector approach, and subprojects are selected and proposed for funding adhering to the agreed Subproject Selection Criteria. Project districts are North 24 Parganas (with two blocks of South 24 Parganas included for distribution network), Bankura and East Medinipur, and subprojects covered under the Project are within these districts only unless otherwise agreed with Asian Development Bank (ADB). Subprojects proposed under the Project stem from a district-wide comprehensive water quality and sustainability planning and completion of the Drinking Water Quality Action Plan (DQWAP) for the concerned district. The DQWAP for the project districts supported by the Project were prepared by the executing agency, the Public Health and Engineering Department (PHED) of Government of West Bengal (GOWB), with support of project preparatory consultants from the ADB, and has been adopted by PHED to guide present and future drinking water improvement in the districts.

3. The project is aligned with the following impact: drinking water security ensured in West Bengal. The project envisages to have the following outcome: safe, sustainable, and inclusive drinking water service received in project districts. The Project outputs are as follows:

- (i) **Output 1: Climate resilient drinking water infrastructure constructed.** The project aims to provide a minimum of 70 lpcd of continuous potable water through metered connections to the households in selected areas of the project districts. The distribution systems are being designed on a DMA basis. Both the bulk and the distribution systems will be integrated with modern STWM and monitoring tools, including supervisory control and data acquisition and geographic information systems. Bulk water supply systems, consisting of intakes, water treatment plants, and transmission mains, will be sized to provide water supply en-route to urban and rural areas. They are to be connected into a grid with the existing and the new systems in the project districts, where feasible, to reduce redundancy, improve resilience, and efficiently manage the system; and
- (ii) **Output 2: Institutions and capacity of stakeholders for drinking water service delivery strengthened.** The project will strengthen institutions and the capacity of stakeholders, including the PHED and the project gram panchayats, for sustainable service delivery. Its objective is to support them to operate the STWM system, including water quantity and quality monitoring, electronic billing and collections, meter reading, and accounting. The project is expected to build capacities and skills of the stakeholders on O&M, and support public awareness on water, sanitation, and hygiene. It will strengthen the sector through introducing and implementing an AMSDF; institutionalizing water and sanitation safety planning; and developing a regulatory framework for, and piloting, fecal sludge and septage management.

4. WBDWSIP initially targets three districts: North 24 Parganas district is the most Arsenic-affected districts in West Bengal; Bankura is heavily affected by Fluoride, and East Medinipur is affected by Salinity. These districts are also one of the most water-stressed districts in West Bengal as they are reliant on depleting groundwater sources. Overall, the Project is intended to meet the requirements of "VISION 2020", endorsed by the GOWB and in line within the guidelines and implementation framework of NRDWP.

5. In South 24 Parganas 9 of total 29 blocks are arsenic affected. Though arsenic contaminated, groundwater is the main source of water supply due to lack of a surface water- based system. PHED proposed to provide a safe and sustainable surface water supply system. Accordingly, provision of water supply in block Bhangar-II in South 24 Parganas is taken up on priority by the PHED and is proposed for implementation under WBDWSIP funded by ADB. The objective of the subproject is to provide sustainable water supply at a rate 70 litres per capita per day (lpcd) to each household in all habitations in the selected block. A detailed description of the components is provided in Section III.

B. Purpose of Initial Environmental Examination Report

6. ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for environmental assessment are described in ADB's Safeguard Policy Statement (SPS), 2009. The potential environmental impacts of the subproject have been assessed using ADB's rapid environmental assessment (REA) checklist for water supply (**Appendix 1**). Then potential negative impacts were identified in relation to pre-construction, construction and operation of the improved infrastructure, and results of the assessment show that the subproject is unlikely to cause significant adverse impacts. The initial environmental examination (IEE) has been updated considering all zones (OHR- zone 1, zone 2, zone 3, zone 4, zone 5,zone 6, zone 7, zone 8 ,zone 9, zone 10, zone 11, zone 12, zone 13,zone 14, zone 15, zone 16, zone 17, zone 18 and Pipeline- zone 1, zone 2, zone 3, zone 4,zone 5 , zone 6, zone 7, zone 8, zone 9, zone 10, zone 11, zone 12, zone 13, zone 14, zone 15, zone 16, zone 17, zone 18) . SEMP submitted by the contractor and construction activities have started/ continued by 29th February 2024, in accordance with ADB SPS's requirements for environment category B projects.

7. The draft IEE was based on the preliminary project report prepared by PHED, and a technical due diligence report prepared by the project preparatory technical assistance (PPTA) team and has been updated during implementation stage after final subproject designs. The IEE is based on field reconnaissance surveys, primary data and secondary sources of information as well as stakeholder consultation. Field monitoring (environmental) survey was conducted, as part of the environmental management plan (EMP) to establish the baseline environmental conditions prior to commencement of civil works by the contractors. The results are reported as part of the environmental monitoring report and forms the basis to ensure no degradation takes place during subproject implementation. Stakeholders' consultations are an integral part of the IEE.

8. This document is updated considering several additions of different OHRs and distribution network whose design is being finalized for starting construction works. This updated IEE in respect to land availability and completion of design elements for all zones as of February 2024.

C. Report Structure

9. This Report contains the following nine (9) sections excluding the executive summary at the beginning of the report:

- (i) Introduction;
- (ii) Description of the project
- (iii) Policy, legal and administrative framework;
- (iv) Description of the environment;
- (v) Anticipated environmental impacts and mitigation measures;
- (vi) Public consultation and information disclosure;
- (vii) Grievance redress mechanism;
- (viii) Environmental management plan, and,
- (ix) Conclusion and recommendation.

II. DESCRIPTION OF THE PROJECT

D. Project Area

10. Proposed project area falls in south 24 Parganas¹ (prior to the bifurcation in 1986, both these areas were part of 24 Parganas district), eastern side of Kolkata City. Bhangar II block shares the boundary with Kolkata City, and new development and expansion of city can be witnessed in the block, especially in the areas adjoining the city limits. Total population of project block is 247,000 (2011 census) and has a geographical area of 162 square kilometre (km²).

11. The subproject component's locations are in the block of Bhangar – II. Overhead reservoirs (OHRs) are located in each zone (except zone 1), outside habitations, and pipelines (distribution lines) are laid along the public roads.




E. Change in Location from the Original IEE

12. Few previously selected OHR locations have been changed due to environmental sensitivities and land related issues. The details of such shifting are presented in **Table 2A**. There are no as such environmental issues for new shifted locations.




13. For laying of pipelines at few locations, canal/ channel crossing is required. Canals to be crossed by either anchoring with existing bridges or installing new caged carrier bridges or passing beneath the canal using HDD method. In new caged bridge, construction of two piles with provision of pipe carrier bridge and walkways are proposed while anchoring will be done with clamps and casing pipes in existing bridges. There is no construction inside the canal. Work involved in anchoring on existing bridges and new carrier bridge method, no significant impact is anticipated, however, in case of HDD method beneath the canals, muck waste with waste water would be generated. Requirement of official permission and disposal of such wastes have been specified in Environmental management Plan. Details of canal crossing location is mentioned below.

¹ Subproject location in South Parganas is not within the core zone of the Sundarban National Park. No works will be allowed in the core zone. The GLSR and small pipes will be located in the transition zone where construction is allowed




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|--------------|-------------|---|--|------------------------------------|
| 1 | 75 | HDPE | 47 | Zone-01 | J-173, J-171 | HDD | Kestopur Canal (Dharmatala pancharia 4) |  | No |
| 2 | 110 | HDPE | 50 | Zone-01 | J-155, J-157 | | Kestopur Canal (Dharmatala pancharia 3) |  | No |
| 3 | 110 | HDPE | 56 | Zone-01 | J-132, J-139 | | Kestopur Canal (Dharmatala pancharia 1) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|----------------------|-------------|---|--|------------------------------------|
| 4 | 300 | HDPE | 56 | Zone-01 | J358- -J177 | | Kestopur Canal (Dharmatala pancharia 1) |  | No |
| 5 | 110 | HDPE | 49 | Zone-01 | J-141, J-142 | | Kestopur Canal (Dharmatala pancharia 2) |  | No |
| 6 | 200 | HDPE | 18 | Zone-01 | J-243/3, J-243/2 (C) | | Fishery Feeding Canal (Jalpath) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|--------------|-------------|--|--|------------------------------------|
| 7 | 140 | HDPE | 22 | Zone-01 | J-313, J-269 | | Kheyadaha Bamanghata Jalpath |  | No |
| 8 | 200 | HDPE | 55 | Zone-10 | J-88, J-224 | | Bagjola Canal (Chhelegoalia jame Masjid) |  | No |
| 9 | 200 | HDPE | 49 | Zone-10 | J-213, J-70 | | Bagjola Canal (Maniktala SSK) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|----------------------|-------------|---|--|------------------------------------|
| 10 | 200 | HDPE | 20 | Zone-01 | J-243/3, J-243/2 (B) | | DWF Canal (Jalpath) |  | No |
| 11 | 200 | HDPE | 68 | Zone-01 | J-243/3, J-243/2 (A) | | SWF Canal (Jalpath) |  | No |
| 12 | 200 | HDPE | 47 | Zone-02 | J-177, J-172 | | Kestopur Canal (Dharmatala pancharia 4) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|------------------|--------------------------------|------------------------------|--|------------------------------------|
| 13 | 200 | HDPE | 68 | Zone-03 | J-433, J-398 (A) | Anchoring with existing bridge | SWF Canal (Bhojerhat) |  | No |
| 14 | 200 | HDPE | 25 | Zone-03 | J-433, J-398 (B) | | DWF Canal (Bhojerhat) |  | No |
| 15 | 200 | HDPE | 60 | Zone-03 | J-394, J-775 | | Bhangar Katakhal (Bhojerhat) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|----------------|-------------|--|--|------------------------------------|
| 16 | 110 | HDPE | 66.8 | Zone-13 | J-84, J-147 | | Bagjola Canal |  | No |
| 17 | 273 | MS | 50 | Zone-18 | J-3 to J-345 | | Keshtopur canal (Hatgacha Haridas Vidyapith) |  | No |
| 18 | 200 | MS | 50 | Zone-18 | J-310 to J-381 | | Keshtopur canal (Hatgacha Haridas Vidyapith) |  | No |




Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|----------------|-------------|-------------------|--|------------------------------------|
| 19 | 200 | HDPE | 14 | Zone-01 | J-368, J-361/1 | Pedestal | Bamanghata Canal |  | No |
| 20 | 90 | HDPE | 14 | Zone-01 | J-313, J-321 | | Snaitala Canal |  | No |
| 21 | 75 | HDPE | 12 | Zone-01 | J-317, J-318 | | Cultivation Canal |  | No |

Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|----------------|-------------|------------------------------------|--|------------------------------------|
| 22 | 200 | HDPE | 15 | Zone-01 | J-368, J-361/2 | | DWF canal (Bamanghata) |  | No |
| 23 | 75 | HDPE | 26 | Zone-01 | J-124, SV-11 | | Drainage Channel |  | No |
| 24 | 140 | HDPE | 18 | Zone-08 | J-345, J-349 | | Bagjola part-II (Khannar pole U/S) |  | No |

Canal crossings location in Bhangar-II Block

| SI No. | Dia of Pipe (in mm) | Type of Pipe | Span (L) (m) | Zone No. | Node | Methodology | Canal name | Environmental Setting | Environmental Sensitivity (if any) |
|--------|---------------------|--------------|--------------|----------|--------------|----------------------------------|---------------------------------------|--|------------------------------------|
| 25 | 75 | HDPE | 20 | Zone-08 | J-405, J-354 | | Bagjola part-II (Khannar pole D/S) |  | No |
| 26 | 63 | HDPE | 20 | Zone-08 | J-534, J-536 | Structural Bridge with Pedestals | Bagjola part-II (Chandir hat) |  | No |
| 27 | 63 | HDPE | 20 | Zone-08 | J-522, J-524 | | Bagjola part-II (Goragachi/Fakirpara) |  | No |

F. Existing Water Supply Situation

14. Arsenic contamination in groundwater is a serious problem in eastern and northern parts of India, and Uttar Pradesh, Bihar and West Bengal are the worst affected states. Out of 20 districts of West Bengal, eight districts (Malda, Murshidabad, Nadia, North 24 Parganas, South 24 Parganas, Bradhaman, Howrah, Hooghly and Kolkata) are arsenic affected. In terms of administrative blocks, 83 out of 341 administrative blocks are arsenic affected, with a concentration of above 3 milligrams per liter (mg/l).

G. Proposed Project

15. Following table shows the nature and size of the various components of the subproject. **Figure 1A and 1B** shows location of reservoirs.

Table 1: Proposed Water Supply Subproject Components

| Infrastructure | Function | Description | Location |
|---|---|---|---|
| Overhead Reservoirs (OHRs) | Storage of water at higher elevation for further distribution to consumers by gravity | 18 Nos. concrete reservoirs Capacity 300 kl to 1000 kl Construction of Chlorination cum SCADA room within OHR campus, beside OHR Construction of Boundary Wall at all OHR locations | One in each zone, on selected land parcels mostly outside habitation areas. OHR locations in Bhangar-II are: Swastayangachhi, Shanpukuria, Bankochua, Baniara, Chanda Kanthal Beria, Paikan, Tona, Shyamnagar, Jaynagar, Uttar Kashipur, Naglapapur, Dheyati, Pithapukuria, Kachua, Jawpur, Bhogali and Jothbhim-2 OHRs. Details are provided in Table 2B and section IV-F |
| Distribution Network | To distribute water from OHRs to consumers | Approx. 923 km DI and HDPE pipes of diameter 63 – 400 mm | Pipes are being laid underground along the public roads – main roads and internal roads. |
| Consumer connection with bulk flow meters | Provide water to consumers and measure water usage | 60,000 Nos. in Bhangar II block | Water delivery pipe (MPDE of dia 15 - 20 mm) will be connected to distribution lines and meters will be attached to the delivery pipe at each house with a meter chamber |

16. Few OHR locations are changed earlier (reported in previous updated report) due to presence of sensitive receptor (EKW) and/or land issues in earlier selected locations. **Table 2A** shows changed locations. There are no sensitive areas in and around the newly proposed lands:

Table 2A: Change in OHR locations from previous IEE (as on 29th February 2024)

| Previous Locations | Old Co-ordinate | Changed Location | New Co-ordinate |
|---------------------|--|--|---|
| Dharmatala Pachuria | Lat: -N22.53356, Long: -E88.49672 | Jothbhim (zone 1)- same adjacent land of zone 18 | Lat: -N22.565669, Long: -E88.476208 |
| Benota | Lat: -N 22.62897, Long: -E 88.51477 | Chandra Kanthalberia (zone 2) | Lat: -N 22 32.045, Long: -E 88 31.018 |
| Chandihat | Lat: -N22 34 10.92, Long: -E88 35 14.64 | Uttar Kashipur (zone 8) | Lat: -N 22 33 23.94 Long: -E 88 35 43.08 |
| Nangla Palpur | Lat: -N 22 36 1.64 | Nangla Palpur(zone 9) | Lat: -N 22 34 49.068 |

| Previous Locations | Old Co-ordinate | Changed Location | New Co-ordinate |
|-------------------------------|--|-----------------------|---|
| | Long: -E 88 36 55.44 | | Long: -E 88 37 9.438 |
| Majerhat | Lat: -N22.558, Long: -E88.5764 | Shanpukuria (zone 10) | Lat: -N 22 32.248, Long: -E 88 36.919 |
| Rampur | Lat: -N22.53841, Long: -E88.58827 | Dheyati (zone 11) | Lat: -N22 32.016, Long: -E88 35.232 |
| Bankachua | Lat: -N22.53943, Long: -E88.6174 | Bankachua (zone 12) | Lat: -N 22 32.514 Long: -E 88 36.231 |
| Pithapukuria (Bhagabanpur) | Lat: -N 22 35 50.16 Long: -E 88 37 12.24 | Pithapukuria(zone 14) | Lat: -N 22 33 33.84 Long: -E 88 33 13.20 |
| Jawapur | Lat: -N 22 33 59.28 Long: -E 88 35 7.26 | Jawapur(zone 16) | Lat: -N 22 30 58.72 Long: -E 88 35 7.10 |
| Hatgacha | Lat: -N 22.55258, Long: -E 88.46837 | Jothbhim (zone 18) | Lat: -N 22.565722, Long: -E 88.476278 |

**Table 2B: Details of Overhead Reservoirs and Land Status under the Subproject
(as on 29th February 2024)**

| Overhead Reservoir Zone | Name of Village | Gram Panchayat | Capacity (kl) | Ownership Status | Land handed over to the Contractor |
|---|----------------------|----------------|---------------|------------------|------------------------------------|
| Updated Information – Design completed | | | | | |
| B-1 | Jothbhim | Bamanghata | 750 | Private | Yes |
| B-2 | Chandra Kanthalberia | Beonta-I | 400 | Private | Yes |
| B-3 | Paiken | Beonta-II | 700 | Private | Yes |
| B-4 | Sastyangachhi | Polerhat-I | 450 | Private | Yes |
| B-5 | Tona | Polerhat-II | 750 | Private | Yes |
| B-6 | Shyamnagar | Polerhat-II | 400 | Private | Yes |
| B-7 | Jaynagar | Polerhat-I | 450 | Private | Yes |
| B-8 | Uttarkashi pur | Shanpukur | 750 | Private | Yes |
| B-9 | Naglapapur | Bhogali-I | 300 | Private | Yes |
| B-10 | Shanpukuria | Shanpukur | 500 | Private | Yes |
| B-11 | Dheyati | Shanpukur | 500 | Private | Yes |
| B-12 | Bankochua | Bhogali-II | 600 | Private | Yes |
| B-13 | Baniara | Bhogali-II | 500 | Private | Yes |
| B-14 | Pithapukuria | Bhagabanpur | 1000 | Private | Yes |
| B-15 | Kachua | Chaltaberia | 1000 | Private | Yes |
| B-16 | Jawpur | Chaltaberia | 1000 | Private | Yes |
| B-17 | Bhogali | Bhogali-I | 350 | Private | Yes |
| B-18 | Jothbhim | Bamanghata | 450 | Private | Yes |

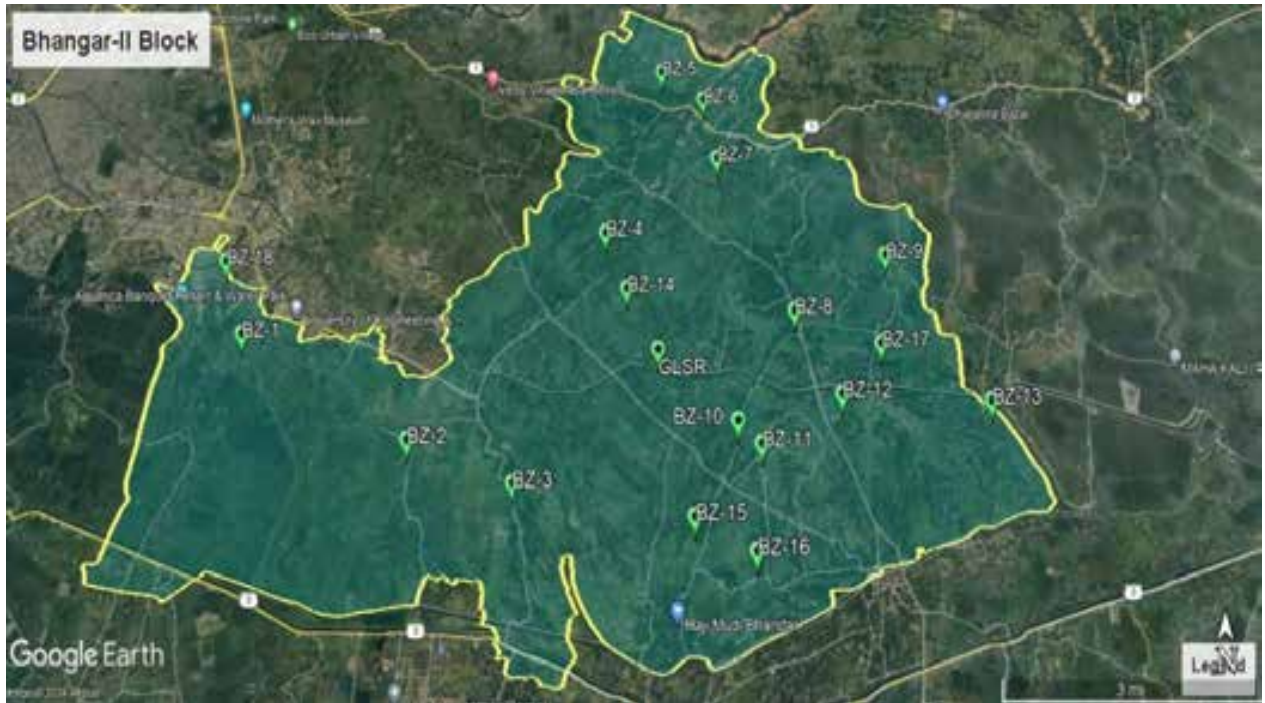


Figure 1A: Google Earth Image Showing Location of Overhead Reservoirs



Figure 1B: Google Earth Image Showing Location of Overhead Reservoirs in Zone 2 and 18 (outside of EKW – zone 1 OHR will be built in the same location as zone 18)

H. Implementation Schedule

17. The project is being implemented on an Item rate contract (Ad measurement contract), with provision of design activity included as part of the contract. Bids were invited in November 2017, and the contract was awarded in October 2018. Contractor was mobilized in January 2019 and zone wise detailed designs were prepared from March 2019 based on land availability. The total period of design and construction is 36 months. After which the Item rate contractor will operate and maintain for a period of 2 years.

I. Project Status as of 29th February 2024

18. Site Specific Environment Management Plans (SEMPs) have been submitted for all the zones. Presently, construction work is undergoing at OHRs in zone 3, zone 5, zone 6, zone 8, zone 9, zone 11 and zone 14 while for other OHRs, construction work is completed or almost completed. Major pipeline laying is ongoing at zone 5 and minor jointing and canal crossing work is under process in different zones. SEMP submission and disclosure status is shown in **Table 3**.

Table 3: Site Specific Environment Management Plan submission status (Upto 29th February 2024)

| North 24 Pgs: Package-N24P/02B – BHANGAR II BLOCK- 18 Zones | | | |
|---|----------------|----------------------|---|
| Overhead Reservoir (OHR) | Gram Panchayat | Name of Village | Website Link |
| Zone -1 | Beonta-II | Dharamtala Pancharia | Submitted |
| Zone -2 | Beonta-I | Chadra Kanthalberia | Submitted |
| Zone -3 | Beonta-II | Paikan | Submitted* |
| Zone -4 | Polerhat-I | Sastyangachhi | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02B_Z04_P_O.aspx |
| Zone -5 | Polerhat-II | Tona | Submitted* |
| Zone -6 | Polerhat-II | Shyamnagar | Submitted |
| Zone -7 | Polerhat-I | Jaynagar | http://wbdwsipmis.wbphed.gov.in/SEMP_N24pgs02B_Z07_O.aspx |
| Zone -8 | Shanpukur | Uttar Kashipur | Submitted* |
| Zone -9 | Bhogali-I | Nagla Palpur | Submitted* |
| Zone -10 | Shanpukur | Shanpukuria | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02B_Z10_P_O.aspx |
| Zone -11 | Shanpukur | Dheyati | Submitted |
| Zone -12 | Bhogali-II | Bankochua | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02B_Z12_P_O.aspx |
| Zone -13 | Bhogali-II | Baniara | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02B_Z13_P_O.aspx |
| Zone -14 | Bhogbanpur | Pithapukuria | Submitted |
| Zone -15 | Chaltaberia | Kachua | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02B_Z15_O.aspx |
| Zone -16 | Chaltaberia | Jawapur | http://wbdwsipmis.wbphed.gov.in/SEMP_N24pgs02B_Z16_O.aspx |
| Zone -17 | Bhogali I | Bhogali | http://wbdwsipmis.wbphed.gov.in/SEMP_N24pgs02B_Zone17_O.aspx |
| Zone -18 | Bamanghata | Jothbhim | http://wbdwsipmis.wbphed.gov.in/SEMP_N24Pgs02B_Z18_O.aspx |

| Distribution Pipeline Network | Gram Panchayat | Remarks | |
|-------------------------------|----------------------------|---------|---|
| Zone-1 | Bamanghata & Benota -II | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z01_P.aspx |
| Zone -2 | Beonta-I | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24pgs02B_Z02_P.aspx |
| Zone-3 | Benota II | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z03_P.aspx |
| Zone -4 | Polerhat-I | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z04_P_O.aspx |
| Zone -5 | Polerhat-II | | Submitted |
| Zone – 6 | Polerhat-II | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z06_P.aspx |
| Zone-7 | Polerhat-I | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z07_P.aspx |
| Zone-8 | Shan Pukur | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z08_P.aspx |
| Zone -9 | Bhogali-I | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z09_P.aspx |
| Zone -10 | Shanpukur | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z10_P_O.aspx |
| Zone-11 | Sanpukur | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z11_P.aspx |
| Zone -12 | Bhogali-II | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z12_P_O.aspx |
| Zone -13 | Bhogali-II | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z13_P_O.aspx |
| Zone -14 | Bhagabanpur | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z14_P.aspx |
| Zone-15 | Bhagbanpur and Chaltaberia | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z15_P.aspx |
| Zone -16 | Chaltaberia | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z16_P.aspx |
| Zone – 17 | Bhogali | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24PGS02_B_Z17_P.aspx |
| Zone -18 | Bamanghata | | http://wbdwsipmis.wbphed.gov.in/SEMP_N24pgs02B_Z18_P.aspx |

*Conditional approval given due to pending compliances. Actions by contractor is continued to fulfil the requirements.

19. The detailed construction status for OHRs and Pipelines are discussed below.

20. **OHR:** This IEE has been updated based on the status of all the 18 OHRs where design have been completed and construction is finished or continued Work is completed for 12 OHRs, while construction work is under progress in zone 3, 5, 8,9,11 and 14 OHR. The land use pattern in and around these 18 OHR locations, are shown in **Figure 2**. Work progress status upto 31st January 2024 is shown in Table below.

| | |
|----------------|--|
| Zone-1 | <ul style="list-style-type: none"> • OHR work completed • SCADA building finishing work under progress |
| Zone-2 | <ul style="list-style-type: none"> • OHR finishing work under progress • SCADA building completed |
| Zone-3 | <ul style="list-style-type: none"> • Boundary and earth filling work under process |
| Zone-4 | <ul style="list-style-type: none"> • OHR- All work completed • SCADA building completed |
| Zone-5 | <ul style="list-style-type: none"> • Boundary work completed • OHR – 1st lift column above pedestal work completed • SCADA building work to be started |
| Zone-6 | <ul style="list-style-type: none"> • OHR- finishing work under progress • SCADA building finishing work under progress |
| Zone-7 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building: Completed |
| Zone-8 | <ul style="list-style-type: none"> • Soil test done for superstructure. Superstructure design under progress for OHR and SCADA building |
| Zone-9 | <ul style="list-style-type: none"> • Boundary work under progress • Excavation and PCC work under progress • SCADA building work to be started |
| Zone-10 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |
| Zone-11 | <ul style="list-style-type: none"> • OHR- 5th brace beam work completed • SCADA building work to be started |
| Zone-12 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |
| Zone-13 | <ul style="list-style-type: none"> • OHR -Completed • SCADA building completed |
| Zone-14 | <ul style="list-style-type: none"> • OHR- Heal beam work is in progress • SCADA building work to be started |
| Zone-15 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |
| Zone-16 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |
| Zone-17 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |
| Zone-18 | <ul style="list-style-type: none"> • OHR - Completed • SCADA building completed |

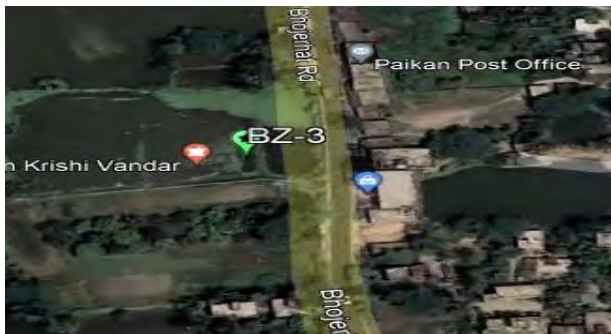
Figure 2: Land use pattern in and around Package 2B - OHRs



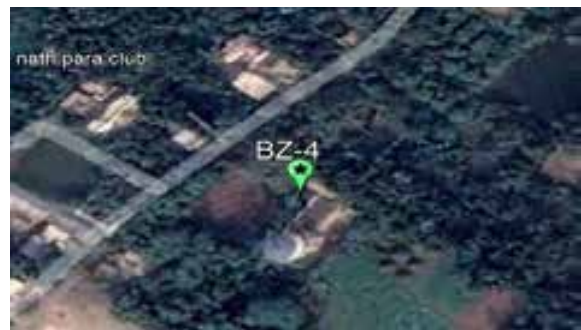
OHR Zone 1, Jhotbhim



OHR Zone 2, Chanderkathal Beria



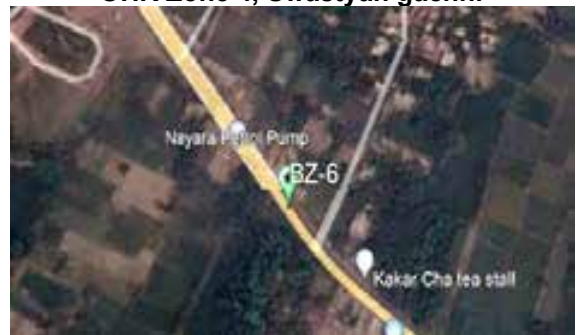
OHR Zone 3, Paiken



OHR Zone 4, Swastyan gachhi



OHR Zone 5, Tona



OHR Zone 6, Shyamnagar



OHR Zone 7, Jaynagar



OHR Zone 8, Uttarkashi pur



OHR Zone 9, Naglalapur



OHR Zone 10, Shanpukuria



OHR Zone 11, Dheyati



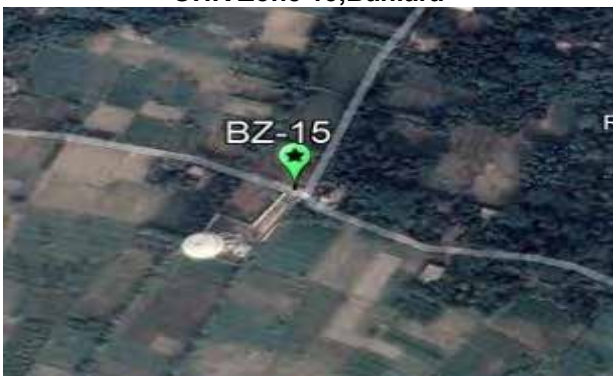
OHR Zone 12, Bankachua



OHR Zone 13, Baniara



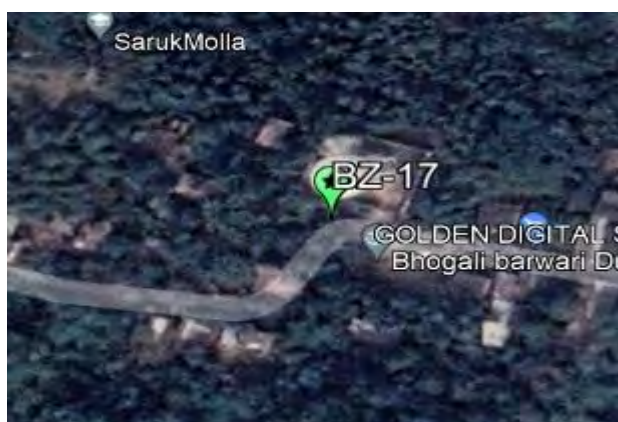
OHR Zone 14, Pithapukuria



OHR Zone 15, Kachua



OHR Zone 16, Jawapur



OHR Zone 17, Bhogali



OHR Zone 18, Jhotbhim

21. **Pipeline:** 878 km out of total 923 km of pipe has been laid and 28795 household connections out of 60000 surveyed household has been completed as of 31st January 2024. Work is in progress for zone 5 pipeline. Some PWD roadside pipeline work and canal crossing work in different zones are also under progress. Till date, out of 13 approved designs for canal crossings, pedestals and anchoring at 3 locations with piling at 1 location have been completed. This IEE report is updated to include all these 18 pipe line zones.

22. The additional pipe is laid at the site depending upon actual site condition and due to new roads coming in the project area. **Table 4** shows final designed pipeline.

Table 4: Summary of Water Distribution Network of Bhangar-II Block

| Bhangar-II Water Distribution Pipe Length (m) Summary | | | | | | | | | | | | | Total Length |
|---|----------|--------------------|---------|---------|---------|---------|---------|---------|--------|-----|------|-----|------------------|
| Revised Zone ID | Status | Pipe Diameters(mm) | | | | | | | | | | | |
| | | 63* | 75* | 90* | 110* | 140* | 200** | 250 | 300 | 350 | 400 | 450 | |
| Zone -B1 | Actual | 22124.6 | 11911.5 | 20913.4 | 8326.9 | 4132.4 | 4413.5 | 3811.1 | 1281.8 | - | 2051 | - | 78966.20 |
| | Approved | 23541 | 14552 | 27616 | 8994 | 4311 | 4427 | 3748 | 1244 | - | 2840 | - | 91273.00 |
| Zone -B2 | Actual | 16286.5 | 8507.6 | 8860 | 4935.9 | 8080.5 | 5145 | 1431 | - | - | - | - | 53246.50 |
| | Approved | 16805 | 8013 | 8900 | 4900 | 6730 | 5253 | 1428 | - | 30 | - | - | 52059.00 |
| Zone -B3 | Actual | 41213.1 | 5217.6 | 3806.2 | 2504.7 | 2336.4 | 3850.1 | 726 | 88 | - | - | - | 59742.10 |
| | Approved | 42013 | 6027 | 4304 | 3230 | 2556 | 5158 | 781 | 799 | 43 | - | - | 64911.00 |
| Zone -B4 | Actual | 19768.2 | 2105.8 | 1558.3 | 5635.7 | 4075.8 | 2891.3 | 487 | 64 | - | - | - | 36586.70 |
| | Approved | 19357 | 2154 | 1359 | 5072 | 4317 | 2484 | 497 | 45 | - | - | - | 35285.00 |
| Zone -B5 | Actual | - | - | 17024.4 | 5401.6 | 3724.0 | 4763.8 | 1063 | 10.8 | - | - | - | 31987.60 |
| | Approved | - | - | 36250 | 5620 | 5946 | 5489 | 737 | 364 | 24 | - | - | 54430.00 |
| Zone -B6 | Actual | 15777.6 | 7092.5 | 2253.3 | 2053.5 | 2708.3 | 2269.7 | 115 | 31 | - | - | - | 32300.90 |
| | Approved | 18609 | 6369 | 2094 | 1427 | 2101 | 2220 | 117 | 31 | - | - | - | 32968.00 |
| Zone -B7 | Actual | 17,739.1 | 4,399.2 | 2,053.0 | 2,321.8 | 2,244.3 | 1924.8 | 1,400.0 | - | - | - | - | 32,082.20 |
| | Approved | 18200 | 5492 | 2252 | 2181 | 2154 | 1661 | 1009 | 7 | - | - | - | 32956.00 |
| Zone -B8 | Actual | 34,184.2 | 7,603.7 | 2,746 | 2,241.4 | 3,665 | 4481.2 | - | 185.1 | - | - | - | 55,106.60 |
| | Approved | 35530 | 9530 | 3059 | 3136 | 4769 | 5514 | 1239 | 184 | 10 | - | - | 62971.00 |
| Zone -B9 | Actual | 15,014.7 | 1,564.6 | 1,581.1 | 992.4 | 1,094.0 | 1,082.0 | 1,602.8 | - | - | - | - | 22,931.60 |
| | Approved | 11153 | 1571 | 1618 | 924 | 1045 | 1245 | 52 | - | - | - | - | 17608.00 |
| Zone -B10 | Actual | 25,456.1 | 2,660.4 | 3,714.9 | 5,130.0 | 3,105.1 | 3248.6 | 1,047.3 | 45.0 | - | - | - | 44,407.40 |
| | Approved | 24112 | 2260 | 3518 | 4983 | 2340 | 3176 | 1027 | 20 | - | - | - | 41436.00 |

| Bhangar-II Water Distribution Pipe Length (m) Summary | | | | | | | | | | | | | Total Length |
|---|----------|--------------------|------------|------------|-----------|----------|----------|---------|--------|---------|--------|-------|--------------|
| Revised Zone ID | Status | Pipe Diameters(mm) | | | | | | | | | | | |
| | | 63* | 75* | 90* | 110* | 140* | 200** | 250 | 300 | 350 | 400 | 450 | |
| Zone -B11 | Actual | 19,153.4 | 5,673.7 | 2,994.6 | 3,549.9 | 1,430.0 | 3,699.0 | 718.0 | - | - | - | - | 37,218.60 |
| | Approved | 14605 | 5054 | 2605 | 2791 | 1235 | 3568 | 743 | 20 | - | - | - | 30,621.00 |
| Zone -B12 | Actual | 22,257.3 | 4,695.7 | 3,997.8 | 3,463.7 | 3,636 | 1805.6 | 1,081.0 | - | - | - | - | 40,937.10 |
| | Approved | 23733 | 4797 | 4159 | 3416 | 3401 | 1675 | 1380 | - | - | 33 | - | 42594.00 |
| Zone -B13 | Actual | 27,091.0 | 7,656.0 | 3,788.0 | 3,816.0 | 3,290 | 2957.5 | - | 414.0 | - | - | - | 49,012.50 |
| | Approved | 25146 | 7282 | 4187 | 3978 | 3173 | 3279 | - | 418 | - | - | - | 47463.00 |
| Zone -B14 | Actual | 41,144.4 | 9,044.3 | 7,121.1 | 6,171.8 | 5,911.1 | 2952.9 | 2,097.5 | - | 1,057.5 | 1,533 | 198.0 | 77,231.60 |
| | Approved | 40081 | 9737 | 7068 | 6045 | 5179 | 3597 | 1375 | 11 | 931 | 1518 | 249 | 75791.00 |
| Zone -B15 | Actual | 54,151.6 | 14,991.2 | 9,717.3 | 6,991.0 | 7,279.8 | 10210.5 | 1,029.6 | 3,497 | 2,538.4 | 542.8 | 260.0 | 111,209.20 |
| | Approved | 53925 | 14430 | 9351 | 6389 | 7160 | 8727 | 1104 | 3502 | 2744 | 546 | 313 | 108191.00 |
| Zone -B16 | Actual | 26,296.7 | 7,129.0 | 3,723.8 | 4,124.5 | 3,831.5 | 5881.6 | 99.2 | - | - | - | - | 51,086.30 |
| | Approved | 28067 | 7570 | 4110 | 4336 | 3509 | 5460 | 448 | 7 | 8 | 28 | 0 | 53543.00 |
| Zone -B17 | Actual | 19,441.5 | 2,615.9 | 2,706.7 | 1,837.0 | 1,904.4 | 817.7 | - | - | - | - | - | 29,323.20 |
| | Approved | 18154 | 3722 | 2562 | 2009 | 1917 | 780 | 30 | - | - | - | - | 29174.00 |
| Zone -B18 | Actual | 22,996.3 | 9,875.8 | 3,169.4 | 4,569.4 | 1,441.6 | 1590.3 | 560 | - | 1388 | - | - | 45,590.80 |
| | Approved | 25350 | 10135 | 3154 | 4478 | 1506 | 1699 | 660 | - | 1499 | - | - | 48486.00 |
| Total | Actual | 440,096.34 | 112,744.50 | 101,729.33 | 74,067.07 | 63890.19 | 63985.09 | 17268.5 | 5617.3 | 4983.9 | 4126.8 | 458 | 888967.02 |
| | Approved | 438387 | 118695 | 128288.70 | 75290.94 | 63800 | 65663.5 | 16375 | 6652 | 5288 | 4965 | 562 | 923967.14 |

*External Diameter** Combined Diameter

III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

23. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all ADB investments.

24. **Screening and Categorization with that of ADB SPS 2009.** ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

- **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
- **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects. An initial environmental examination is required
- **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI.

25. **Environmental Management Plan.** An EMP, which addresses the potential impacts and risks identified by the environmental assessment, shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions are commensurate with the project's impact and risks.

26. **Public Disclosure.** ADB posts the safeguard documents on its website as per following protocols as well as disclose relevant information to local communities: in an accessible place (e.g., local government offices, libraries, community centers, etc.), and a summary translated into local language for the project affected people and other stakeholders. For environmental category A projects:

- Draft EIA report at least 120 days before Board consideration;
- Final or updated EIA and/or IEE upon receipt; and
- Environmental Monitoring Reports submitted by the Project Management Unit (PMU) during project implementation upon receipt.

27. **Consultation and Participation.** ADB SPS require borrower to conduct meaningful consultation² with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

28. **Grievance Redress Mechanism.** ADB SPS require borrowers to establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the subproject's performance. The grievance mechanism shall be scaled to the risks and adverse impacts of the subproject.

29. **Unanticipated Environmental Impacts.** Where unanticipated environmental impacts become apparent during subproject implementation, ADB SPS requires the borrower to update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

30. **Occupational Health and Safety.** ADB SPS requires the borrower³ to ensure that workers⁴ are provided with a safe and healthy working environment, taking into account risks inherent to the sector and specific classes of hazards in the subproject work areas, including physical, chemical, biological, and radiological hazards. Borrower shall take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work, including: (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

31. **Community Health and Safety.** ADB SPS requires the borrower to identify and assess risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the subproject, and shall establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.

32. **Physical Cultural Resources.** Borrower is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources. ADB SPS requires that such resources likely to be affected by the subproject are identified, and qualified and experienced experts assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a

² As per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues

³ In case where responsibility is delegated to subproject contractors during construction phase, borrower shall ensure that the responsibilities on occupational health and safety are included in the contract documents,

⁴ Including nonemployee workers engaged by the borrower/client through contractors or other intermediaries to work on project sites or perform work directly related to the project's core functions.

subproject component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures shall be included in the EMP.

33. **ADB SPS International Best Practice Requirements.** ADB SPS requires that, during the design, construction, and operation of the project, the executing agency shall apply pollution prevention and control technologies and practices that are consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines {IFC's General EHS Guidelines⁵, WHO Interim Guidance (and its updates) on Water, Sanitation, Hygiene and Waste management for the COVID 19 virus and Sector Specific (Water and Sanitation) Guidelines⁶}. These standards contain performance levels and measures that are normally acceptable and applicable to projects. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When Government of India regulations differ from these levels and measures, the PMU and PIUs will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the PMU and PIUs will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

B. National Environmental Laws

34. **Environmental Assessment.** The Government of India, EIA Notification of 2006 (replacing the EIA Notification of 1994), sets out the requirement for Environmental Assessment in India. This states that Environmental Clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

35. Category A projects require Environmental Clearance from the central Ministry of Environment, Forest and Climate Change (MoEFCC). The proponent is required to provide preliminary details of the project in the prescribed manner with all requisite details, after which an expert appraisal committee (EAC) of the MoEFCC prepares comprehensive terms of reference (TOR) for the EIA study. On completion of the study and review of the report by the EAC, MoEFCC considers the recommendation of the EAC and provides the Environmental Clearance if appropriate.

36. Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study), and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the Environmental Clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

⁵ <https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>

⁶ <https://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES>

37. None of the components of this water supply distribution system subproject falls under the ambit of the EIA Notification 2006, and, therefore no EIA Study or environmental clearance is required for the subproject.

38. Applicable Environmental Regulations. Besides EIA Notification 2006, there are various other acts, rules, policies and regulations currently in force in India that deal with environmental issues that could apply to infrastructure development. The specific regulatory compliance requirements of the subproject are shown in **Table 5**.

Table 5: Applicable Environmental Regulations

| Law | Description | Requirement |
|--|--|---|
| Environment (Protection) Act, 1986 and Central Pollution Control Board Environmental Standards. | Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards | Appendix 2 provides applicable standards for ambient air quality. Appendix 3 provides vehicular emission norms |
| Noise Pollution (Regulation and Control) Rules, 2000 amended up to 2010. | Rule 3 of the Act specifies ambient air quality standards in respect of noise for different areas/zones. | Appendix 2 provides applicable noise standards. |
| Air (Prevention and Control of Pollution) Act, 1981, amended 1987 and its Rules, 1982. | <ul style="list-style-type: none"> – Applicable for equipment and machinery's potential to emit air pollution (including but not limited to diesel generators and vehicles); – Consent to establish (CTE) and consent to operate (CTO) from West Bengal Pollution Control Board (WBPCB); – Compliance to conditions and emissions standards stipulated in the consent to establish and consent to operate. | |
| Direction of West Bengal Department of Environment under the Air Act, 1981 Direction No. EN/3170/T-IV-7/001/2009 dated:10 December 2009 | <ul style="list-style-type: none"> – Issued based on a study by WBPCB with help of ADB on air pollution from construction activities – Lays out norms for control of air pollution from construction activities – Prescribes two sets of norms: preventive measures, and practices to be discarded – Failure to comply will lead to legal action, stoppage of work etc., – All construction activities under West Bengal Drinking Water Sector Improvement Project shall follow the norms | Appendix 4 provides the pollution control measures indicated in the direction |
| West Bengal Inland Fisheries Act, 1984 | <ul style="list-style-type: none"> – Act to conserve, develop, propagate, protect, exploitation of inland fish and fisheries. – No discharge of wastewater, pollutants into inland water bodies that may affect fish. – Prohibits conversion of fishery area (any water area, naturally or | Project sites located in such areas will require prior permission |

| Law | Description | Requirement |
|--|--|--|
| | <p>artificially depressed land, irrespective of ownership, measuring 0.035 hectares (ha) or more, which retains water for more than 6 months and capable of being used as fishery) for any other purpose.</p> <ul style="list-style-type: none"> - Prohibits filling up fishery areas to convert into solid land, e. g., for any construction. - Prohibits dividing water area into parts to make any part less than 0.035 ha. - If conversion/ filling up is for development works, prior permission is required. | |
| East Kolkata Wetland (Conservation and Management) Act, 2006 | This legislation regulates all activities within the notified area of East Kolkata Wetlands. | Zone 1, 2, and 18 falls within EKW area hence prior permission should be obtained from the East Kolkata Management Authority for laying water distribution pipe networks within EKW area Appendix 8A shows NOC from EKW Management Authority |
| Municipal Solid Wastes Management (MSWM) Rules, 2016 | Rules to manage municipal solid waste generated; provides rules for segregation, storage, collection, processing and disposal | Solid waste generated at proposed facilities shall be managed and disposed in accordance with the MSWM Rules |
| Construction and Demolition Waste Management Rules, 2016 | Rules to manage construction and to waste resulting from construction, remodeling, repair and demolition of any civil structure. Rules define C and D waste as waste comprising of building materials, debris resulting from construction, re- modeling, repair and demolition of any civil structure. | Construction and demolition waste generated from the project construction shall be managed and disposed as per the rules (Appendix 5) |
| Labour Laws | The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline. The contractor shall provide equal wages and benefits to men and women for work of equal value or type. | Appendix 6 provides applicable labour laws including amendments issued from time to time applicable to establishments engaged in construction of civil works. |
| The Child Labour (Prohibition and Regulation) Act, 1986 | Prohibits employment of children below 14 years of age in certain occupations and processes | No child labour shall be employed |

| Law | Description | Requirement |
|---|--|---|
| | Employment of child labor is prohibited in building and construction Industry. | |
| Minimum Wages Act, 1948 | Minimum wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of buildings, roads and runways are scheduled employment. | Applicable to all construction works in the project All construction workers should be paid not less than the prescribed minimum wage |
| Ancient Monuments and Archaeological Sites and Remains Rules of 1959 Ancient Monuments and Archaeological Sites and Remains (Amendment) Bill, 2017 | The Rules designate areas within a radius of 100 meters (m) and 300 m from the “protected property” as “protected area” and “controlled area” respectively. No development activity (including mining operations and construction) is permitted in the “protected area” and all development activities likely to damage the protected property are not permitted in the “controlled area” without prior permission of the Archaeological Survey of India (ASI). Protected property includes the site, remains, and monuments protected by ASI or the State Department of Archaeology | There are no protected properties near project area. However, in case of chance finds, the contractors will be required to follow a protocol as defined in the Environmental Management Plan (EMP). |
| Workmen Compensation Act, 1923 | Provides for compensation in case of injury by accident arising out of and during the course of employment. | Compensation for workers in case of injury by accident |
| Equal Remuneration Act, 1979 | Provides for payment of equal wages for work of equal nature to male and female workers and not for making discrimination against female employees in the matters of transfers, training and promotions etc. | Equal wages for work of equal nature to male and female workers |
| Hazardous Waste Management Rules 2016 | Responsibilities of the occupier for management of hazardous and other wastes- (1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely: - (a) prevention; (b) minimization; (c) reuse, (d) recycling; (e) recovery, utilization including co-processing; (f) safe disposal. (2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes. (3) The hazardous and other wastes generated in the establishment of an occupier shall be sent or sold to an authorized actual user or shall be disposed of in an authorized disposal facility. (4) The hazardous and other wastes shall be transported from an occupier’s establishment to an authorized actual user or to an | Contractor to comply all the requirements of this Rule during construction works. |

| Law | Description | Requirement |
|-----|--|-------------|
| | authorized disposal facility in accordance with the provisions of these rules. (5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal. (6) The occupier shall take all the steps while managing hazardous and other wastes to- (a) contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and (b) provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety. | |

39. Clearances / permissions to be obtained prior to start of construction. **Table 5A** shows the list of clearances/permissions obtained for construction. This list is indicative, and the contractor should ascertain the requirements prior to start of the construction and obtain all necessary clearances/permissions prior to start of construction

Table 5A: Clearances and permissions obtained or to be obtained for Construction activities

| Sl. No | Construction Activity | Statute under which Clearance is Required | Implementation | Supervision |
|--------|--|--|----------------|-------------|
| 1 | Tree Cutting | State Forest Department / Revenue (Tehsildar) | PIU | PIU & PMU |
| 2 | Hot Mix Plants, Crushers and Batching plants | Consent to establish and consent to operate under Air Act, 1981 from WBPCB | Contractor | PIU |
| 3 | Storage, handling and transport of hazardous materials | Hazardous Wastes (Management and Handling) Rules, 2016 Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989 | Contractor | PIU |
| 4 | Sand mining, quarries and borrow areas | Permission from District Collector/ State Department of Mining | Contractor | PIU |
| 5 | New quarries and borrow areas | Environmental clearance under EIA Notification 2006 | Contractor | PIU |
| 6 | Temporary traffic diversion measures | District traffic police | Contractor | PIU |
| 7 | Road cutting for pipe laying works | Panchayet and PWD | Contractor | PIU |

40. PMU will be responsible for overall supervision in getting all clearances and provide details to ADB through semi-annual report.

IV. DESCRIPTION OF THE ENVIRONMENT

C. Methodology Used for Baseline Study

41. **Data Collection and Stakeholder Consultations.** Data for this sub project has been primarily collected through comprehensive literature survey, discussion with stakeholders, and field surveys for the subproject sites. Later, primary data was collected for select zones as part of pre-construction baseline survey in accordance with monitoring requirements specified in the previous IEE. The monitoring data are included in respective sections below.

42. The literature survey broadly covered the following:

- ✓ Project details, reports, maps, and other documents prepared by technical experts of the PHED, ADB PPTA Team;
- ✓ Discussions with Technical experts of the PPTA team, municipal authorities, relevant government agencies like West Bengal Pollution Control Board (WBPCB), etc.
- ✓ Secondary data from previous project reports and published articles, and;
- ✓ Literature on land use, soil, geology, hydrology, climate, socioeconomic profiles, and other planning documents collected from Government agencies and websites.

43. **Ocular inspection.** Several visits to the project sites were made during IEE preparation period in 2016-17 to assess the existing environment (physical, biological, and socioeconomic) and gather information with regard to the proposed sites and scale of the proposed project. A separate socioeconomic study was conducted to determine the demographic information, existing service levels, stakeholder needs and priorities.

44. **Field Surveys.** During updation of IEE report several time field visit, discussion with stakeholder and generation of primary data with the help of respective contractor have been conducted by Environment safeguard team.

D. Physical Resources

1. Location, Area and Connectivity

45. Project area is located in the Ganga- Brahmaputra River Delta, in the two administrative districts of North and South 24 Parganas. Located in southern part of West Bengal, 24 Parganas district was a single district before it was bifurcated into two districts – north 24 Parganas and south 24 Parganas in 1986.

46. **Geographically** South 24-Parganas district is located between 22°30'45" to 20°29'00" North latitude and between 89°4'56" and 88°3'45" East longitudes, with a total geographical area of 9,960 sq.km. It is the largest district in West Bengal, and Alipore is the district headquarter town. District is bounded by the river Hooghly in the west, Bay of Bengal in the south, Kolkata city and North 24 Parganas in the north. Its shares eastern boundary with Bangladesh and Bidya and Matla River. District is located at an average altitude from 1 to 7 meter above MSL. South 24 Parganas district is divided into 29 Community Development blocks, and the project covers Bhangar II Community Development Block, located in the northern part of the district, under Baruipur sub-division. Bhangar-II is located at 22°31'52.15"N longitude and 88°35'21.66"E latitude, with an elevation ranges from 3 meter (m) to 9 m above MSL, and an area of 162.04 km².

47. Located close to Kolkata, project area has good road connectivity with Kolkata and the rest of the state and country with national and state highways: NH2 (Kolkata-Delhi Road).

2. Topography, Soils and Geology

48. **Being** a deltaic district, major physiographic units are: natural levee areas, swamps area and older flood plain. The southern part of the district is covered with active and growing delta with a number of tidal rivers, creeks, saline soils, swamps and marshes.

49. South 24 Parganas district is located in the lower deltaic plain on the composite Gangetic Delta and is covered by the Quaternary sediments deposited by the Ganga and its tributaries. The top of the alluvium is clayey in nature with varying thickness of 15 to 75 m. Fine sand and silty-clay capping also occurs in small patches in the alluvium. Underlying the clay blankets occur a huge thickness of unconsolidated sediments composed of silt, fine to coarse grained sand and gravel with increasing thickness towards east and southeast. The gravel zone is underlain by another extensive clay zone at varying depths. There is a succession of Tertiary and Mesozoic formations within the depth range of 350 m to 4000 m. These geological horizons are sloping gently towards south-southeast. Other than this, no prominent rock and mineral formations are found in the project district.

50. **Soils.** The soils in South 24 Parganas are mostly sandy loam and clay loam in texture and contain large percentage of silt and clay with good water holding capacity. Soils are highly fertile. Only in areas close to rivers, soils are sandy clay. As per US soil taxonomy soil type in the district are broadly classified in to three groups: Entisols comprises of mainly sandy loam which is found in the western corner of the district; Alfisols which are typically deltaic alluvium soils, are present central part of the district, and Aridisols which are saline and saline-alkali in nature are present in the southern part of the district. Soil in Bhangar-I and Bhangar-II community development blocks is characterized by sandy loamy to clay loamy soil.

3. Seismology

51. As per the seismic zoning map of India, project area in the district falls under Zone IV, which is the high earthquake damage risk zone in India. Project area besides earthquake risk, is also vulnerable to various natural calamities like flood, cyclone, hailstorm, drought and embankment erosion, etc.

4. Climatic Conditions

52. The climate of the project area is humid and subtropical, characterized by a hot and dry summer from March to May/June, a south-west monsoon season from June to September, a pleasant post-monsoon from October to November and a cool winter from December to February. Majority of the rain is received during the south-west monsoon, from late June to September end. It also receives pre-monsoon torrential rains in summers between March and May.

53. Average annual rainfall of South 24 Parganas district is 1663 mm. Maximum and Minimum average temperature registered in the project district is 41°C and 10°C. Relative annual humidity in the district is lies from 71% to 85%.

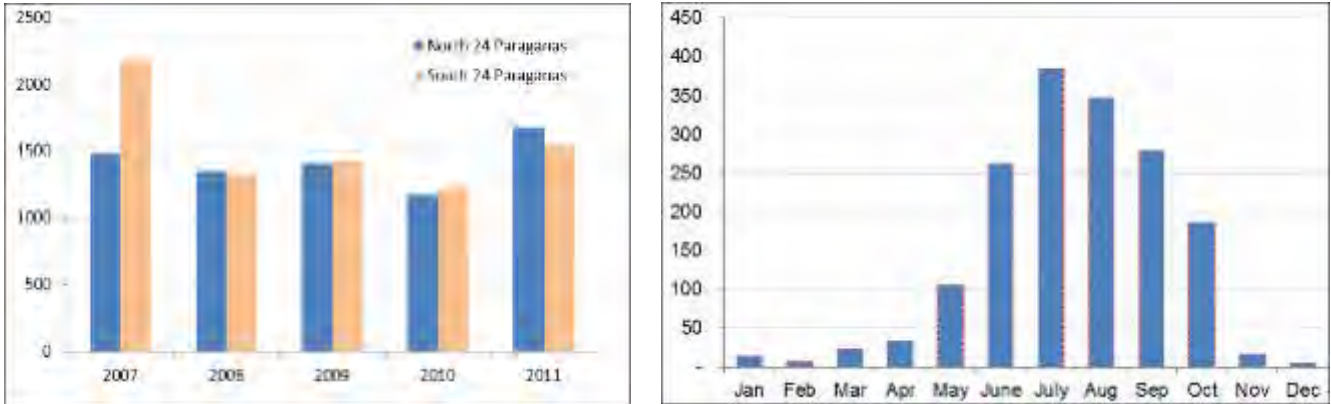


Figure 3. Annual Rainfall and Average Monthly Rainfall in Project Area



Figure 4: Average Minimum and Maximum Temperature in Project Area

5. Surface Water

54. Although there is no river passing through this sub-project but other forms of surface water resources such as reservoirs, ponds, lakes, bheris, canals, streams, roadside burrows, Beels etc., are found in plenty in the project block. Project area, specially, the rural hinterland, is dotted with large number of small water bodies (ponds), mainly used for fisheries.

55. Project water source is River Hooghly (the Ganges), and the existing river intake is at Rani Debendrabala Ghat in Kolkata. River Ganga is formed by two rivers at Devprayag in Uttarakhand State – Bhagirathi and Alakananda, originating from the glaciers of the Himalayas. From Uttarakhand, it flows down to Uttar Pradesh, where it is joined by its largest tributary River Yamuna at Allahabad, and then enters Bihar, where it is joined by another large river Kosi. The river finally enters West Bengal, and then it bifurcates into two branches about 40 km downstream of Farakka Barrage. The left branch, called River Padma, flows eastwards and enters Bangladesh, and the right branch, called River Bhagirathi/River Hooghly, flows southwards through West Bengal and ultimately discharges into Bay of Bengal near Kolkata. Of the total river length 2,575 km, the lowest portion of 570 km falls in West Bengal. River Hooghly is perennial in nature and owing to numerous large tributaries it carries huge quantities of water throughout the year. Water quality is suitable for drinking after treatment and disinfection. A study by the Hydraulic Study Department of Kolkata Port Trust assumes the flow in the river to be 1,135 cubic meter per second (m³/sec). The width of river varies, but near Kolkata it is roughly 1000 m wide. The Hooghly is under tidal influence for up to 300 km. The overall spring tide range is 4.27 m to

4.57 m and range of the neap tides is 1.83 m to 2.83 m. Near Kolkata, the water level fluctuates 4.0m per day during the rainy season and 2.75m twice in a day in the dry season. Highest highwater level (HHWL) and the lowest low water level (LLWL) are 5.34 m above mean sea level (msl) and 0.95 m below msl respectively.

6. Groundwater

56. In South 24 Parganas district, the ground water bearing aquifers are present within Quaternary and Tertiary sediments and generally occur under confined condition in the depth range of 75 m to 360 m with numerous alternations of clayey and sandy layers of varying thickness. The confined aquifers are divided into two groups, from north to extreme south. The upper one, usually in the depth span of 20m to 160m has a sandy gravel layer as a marker bed at its base which pinches out eastward. The ground water in general except at a few places occurring in this upper group of aquifers, is brackish to saline (chloride ranging from 1750 to 6300 ppm) and is not in use. The lower group of aquifers occurring in the depth range of 160 m to 360 m, is separated from the upper group by a thick impermeable sticky clay bed which is laterally extensive with varying thickness. The ground water occurring in this lower group of aquifers is generally fresh and is used extensively. Groundwater level lies from 1.70 mbgl to 6.00 mbgl during pre-monsoon period and from 0.50 m to 5.80 mbgl during post-monsoon period. Productive fresh water bearing zones are in depths ranging from 115 to 402 mbgl and are capable to yield 100 to 120 m³/h, with drawdown ranging from 2.3m to 16.5m. Transmissivity values range from 400 to 6500 m²/day and the Storativity values range from 0.0002 to 0.0015.

57. **Groundwater Quality.** Groundwater from unconfined aquifer except a few places is fresher within 60 mbgl than the deeper aquifers within 60 to 125 mbgl. Ground water from the unconfined aquifer is generally neutral to mildly alkaline with pH ranging from 7.2 to 8.1. Ground water in the western and central part of the district is primarily a Calcium-Magnesium- Bicarbonate type. The aquifer within the depth range of 150 mbgl in this area is generally marked by brackishness where chloride value ranges from 1750 to 6300 ppm. The deeper group of confined aquifers occurring within the depth range of 160 to 350 mbgl in the southern and south-eastern part of the district contain fresh water. The ground water is neutral to mildly alkaline with pH ranging from 7.4 to 8.1. Conductivity ranges from 714 to 2692 μ s/cm and the chloride value ranges from 14 to 596 ppm. In the coastal belt of this district the aquifers under semi confined to confined condition contain ground water with very high dissolved salts. Arsenic content of groundwater has been found to be beyond permissible limit of 0.05 ppm in a number of localized patches in sporadic manner in 9 blocks-Baruipur, Sonarpur-Bhangar-I and II, Jaynagar-I, Bishnupur-I and II, Magrahat-II and Budge Budge-II in this district.

58. **Arsenic in Groundwater.** In 2015, the Indian standard (permissible concentration) for Arsenic in drinking water has been revised from 0.05 mg/L to 0.01 mg/L (WHO guidance value). As per the available data, as of 2016, there are around 13,000 habitations spread over 17 states in India, that have arsenic in groundwater above the permissible concentration. Most of the affected states are in the Ganga- Brahmaputra fluvial plains: Assam, Bihar and West Bengal. Over 50% of total affected habitations are in the state of West Bengal alone. The School of Environmental Studies (SoES), Jadavpur University carried out extensive sampling from the tube wells in the state for over a period of 20 years starting from 1988, and found that out of 135,555 samples analyzed from nine districts, 67,306 (49.7%) samples shown arsenic concentration above 0.01mg/L and 33,470 (24.7%) samples above 0.050 mg/L. specifically on project area. Water quality is compared with drinking water standard.as per IS10500 (2012) (**Appendix 7**).

7. Air, Noise and Surface Water Monitoring

59. West Bengal Pollution Control Board (WBPCB) has established a network to monitor air and noise pollution in the State. WBPCB have monitoring stations located at various places across the state covering major cities, district headquarters and industrial locations. The sub-project area is not covered in this network.

60. In order to establish baseline and assess project impact, 1st monitoring was conducted in Feb 2019 (Pre construction phase base line monitoring) and subsequently every quarter (Construction phase monitoring) except quarter 3 being monsoon, no monitoring is performed in this period. It should be noted that in order to assess the project impacts, monitoring is conducted in such a way as to gather pre-construction and during construction environmental status. Further, the schedule for monitoring has been in accordance with the IEE. Monitoring results of 1st campaign along with latest campaign is presented below.

➤ Monitoring Results of 1st Campaign (Feb - Mar 2019)



Figure 5: Ambient Air Quality, Noise Level and Surface Water Monitoring Stations in Bhangan-II Block during 1st Campaign

Table 6: Ambient Air Quality (Daily Average)

| Site No. | Date of Testing | Site Location | Parameters (Government Standards) | | | | |
|--|-----------------|--------------------------------------|-----------------------------------|-------------------------------|----------------------------|-----------------------------|-----------------------------|
| | | | PM10 (µg/m ³) | PM2.5 (µg/m ³) | CO (µg/m ³) | SO2 (µg/m ³) | NO2 (µg/m ³) |
| Zone 1 | 20 – 21.02.2019 | Dharmatala Pacharia | 185 | 98 | 0.59 | 10.3 | 32.3 |
| Zone 4 | 20 – 21.02.2019 | Swastayan Gacchi Near School | 217 | 103 | 0.67 | 12.9 | 38.3 |
| Zone 9 | 21-22.02.2019 | Nanglapapur | 137 | 68 | 0.57 | 11.4 | 35.5 |
| Zone 10 | 18-19.02.2019 | Near Paschim Maharaja Primary School | 251 | 146 | 0.71 | 12 | 36.7 |
| Zone 15 | 21-22.02.2019 | Near Koach Pukur Primary School | 198 | 87 | 0.55 | 9 | 31.9 |
| National Ambient Air Quality Standard | | | 100 | 60 | 2 | 80 | 80 |
| WHO Standards | | | 100 | 50 | - | 50* | 40* |

*Interim target 2

Table 7: Surface Water Quality

| No. | Parameters | Result | Surface water quality criteria by CPCB for class B |
|--|--|--------|--|
| Pond water of Zone 15 (Koach Pukur) | | | Date: 22.02.2019 |
| 1 | pH value at 25°C | 7.59 | 6.5-8.5 |
| 2 | Turbidity in NTU | 9.8 | |
| 3 | Chloride (as Cl) in mg/l | 56.34 | |
| 4 | Fluoride (as F) in mg/l | <0.10 | 1.5 |
| 5 | Nitrate (as NO ₃) in mg/l | <0.5 | |
| 6 | Chemical Oxygen Demand (COD) in mg/l | 39.2 | |
| 7 | Bio-Chemical Oxygen Demand (BOD) in mg/l | 10.3 | 3 |
| 8 | Dissolved Oxygen (DO) in mg/l | 5.06 | 5 |
| 9 | Total Alkalinity (as CaCO ₃) | 198 | |
| 10 | Hardness (as CaCO ₃) in mg/l | 220 | |
| 11 | Oil & Grease in mg/l | 1.0 | |
| 12 | Total coliform MPN/100 ml | 110 | 500 |
| 13 | Faecal Coliform MPN/100 ml | 22 | |
| Pond water in Zone 10 (Majerhat) | | | Date: 22.02.2019 |
| 1 | pH value at 25°C | 7.57 | 6.5-8.5 |
| 2 | Turbidity in NTU | 6.8 | |
| 3 | Chloride (as Cl) in mg/l | 71.88 | |
| 4 | Fluoride (as F) in mg/l | <0.1 | 1.5 |
| 5 | Nitrate (as NO ₃) in mg/l | <0.5 | |
| 6 | Chemical Oxygen Demand (COD) in mg/l | 58.8 | |
| 7 | Bio-Chemical Oxygen Demand (BOD) in mg/l | 15.9 | 3 |
| 8 | Dissolved Oxygen (DO) in mg/l | 4.14 | 5 |
| 9 | Total Alkalinity (as CaCO ₃) | 224.4 | |
| 10 | Hardness (as CaCO ₃) in mg/l | 256 | |
| 11 | Oil & Grease in mg/l | 1.8 | |
| 12 | Total coliform MPN/100 ml | 30.0 | 500 |
| 13 | Faecal Coliform MPN/100 ml | 8.0 | |

Table 8: Ambient Noise Monitoring

| SI No. | Date of Monitoring | Location | Area Type | Leq dB (A) Day Time | Leq dB (A) Night Time |
|--|--------------------|---|--|---------------------|-----------------------|
| 1 | 18-19.02.2019 | Majerhat (Zone-10) | Residential | 57.2 | 46.5 |
| 2 | 20 – 21.02.2019 | Near Swastayan Gacchi School (Zone 4) | Silence zone | 51.8 | 47.7 |
| 3 | 20 – 21.02.2019 | Dharmatala Pachuria School (Zone 1) | Silence zone | 65.6 | 56.1 |
| 4 | 21-22.02.2019 | Nangla Palpur (Zone 9) | Residential | 56.2 | 50.1 |
| 5 | 21-22.02.2019 | Near Koach Pukur Primary School (Zone 15) | Silence zone | 53.9 | 47.2 |
| National Ambient Noise Standard | | | | | |
| | | | Industrial area | 75 | 70 |
| | | | Commercial area | 65 | 55 |
| | | | Residential area | 55 | 45 |
| | | | Silence zone | 50 | 40 |
| World Bank Ambient Noise Standard | | | | | |
| | | | Industrial, Commercial | 70 | 70 |
| | | | Residential, Educational, Institutional | 55 | 45 |

Monitoring Results of Latest Campaign (May – Oct 2023)





Figure 6: Ambient Air Quality and Noise Level Monitoring Stations in Bhangar-II Block during latest campaign.

Table 9: Ambient Air Quality (Daily Average)

| Site No. | Date of Testing | Site Location | Construction phase | Parameters | | | | |
|--|-----------------|---------------------------|---------------------|--|---|----------------------------|---|---|
| | | | | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | CO (µg/m ³) | SO ₂ (µg/m ³) | NO ₂ (µg/m ³) |
| Contract Package WBDWSIP/DWW/NCB/N24P/02B/2017-18 | | | | | | | | |
| Zone -03 | 20-21.05.23 | Paiken | Pre- Construction | 91 | 50 | 847 | 7.3 | 32.8 |
| Zone - 11 | 19-20.05.23 | Dheati OHR | During Construction | 76 | 39 | 789 | 7.0 | 30.8 |
| Zone - 14 | 19-20.05.23 | Pitha Pukuria OHR | During Construction | 96 | 58 | 904 | 7.8 | 34.2 |
| Zone -02 | 19-20.05.23 | Benota OHR | During Construction | 80 | 43 | 812 | 6.7 | 31.4 |
| Zone -05 | 20-21.05.23 | Tona OHR | During Construction | 84 | 49 | 835 | 7.0 | 32.5 |
| Zone-08 | 27-28.10.23 | Chandihaat canal crossing | Pre- Construction | 83 | 49 | 664 | 6.3 | 23.8 |
| Zone - 09 | 27-28.10.23 | Nanglapalpur OHR | Pre- Construction | 53 | 30 | 618 | 5.5 | 23.1 |
| Zone - 11 | 26-27.10.23 | Dheati OHR | During Construction | 88 | 42 | 698 | 5.8 | 24.5 |
| Zone - 14 | 26-27.10.23 | Pitha Pukuria OHR | During Construction | 62 | 27 | 686 | 6.0 | 25.5 |
| Zone - 05 | 26-27.10.23 | Tona OHR | During Construction | 73 | 31 | 744 | 6.5 | 25.9 |
| National Ambient Air Quality Standard (NAAQS) | | | | 100 | 60 | 2000 | 80 | 80 |
| WHO standard | | | | 100 | 50 | - | 50* | 40* |

*Interim target 2

Note: National level Central Pollution Control Board's (Govt. of India) guideline/ protocol used for sampling. INDIAN STANDARD IS 5182 and USEPA CFR 40 (International protocol) used for analysis

Table 10: Ambient Noise Level Monitoring

| Site No | Date of Testing | Site Location | Construction phase | Land use | Leq dB(A) | |
|--|-----------------|---------------------------|---------------------|---|--------------------------------------|--|
| | | | | | Day Time | Night Time |
| Contract Package WBDWSIP/DWW/NCB/N24P/02B/2017-18 | | | | | | |
| Zone-03 | 20-21.05.23 | Paiken | Pre- Construction | Residential | 58.7 | 45.2 |
| Zone-11 | 19-20.05.23 | Dheati OHR | During Construction | Residential | 54.8 | 42.9 |
| Zone-05 | 20-21.05.23 | Tona OHR | During Construction | Residential | 57.4 | 40.1 |
| Zone-14 | 19-20.05.23 | Pitha Pukuria OHR | During Construction | Residential | 56.0 | 43.0 |
| Zone-02 | 19-20.05.23 | Beonta OHR | During Construction | Residential | 58.1 | 43.2 |
| Zone - 08 | 27-28.10.23 | Chandihaat canal crossing | Pre- Construction | Residential | 59.0 | 47.3 |
| Zone-09 | 27-28.10.23 | Naglapalpur OHR | Pre- Construction | Residential | 57.6 | 48.2 |
| Zone-11 | 26-27.10.23 | Dheati OHR | During Construction | Residential | 56.2 | 44.3 |
| Zone-05 | 26-27.10.23 | Tona OHR | During Construction | Residential | 58.0 | 45.1 |
| Zone-14 | 26-27.10.23 | Pitha Pukuria OHR | During Construction | Residential | 57.4 | 46.4 |
| National Ambient Noise Quality Standard | | | | | | |
| | | | | Landuse | Leq Day Time dB(A) - Standard | Leq Night Time dB(A) - Standard |
| | | | | Industrial | 75 | 70 |
| | | | | Commercial | 65 | 55 |
| | | | | Residential | 55 | 45 |
| | | | | Silence Zone | 50 | 40 |
| World Bank Ambient Noise Standard | | | | | | |
| | | | | Industrial, Commercial | 70 | 70 |
| | | | | Residential, Educational, Institutional | 55 | 45 |

*Interim target 2

Note: National level Central Pollution Control Board's (Govt. of India) guideline/ protocol used for sampling. INDIAN STANDARD IS 5182 and USEPA CFR 40 (International protocol) used for analysis

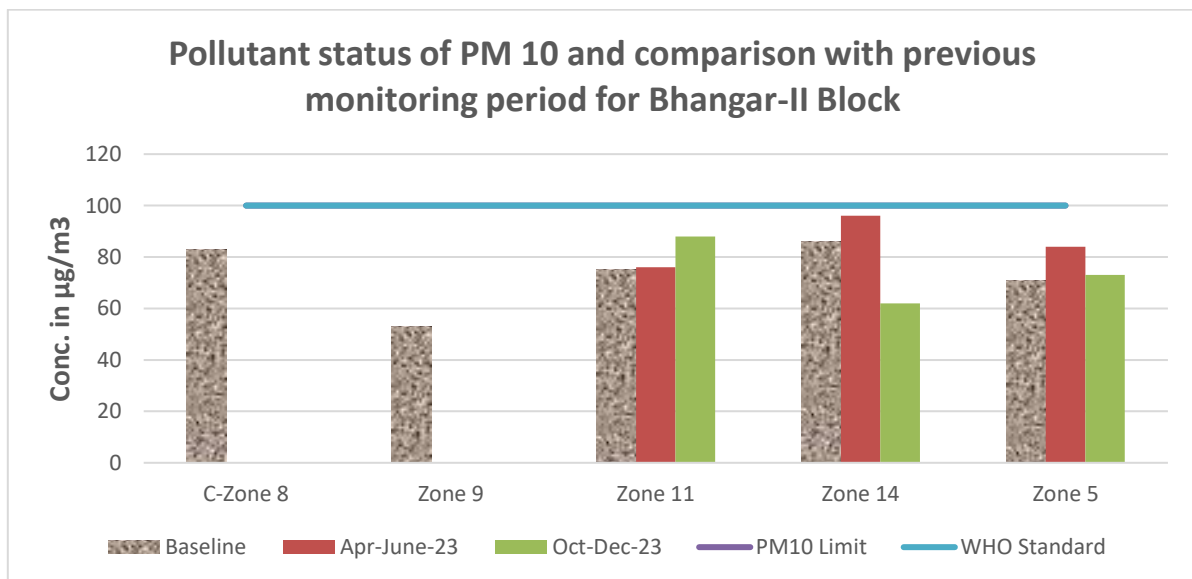
Table 11: Surface water Quality

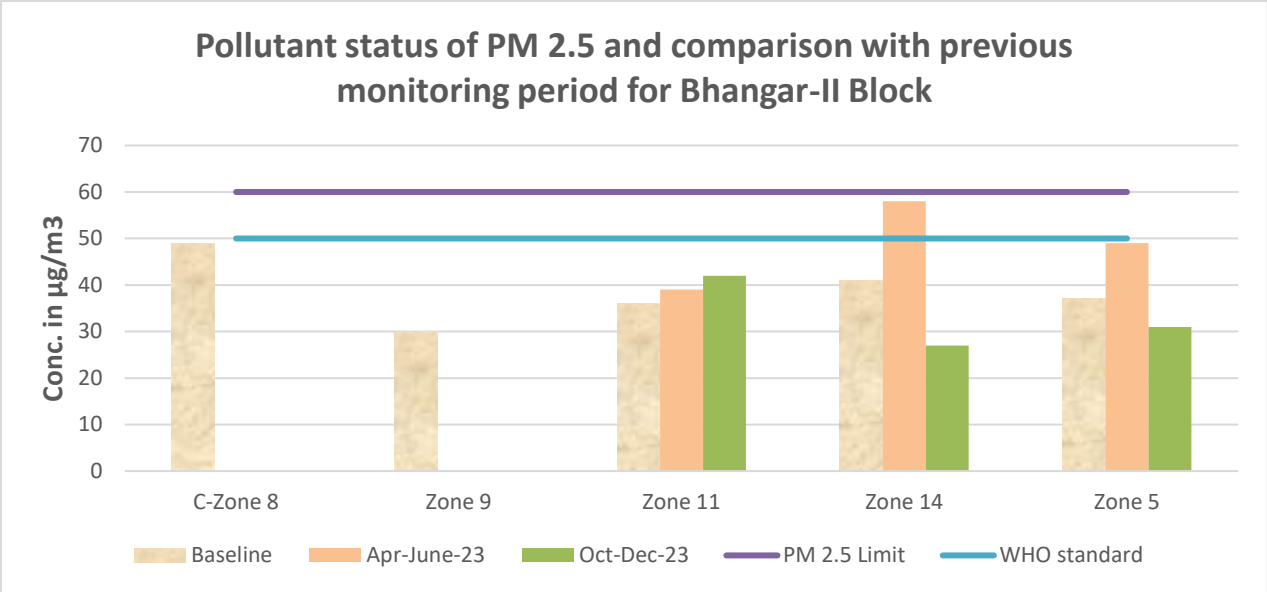
| Sl. No. | Parameters | Result | Surface water quality criteria by |
|---|--|--------|-----------------------------------|
| Pond water in Zone 8 (Canal Water) | | | Date-27.10.2023 |
| 1 | pH value at 25°C | 7.44 | 6.5-8.5 |
| 2 | Turbidity in NTU | 12.7 | |
| 3 | Chloride (as Cl) in mg/l | 84.8 | |
| 4 | Fluoride (as F) in mg/l | 0.29 | 1.5 |
| 5 | Nitrate (as NO3) in mg/l | 0.91 | |
| 6 | Chemical Oxygen Demand (COD) in mg/l | 78 | |
| 7 | Bio Chemical Oxygen Demand (BOD) in mg/l | 23 | 3 |
| 8 | Dissolved Oxygen (DO) in mg/l | 5.9 | 5 |

| Sl. No. | Parameters | Result | Surface water quality criteria by |
|---|--|--------|-----------------------------------|
| 9 | Total Alkalinity (as CaCO ₃) | 130.2 | |
| 10 | Hardness (as CaCO ₃) in mg/l | 140.6 | |
| 11 | Oil & Grease in mg/l | 3.2 | |
| 12 | Total coliform MPN/100 ml | 48 | 500 |
| 13 | Faecal Coliform MPN/100 ml | 17 | |
| Pond water of Zone 9 (Naglapalpur) | | | Date: 27.10.2023 |
| 1 | pH value at 25°C | 7.73 | 6.5-8.5 |
| 2 | Turbidity in NTU | 14.6 | |
| 3 | Chloride (as Cl) in mg/l | 189.2 | |
| 4 | Fluoride (as F) in mg/l | 0.33 | 1.5 |
| 5 | Nitrate (as NO ₃) in mg/l | 1.18 | |
| 6 | Chemical Oxygen Demand (COD) in mg/l | 97 | |
| 7 | Bio-Chemical Oxygen Demand (BOD) in mg/l | 25 | 3 |
| 8 | Dissolved Oxygen (DO) in mg/l | 5.3 | 5 |
| 9 | Total Alkalinity (as CaCO ₃) | 259.6 | |
| 10 | Hardness (as CaCO ₃) in mg/l | 220.4 | |
| 11 | Oil & Grease in mg/l | 2.6 | |
| 12 | Total coliform MPN/100 ml | 110 | 500 |
| 13 | Faecal Coliform MPN/100 ml | 34 | |

Air Quality

61. From the recorded monitoring result, it is evident that the air quality at various locations is more influenced by the season in which data was collected than impact from project activities. Accordingly, the comparison of air quality data is presented by season in the graphs shown below:

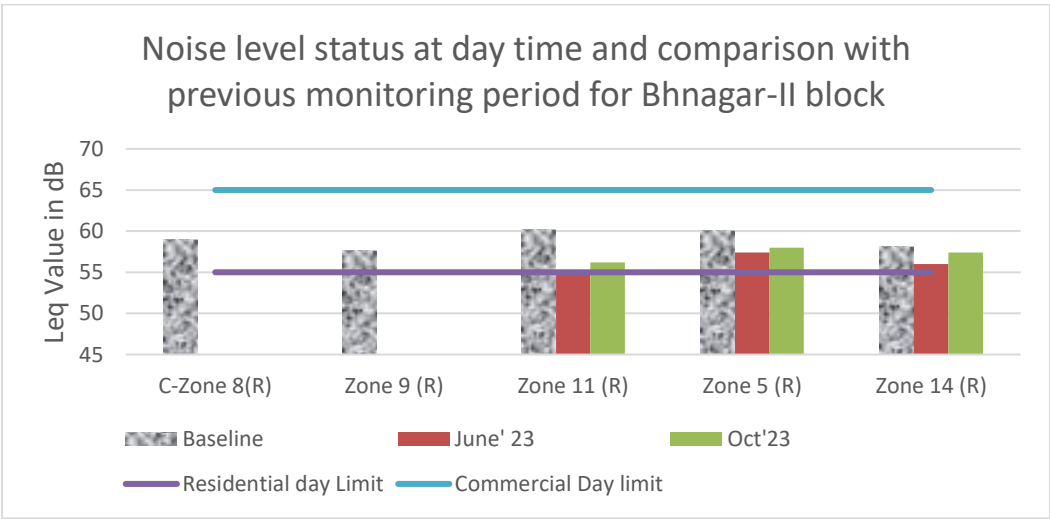


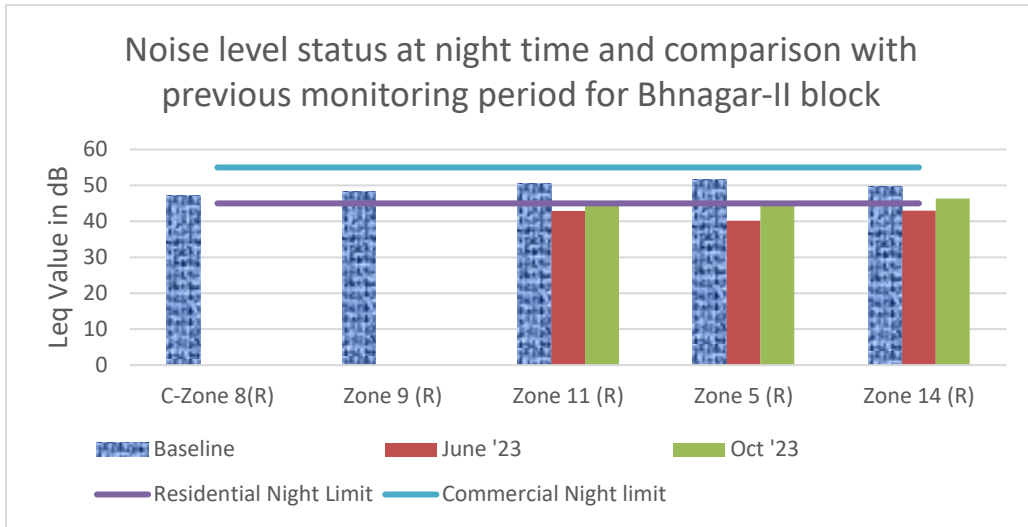


62. From the above graphs, it is obvious that both PM10 and PM2.5 concentration in ambient air represents similar pattern. At Zone 5, 8, 9, 11 and 14 during the present monitoring campaign (Oct – Dec 2023), the PM10 and PM2.5 concentrations were found below the stipulated limits set by WHO as well as CPCB. At Zone 11 concentrations of these pollutants in ambient were found in increasing pattern due to relatively lower moisture content in post monsoon season. For package 02B, there also influence of seasonal variation is evident. However, relatively reduced construction activities also contributed to the overall ambient concentration of particulates and that is obvious from the results observed at zone 5 and 14 where ambient concentration has decreased from previous monitoring period due lesser construction activities during monitoring period.

Noise Level

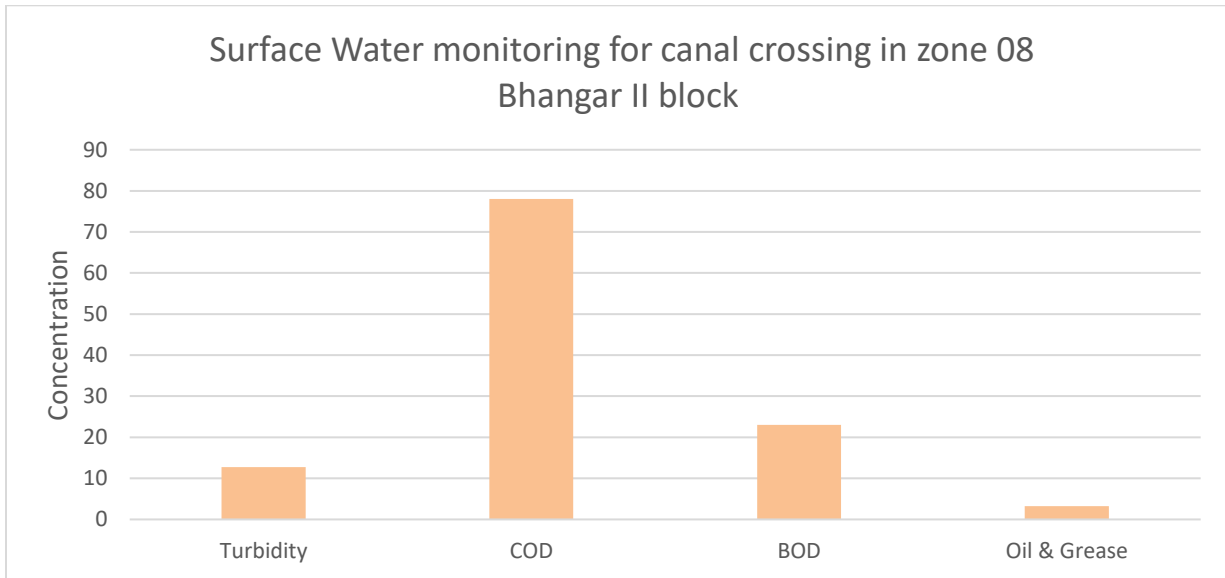
63. As noted in Package 02B, analysis of noise level data collected over time at this package also shows that the noise level at a particular location is more influenced by the level of noise generating activities at the time of monitoring than season of monitoring.

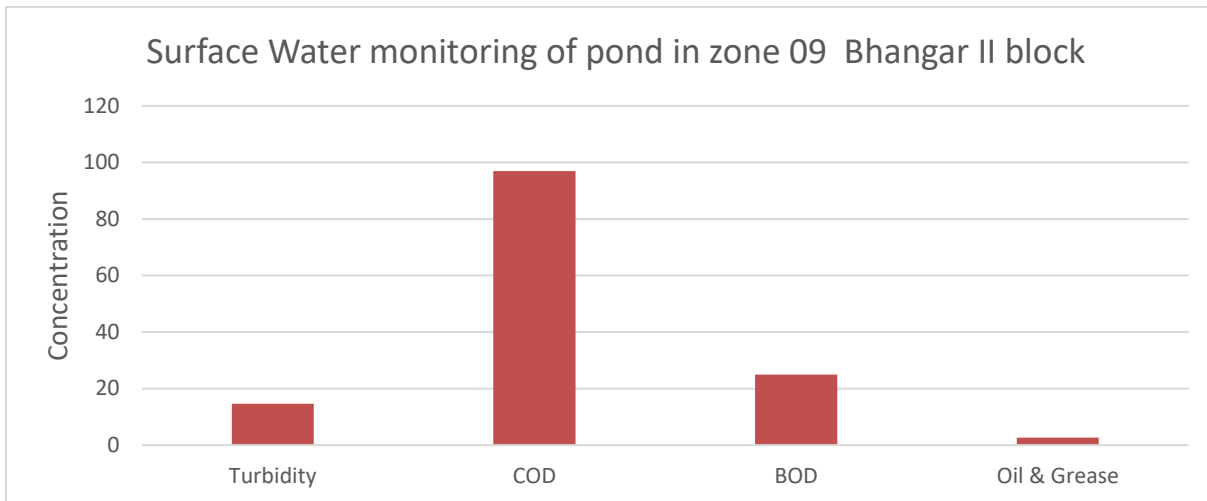




64. From the above graphs it is evident that the noise level at all the monitored locations at Zone 5, 8, 9, 11 and 14 in Bhangar II block has been above the stipulated limits for residential areas. Higher noise generating shuttering activities as project progressed positively impacted the ambient noise quality at all working zone. Further, the noise level at these locations were found to dip during night in comparison to day time. This is logical considering no input from project activities during night time. However, the noise level at zone 14 slightly exceeded of prescribed limits in night due to cultural activity during festive season near the location.

Water Quality





65. As per sampling pattern, BOD at both the sampling locations at zone 8 and 9, exhibits exceedance with respect to prescribed limit (i.e. 3 mg/l) set by CPCB for Class B water bodies designated for outdoor bathing. Total coliform and DO although reported in both the samples and but are well within the prescribed standard. The apparent reason for this sort of water quality seems to be due to discharge of domestic wastewater in zone 8 canal crossing area while near zone 9 fisheries activity impacts the water quality.

C. Ecological Resources

66. South and North 24 Parganas districts are the home of Sundarbans Biosphere Reserve, a unique ecosystem, and a World Heritage Site. This area is part of delta of Ganges and Brahmaputra River system. It is spread over 9,630 km² in 6 Community Development blocks of North 24 Parganas (Hingalgaon, Hasnabad, Haroa, Sandeskhali - I, Iland Minakhan) and 13 CD blocks in in South 24 Parganas district (Sagar, Namkhana, Kakdwip, Patharpratima, Kultali, Mathurapur-I,II, Jaynagar-I,II, Canning-I,II, Basanti, and Gosaba). The extent of mangrove Reserve Forests is around 4260 km², out of which 55% is under land vegetation cover and balance 45% is under water body/ inter-tidal zone. Nearly 40% of this reserve forest area is notified as protected areas: Sundarban National Park (1330 km²), Sajnekhali Wildlife Sanctuary (362 km²), Lothian Wildlife Sanctuary (38 km²) and Haliday Wildlife Sanctuary (6 km²). Sundarban Tiger Reserve, covers an area of 2585 km², which include Sundarban National Park as its core area, and the balance is the surrounding reserved forest area which forms its buffer zone.

67. Sundarban Biosphere Reserve consists of following zones: Core Zone (protected site for conserving biological diversity and undertaking non-destructive research and other low-impact uses like education etc.); Buffer Zone (surrounding or adjoining the Core Zone, and is used for activities compatible with sound ecological practices); and Transition Area (contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, NGOs and other stakeholders work together to manage and develop the Area's resources). Biosphere reserves are managed under the existing forest, wildlife and environmental related laws as applicable, and there are no other specific regulations. Except Sundarbans in the southern extreme, there are no forest areas or protected forest in the project area, and mainly consists of agricultural, habitation areas and water bodies, etc. Based on detailed designs, no works is being conducted in the Sundarban Biosphere Reserve areas, except for small civil works in one mouza of Bhangar II block where the site for GLSR and small pipes are in the outer periphery of the transition zone of Sundarban biosphere reserve. The project preparatory team has noted that the site and alignment are in developed areas and construction

is allowed. The project has not considered any components in the buffer or core areas. Chintamani Kar Bird Sanctuary is in the southwest of the project area at about 20-30 km from the project area. NOC from Sundarban Biosphere reserve has been obtained and attached in **Appendix 8**.

68. Floral species present in the project blocks are indigenous in nature. Commonly seen plant species are Tamarind (*Tamarindus indica*), Neem (*Azadirachta indica*), Gulmohur (*Delonix regia*), Jhau (*Casuarina equisetifolia*), Sisso (*Dalbergia sisso*), Babul (*Acacia nilotica*), Peepal (*Ficus religiosa*), etc. Domestic animals are commonly observed in the project blocks. The project (OHR) sites are mostly vacant; only few sites have few trees around them. Till date no tree cutting requirement has been encountered for the sites where construction is completed or undergoing.

69. **East Kolkata Wetlands (EKW).** A Ramsar designated wetland of international importance, located in the eastern outskirts of Kolkata city covering a total area of 12.5 km² (12,500 ha). It comprises large number of water bodies, sewage fed fish farms, agricultural lands and also some built up areas. Administratively, these wetlands are located in Kolkata municipal area and in the districts of north and south 24 Parganas. These water bodies include man-made and as well as natural ponds. Of the total area of 12,500 ha, slightly less than half (~47%) is covered with water bodies, nearly 43% is fish/agriculture farming area, and the remaining 10% consists of built-up area (both rural and urban). These wetlands are unique and used to treat sewage generated here through pisciculture. There are various deep canals, which flow with very low velocity that bring sewage from the city, and circulate in the wetlands. These canals act as facultative lagoons, and while fish ponds act as maturation ponds for completing the sewage treatment. Solid wastes are also dumped here. So, these wetlands provide natural treatment for both sewage and solid waste, while providing benefits to the local people via fish farming. Outflow from fishponds flows naturally into streams, for further disposal into sea via natural drainage channels/streams.



Figure 8: East Kolkata Wetlands Map

70. Besides providing the benefits of waste treatment and fish farming, wetlands have very rich biodiversity and is a waterfowl habitat. It is also known habitat for migratory birds. There are

about 100 plant species recorded in and around the EKW. Several kinds of water hyacinths grow here, which also control land erosion. Area is known for paddy, coconut, vegetable cultivation. Fish species farmed in these sewage fed ponds include silver carp and tilapia. There are about 20 types of mammals and several reptiles in this area, which include: marsh mongoose, small Indian mongoose, Palm Civet, Small Indian Civet, Checkered keel back, smooth water snake, Buff striped keel back, and Bronze back tree snake.

71. However, due to its location just outside Kolkata city and the neighbouring rapidly developing New Town area of Rajarhat, has put tremendous pressure on the existence and functioning of this wetland ecosystem. Government has set up an EKW Management Authority (EKWMA) to regulate the activities in and around the EKW. Based on the detailed design and survey it has been found that water supply distribution pipes laying route in three zones will pass through EKW areas (zone 1, zone 2 and zone 18) under the jurisdiction of EKW Management Authority. Accordingly, no over-ground constructions will be done in these three distribution zones and application has been submitted to the EKW Management Authority (EKWMA) for granting permission for pipe laying works in the EKW area falling under. The EKWMA has given NOC for pipe laying in these three EKW zones (**Appendix 8A**). Further, land for overhead reservoirs in Zone 1, 2 and 18 have been identified outside the EKW while it is pertinent to note that zone 1 OHR is selected in the same land as in zone 18 area.

D. Economic Development

1. Land Use

72. Following table shows the land use/utilization pattern as per Census 2011. In South 24 parganas district, nearly 45% of the total reporting area is under forest, 38% land is under cultivation and 15% land is under non-agricultural use. However, in Project block of Bhangar II block in the district, there is no forest area.

Table 12: Land Use in Project Area

| Land use classification | S 24 Pgs District | Bhangar II Block |
|--|-------------------|------------------|
| | Areas in Hectares | |
| Forests | 426,360 | - |
| Area under non-agricultural uses | 143,320 | 6,002.6 |
| Barren and uncultivable land | 70 | - |
| Permanent pastures and other grazing lands | 20 | - |
| Land under miscellaneous tree crops | 2,560 | - |
| Culturable waste land | 1,340 | 43.7 |
| Fallow | 16,700 | - |
| Net area sown | 358,400 | 7,935.6 |
| <i>Total reported area (total district area excluding the area under census towns and urban areas)</i> | <i>948,770</i> | <i>13,177.7</i> |
| Total Geographical area | 996,000 | 16,204 |

*Source: Census 2011.

8. Industry and Agriculture

73. Owing to its location close to Capital City Kolkata, and good connectivity, abundance of water infrastructure available.

74. **South 24 Parganas.** Owing to various natural and man-made factors, industrial development in the district is very limited. Due to presence of large tracts of forest lands, numerous rivers, streams, creeks etc., much of the areas is not accessible to industrial development. Small scale household and cottage industries such as jute, handlooms,

manufacturing cutlery, pottery, agriculturally based industries, are in the district. There are a small number of large-scale industrial units (dealing in food, chemical, engineering and ship building) in the district. Located in the vast delta with number rivers, streams, creeks etc., land suitable for agriculture is also limited. District comprises area with non-saline soils and with saline (coastal) soils of tidal origin. Non-saline soils are very fertile and rich with nutrient, and are very good for agriculture with abundance of water availability, while the coastal soils are not suitable for agriculture. As per the land use statistics, 38% of the area is under cultivation. Paddy is the main crop, and other include pulses, potato and cash crop Jute. Fishery is an important economic activity in the district. Due to presence of both fresh water and saline water bodies, fresh water and as well as saline water fishing is practiced in the district, and a significant number of families depend on this activity for their livelihood.

9. Infrastructure

75. **Water Supply.** The North 24 Parganas District has a predominantly urban profile with almost 50% of the people living in the 27 municipalities. Urban local bodies provide water supply in urban areas while Public Health Engineering Department (PHED) is responsible for rural water supply covering the blocks and the census towns within the blocks. At present 61% of population (mainly rural) under the PHED jurisdiction is provided with piped water supply schemes, and rest depend on tube wells, dug wells etc., Groundwater in the district is not suitable for drinking due to high arsenic content, however, only 5% of habitations are provided with water supply schemes based on surface water sources. Rest all are depending on groundwater which is potentially unsafe. There are 181 commissioned Piped Water Supply Schemes (PWSS) in the district, and additional 32 schemes are under implementation. Out of the 181 commissioned schemes, 170 are based on ground water and 11 are based on surface water. Phasing out of groundwater-based schemes as per the recommendation of the Arsenic Master Plan is in progress. Groundwater is the only source for the PWSS in nine blocks, viz. Baduria, Bagda, Barasat - II, Bongaon, Haroa, Rajarhat, Sandeshkhali - I, Sandeshkhali - II, Swarupnagar. The typical groundwater-based scheme comprises a borewell and pumping arrangement, supplying water to the households after disinfection through chlorination. Where surface water sources are too far distant, Arsenic Master Plan recommended setting up on Arsenic / Iron Removal Plants (ARP) and accordingly a number of existing schemes have been retrofitted with ARP and new schemes have been proposed with ARP. In North 24 Parganas, a total of 33 groundwater based PWSS has been considered for provision of ARPs. At present there is only one major surface water based PWSS in the district. This scheme covers four blocks of Amdanga (Part), Deganga, Barasat – I, Barrackpore – II, and a small portion of Basirhat I.

76. **Sewerage and Drainage.** There is no sewage collection system in the project area. Households mainly depend on individual sanitation systems like pit latrines, flush latrines, some connected to septic reservoirs. Due to flat topography, low laying lands, high rainfall and several water bodies around, project area is prone flooding. Cyclones are also common; 2009 cyclone and subsequent torrential rains badly affected 20 of 22 blocks in the district. Large tracts of lands inundated. Storm water drainage system mainly consists of natural stream and major canals. Open drains along the roads are provided in some places.

77. **Solid Waste Management.** There is no proper solid waste management system in the project area. Respective village panchayats are responsible for SWM services their areas. Villages lack solid waste collection and disposal systems. Due to this, disposal of solid waste in water bodies, canals and ponds, etc. is very common, and is creating unhygienic conditions.

78. **Transport.** Transport infrastructure in the district is well developed with national highways (NH 34 and NH 35) and state highways (SH 1, SH 2 and SH 3) passing through the project area. Area is well connected with district roads and village roads. District is also well connected by railways. Internal roads in villages are mostly narrow. Due to high population density, traffic on the roads is considerable. Most of the roads are maintained by Public Works Department, except the roads in municipalities, which are maintained by the respective urban local bodies. Road condition is generally poor, with many roads in need of repairs and resurfacing.

E. Socio Cultural Resources

1. Demography

79. Total population of the project area, comprising 1 community development block in the district of south 24 Parganas, is 247,000 (2011 census). Population density is high in the project area, much higher than the state average. As this is one of the fastest developing areas close to Kolkata, the population growth is also higher than the state average. Sex ratio is much lower than the state and district averages. Literacy rate is comparatively lower in south 24 Parganas blocks. Population of schedule castes is higher in the project district. Work participation rate is 33-34%. Agriculture is predominant economic activity in Bhangar II block, with large number of households engaged in agricultural activities. Main language spoken in the project area is Bengali.

Table 13: Demographic Characteristics

| Demographic Parameters | West Bengal State | South 24 Parganas | Bhangar II Block |
|--|-------------------|-------------------|------------------|
| Population (2011) | 91,276,115 | 8,161,961 | 246,708 |
| Geographical area (km ²) | 88,752 | 9960 | 162.04 |
| Total households | 20,380,315 | 1,775,756 | 50,209 |
| Decadal Growth rate (2001-11) | 13.84% | 18.87% | 18.87% |
| Sex ratio | 950 | 956 | 940 |
| Population Density, (per km ²) | 1028 | 819 | 1,523 |
| Household size | 4.5 | 4.6 | 4.9 |
| literacy rate | 76.26% | 77.51% | 74.45% |
| literacy rate (male) | 81.69% | 83.35% | 78.01% |
| literacy rate (female) | 70.54% | 71.40% | 70.64% |
| % of urban population | 31.87% | 25.58% | 0.00% |
| SC Population | 23.5% | 30.19% | 19.82% |
| ST Population | 5.8% | 1.19% | 0.77% |
| Total workers | 38.08% | 36.32% | 34.27% |
| Male workers | 57.07% | 56.46% | 29.07% |
| Female workers | 18.08% | 15.24% | 5.21% |
| Main workers | 28.14% | 24.55% | 27.30% |
| Marginal workers | 9.94% | 11.77% | 18.21% |
| Cultivators | 14.72% | 11.99% | 26.44% |
| Agricultural Labourers | 29.32% | 27.21% | 24.53% |
| HH industry workers | 7.09% | 8.13% | 6.20% |
| Other workers | 48.87% | 52.68% | 42.83% |

2. History, Culture and Tourism

80. Prior to their bifurcation in 1986 as separate districts, both south and north 24 Parganas districts were part of 24 Parganas district. Located in the revered Gangetic belt, as per the legends, reference to this landmass is found in the great epic Mahabharata. References to this place is also found in the writings of Greek navigators, geographers, chroniclers and historians. Ruler of the Sundarbans between 1561 to 1611 A.D is said to be a Hindu Chieftain, named Pratapaditya, and enjoyed independence in the south and south-east of the Gangetic delta. During the middle half of the 16th century A.D., the region was invaded by the Portuguese pirates. In the early 17th century, Maharaja Pratapaditya fought and resisted the Portuguese. Maharaja Pratapaditya was a Bhuian (feudal lord of Bengal who declared their sovereignty from the Mughal Empire along with another 11 Bhuians together referred as the Baro Bhuians means twelve chieftains) of Jessor, Khulna, Barisal and Greater Twenty-Four Parganas. Maharaja Pratapaditya was defeated and captured in the battles of Salka and Magrahat by the Mughals. Independent Nawab of Bengal Siraj-ud-Dullah faced defeat in the battle of Plassey (1757). Subsequently, the area came under British rule, under which entire Sunderbans were under 24 Parganas.

81. The district name Twenty-Four (24) Parganas is derived from the number of Parganas comprised in the Zamindari (Land Lordship) of Calcutta, which was ceded to East India Company in 1757 by the then Nawab of Bengal Mir Jafar. In the year 1824, the district got focus when the sepoys (soldiers) deployed at Barrackpur declared that they will not take part in the Burma war as crossing the sea was forbidden as per Hindu belief. The European troop opened fire; many of them were killed. In the year 1857, the second mutiny by the sepoys broke out at the then headquarters of the Presidency Division of Bengal, Barrackpore. This mutiny is often referred as the First War of Independence. The rebellion was ignited with Mangal Pandey, a Sepoy of the 34th Regiment, stationed at Barrackpore in March, 1857. After the mutiny, India came under the direct rule of the British Emperor from the East India Company. In 1905, some portions of the district were attached neighbouring districts, which are now part of Bangladesh. In 1986, the district is divided into two districts – north and south.

82. West Bengal has rich and unique culture and tradition. Many pujas and festivals are celebrated here with gaiety and grandeur. People from all faiths participate in these celebrations. Durga Puja, dedicated to the Goddess Durga is the most prominent and main festivals of the state. This symbolizes the triumph of Goddess Durga over the devil Mahishasura. There are several places of religious importance in the project districts. The most popular tourist attractions in South 24 Parganas includes Temple of Sagardiwp, Sunderban National Park, Bakkhali and Frasergunj beach, Diamond Harbour, Maheshtala, etc.

83. There is one protected monuments/archeological place of national importance in north 24 Parganas district. Jhater Deul Temple in Jhata is the only protected monument in south 24 Parganas district but not located in the project area.

F. Subproject Site Environmental Features

84. Features of the subproject sites are presented in the **Table 14**. All OHR lands have been handed over to contractor are presented in **Figure 2**. Recent photographs of the few sites where construction activities are undergoing is presented in **Appendix 9**

Table 14: Site Environmental Features

| Infrastructure | Location and Environmental Features | Site Photograph |
|---|---|---|
| 1. Overhead Reservoir Sites | | |
| | | |
| Zone-1, Jothbhim: Private land Near zone 18 | Zone-2, Private land at Chandra Kanthalberia | Zone-3, Paikan, Private agricultural land |
| | | |
| Zone-4, Swastyangachi, Private vacant land with few trees | Zone-5, Tona: Private agricultural land with few mango trees | Zone-6, Shyamnagar, Private agriculture land |
| | | |
| Zone-7, Joynagar, Private agricultural land with few trees | Zone-8, Private land at Uttar Kashipur | Zone-9, Private land at Naglapalpur |
| | | |
| Zone-10, Private land at Shanpukuria | Zone-11, Private land at Dheyati | Zone-12, Bankachua, Private land |



Zone-13, Baniara, Private land



Zone-14, Pithapukuria, Private land



Zone-15, Kachua, Private land



Zone-16, Private land at Jawapur



Zone-17, Private land at Bhogali



Zone-18, Private land at Jothbhim

Infrastructure

2. Distribution Lines

Location and Environmental Features

Distribution lines being laid from respective OHRs to households in respective zones, and will cover entire habitation areas in each zone.

Pipelines are being laid along the public roads (buried in a trench). Where there is adequate land in the road shoulder beside tarmac, pipe line will be buried in the earthen shoulder and where there is no space in road shoulder, pipeline will be laid under the tarmac. Many roads within habitations are narrow.

There are very few trees along the roads, pipeline alignment is being locally modified as required to save most trees.

Site Photograph



V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

85. Potential environmental impacts of the proposed infrastructure components are presented in this section. Mitigation measures to minimize/mitigate negative impacts, if any, are recommended along with the agency responsible for implementation. Monitoring actions to be conducted during the implementation phase is also recommended to reduce the impact.

86. Screening of potential environmental impacts are categorized into four categories considering subproject phases: location impacts and design impacts (pre-construction phase), construction phase impacts and operations and maintenance phase impacts.

- (i) **Location impacts** include impacts associated with site selection and include loss of on-site biophysical array and encroachment either directly or indirectly on adjacent environments. It also includes impacts on people who will lose their livelihood or any other structures by the development of that site.
- (ii) **Design impacts** include impacts arising from Investment Program design, including technology used, scale of operation/throughput, waste production, discharge specifications, pollution sources and ancillary services.
- (iii) **Construction impacts** include impacts caused by site clearing, earthworks, machinery, vehicles and workers. Construction site impacts include erosion, dust, noise, traffic congestion and waste production.
- (iv) **O & M impacts** include impacts arising from the operation and maintenance (O&M) activities of the infrastructure facility. These include routine management of operational waste streams, and occupational health and safety issues.

87. Screening of environmental impacts has been based on the impact magnitude (negligible/moderate / severe – in the order of increasing degree) and impact duration (temporary/permanent).

88. This section of the updated IEE reviews possible project-related impacts, in order to identify issues requiring further attention and screen out issues of no relevance. ADB SPS (2009) require that impacts and risks are analysed during pre-construction, construction, and operational stages in the context of the project's area of influence.

89. The ADB Rapid Environmental Assessment Checklist for water supply has been used to screen the project for environmental impacts and to determine the scope of the IEE.

90. In the case of this project (i) most of the individual elements involve straightforward construction and operation, so impacts are mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving excavation and earth movements; and some works are located in the reservoir and (iii) being mostly located in rural area, will not cause direct impact on biodiversity values. The project components have been located in properties held by the local government (Gram Panchyat) and private owners and access to the project location is through public rights-of-way and existing roads hence, land acquisition and encroachment on private property will not occur. The private lands will be purchased through negotiated settlements.

A. Pre-Construction Impacts – Design and Location

91. **Design of the Proposed Components.** Technical design of the (i) overhead reservoirs, (ii) distribution pipelines, and (iii) water connections and flow meters follow the relevant national planning and design guidelines, focusing on providing a robust system which is easy to operate, sustainable, efficient and economically viable. Following environmental considerations are included in the project:

- Gravity distribution system: designing the entire system to maintain optimal flow and terminal pressure, and optimizing the overall energy usage;
- Implementation of a water quality surveillance program including development of a laboratory as part of the project to ensure that supplied water meets the drinking water standards;
- Minimizing water losses from pipelines by perfect jointing and alignments using appropriate techniques;
- Reducing the incidence of water borne diseases by providing 100% population including urban poor with potable water supplies.

92. **Proposed Subproject Locations and Impacts.** Location impacts are associated with planning particularly on the site selection, and include impacts due to encroaching on sensitive areas, and impacts on the people who might lose their homes or livelihoods. All the project sites are along the public roads, and there are no environmentally sensitive features like forests or protected areas in the project location.

93. There are several water bodies/ low lying land parcels filled with water / ponds in most habitations. Although there is no direct impact as pipelines are not encroaching/disturbing these areas, there may be impacts during construction due to spilling of excavated soil or silt laden run off or washing of construction material, waste etc., into these ponds, and may adversely effect on their current usage (as fishery ponds). These impacts are being considered during construction phase. Most of the selected OHR sites are privately owned agricultural or vacant lands, some of which are low-lying lands. Discussion with the local people indicated that these lands were originally flat, but excavated for borrowing earth for increasing the level of adjoining areas. No significant negative impacts envisaged due to filling up and raising of these low- lying lands or ponds provided overall natural drainage system of the area is maintained. Although prima facie it appears these lands may not fall under the ambit of ‘fishery area’⁷ regulated under West Bengal Inland Fisheries Act, 1984, it needs to be reviewed during the detailed design stage about the applicability. Following measures needs to be implemented:

- Avoid using low-lying lands / ponds for construction of OHRs; alternative private lands may be explored within the vicinity;
- Review the applicability of West Bengal Inland Fisheries Act, 1984, whether the site falls under the definition of fisher area; obtained permission from Fisheries Department if required prior to start of construction.

⁷ Fisher area is defined as “any water area, naturally or artificially depressed land, irrespective of ownership measuring 0.035 ha or more, which retains water for more than 6 months and capable of being used as fishery.

94. **Tree cutting.** There are trees in some selected OHR sites (e.g., Shanpukuria, Joynagar, Tona, and Sastyangachi OHRs). These are mostly mango trees or of other local species. Also, there are trees along the public roads – especially on the main roads. As of now, no tree has been cut at any of the OHR sites. As per the final design no tree removal is required for laying of pipes. Till date, no tree cutting is required for any OHR construction and pipeline laying sites, however minor trimming has been performed in different OHR sites.

95. Following measures need to be implemented to compensate for the loss of tree cover if any.

- Minimize removal of trees by adopting to site condition and with appropriate layout design of OHRs within the sites;
- Avoid cutting of trees by adopting suitable alignment changes as required during laying of pipelines;
- In unavoidable cases, obtain prior permission for tree cutting;
- Plant and maintain 5 trees for each tree that is removed.

96. **Utilities.** Telephone lines, electric poles and wires, water lines within the proposed project locations may require to be shifted in few cases. To mitigate the adverse impacts due to relocation of the utilities, the contractor, in collaboration with the PHED will (i) identify the locations and operators of these utilities to prevent unnecessary disruption of services during construction phase; and (ii) instruct construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. According to detailed design no utility shifting is required for the zones mentioned under this report.

97. **Site Selection of Construction Work Camps, Stockpile Areas, Storage Areas, and Disposal Areas.** Priority is to locate these near the project location. However, if it is deemed necessary to locate elsewhere, sites considered do not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems. Residential areas are not being considered for setting up construction camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). However, in some zones existing houses are being rented to accommodate workers. Extreme care has been taken to avoid disposals, if any, near forest areas, water bodies.

98. **Site Selection of Sources of Materials.** Significant quantities of gravel, coarse aggregate and fine aggregate are required for construction works. Contractor is procuring these materials only from the quarries permitted/licensed by Mines and Geology Department. Contractor should, to the maximum extent possible, procure material from existing quarries, and creation of new quarry areas should be avoided as far as possible. If new quarries are required then the contractor is responsible for obtaining all permissions and clearances, including environmental clearance for mining. Contractor should factor in the time required for obtaining clearances including conduct of EIA if required under the law. It is construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of Department of Mines and Geology and local revenue administration.

B. Construction Impacts

99. Main civil works in the subproject includes construction of overhead reservoirs, at the identified sites, and laying of water supply pipelines (distribution lines). OHR works have been confined to sites, and construction includes general activities like site clearance, excavation for foundations, and creation of concrete structures (staging and reservoir). Since these works are confined to the boundary of identified sites, there is no direct interference of construction work with the surrounding land use. However, construction dust, noise, use of local roads for transportation of construction material, waste, labour camps etc., cause negative impacts, which are avoided or mitigated properly.

100. Subproject also include laying of distribution lines. Distribution lines are cover all habitations, and are being laid along all internal roads in the project area. Pipelines have been buried along the roads using open cut method.

101. Open cut trenching method of pipe laying involves excavation for laying pipes along the roads, placing pipes in the trench, jointing and testing, and refilling with the excavated soil. The trenches are of 1 m – 1.5 m wide and 1.5 to 2 m deep. Earthwork excavation is being undertaken by machine (backhoe excavator) or manually, while pipe laying works include laying of pipes at required gradient, fixing collars, elbows, tees, bends and other fittings including conveying the material to work spot and testing for water tightness. Sufficient care is being taken while laying so that existing utilities and cables are not damaged and pipes are not thrown into the trenches or dragged, but carefully laid in the trenches. As trenches are only 1.5-2 m deep, risk of collapse of trenches or damage to surrounding buildings is minimal. However, necessary precautions have been taken depending on the soil conditions, and wherever required measures such as bracing or shoring in the trench have been provided. Once they are laid, pipes will be joined as per specification and then tested for any cracks or leakages. For the existing sites where pipe laying has commenced, no extra soil has been accumulated for off-site disposal. All excavated soil has been fully reused on-site only.

102. Although pipe laying work involves quite simple techniques of civil work, the invasive nature of excavation and pipeline alignment in the built-up areas where there are a variety of human activities, leads to impacts to the environment and sensitive receptors such as residents, businesses, and the community in general. These anticipated impacts are temporary and for short duration, however, needs to be mitigated.

103. Anticipated impacts during the construction phase are discussed below along with appropriate mitigation measures to avoid, minimize or mitigate those impacts to acceptable levels.

104. **Sources of Materials.** Significant amount of sand and coarse aggregates is required for this project, which are being sourced from existing government approved quarries. Quarries inevitably cause extensive physical changes; as construction materials are excavated from the ground, leaving large cavities, or levelling hillsides, etc. The physical damage caused by quarries is controlled by allowing them to operate within specific limited areas only, so the damage is restricted in extent and not allowed to spread indiscriminately. New quarries are subject to a rigorous process of environmental assessment to ensure appropriate siting and adequate environmental controls on the operation. Therefore, it is important to ensure that construction materials for this project are obtained from government approved licensed quarries only, to ensure these controls are in place. Contractor should avoid new borrow pits/quarries as far as possible, if necessary, all the permissions, including conduct of environmental assessment, and environmental clearance as necessary shall be obtained prior to start of quarrying activity. The

contractor should also make a concerted effort to re-use as much excavated material from this project as possible. The construction contractor is required to:

- Obtain construction materials only from government approved quarries with prior approval of PIU;
- PIU to review, and ensure that proposed quarry sources have all necessary clearances/ permissions in place prior to approval;
- Contractor to submit to PIU on a monthly basis documentation on material obtained from each source (quarry/ borrow pit);
- Avoid creation of new borrow areas, quarries etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance prior to approval by PIU.

105. **Air Quality.** Construction work, especially from earthwork activities, coupled with dry and windy working conditions, material and debris transport, and works along the public roads carrying significant traffic, have high potential to generate dust. Also, emissions from construction vehicles, equipment, and machinery used for excavation and construction will induce impacts on the air quality. Anticipated impacts include dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons. Dust generation from OHR construction work is mainly during initial construction phase of earth work, as the site is confined, dust can be effectively controlled with common measures. Dust generation more significant during pipeline laying along the roads. Increase in dust/ particulate matter in ambient air is detrimental, and may have adverse impacts on people and environment. To mitigate the impacts, construction contractor is required to:

For All Construction Works

- Comply with the air pollution / dust control measures for construction activities stipulated by the “Direction of West Bengal Department of Environment under the Air Act, 1981 Direction No. EN/3170/T-IV-7 /001/2009 dated: 10 December 2009” (**Appendix 4**);
- Provide a dust screen/high compound wall around the construction sites (OHRs)
- Damp down the soil and any stockpiled material on site by water sprinkling;
- Use tarpaulins to cover the loose material (soil, sand, aggregate etc.,) when transported by trucks;
- Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry;
- Control dust generation while unloading the loose material (particularly aggregate, soil) at the site by sprinkling water and unloading inside the barricaded area
- Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in a stabilized condition
- Apply water prior to levelling or any other earth moving activity to keep the soil moist throughout the process;
- Control access to work area, prevent unnecessary movement of vehicle, public trespassing into work areas; limiting soil disturbance will minimize dust generation;
- Ensure that all the construction equipment and machineries are fitted with pollution control devices, which are operating correctly, and have a valid pollution under control (PUC) certificate

For Pipeline Works

- Barricade the construction area;
- Initiate site clearance and excavation work only after barricading of the site is done
- Confine all the material, excavated soil, debris, equipment, machinery (excavators, cranes etc.), to the barricaded area;
- Limit the stocking of excavated material at the site; remove the excess soil from the site immediately to the designated disposal area;
- Undertake the work section wise;
- Conduct work sequentially - excavation, pipe laying, backfilling; conduct pipe testing section-wise (for a minimum length as possible) so that backfilling, stabilization of soil can be done;
- Remove the excavated soil of first section to the disposal site; as the work progresses, sequentially, by the time second section is excavated, the first section is ready for back filling, use the freshly excavated soil for back filling, this will avoid stocking of material, and minimize the dust;
- Backfilled trench at any completed section after removal of barricading is the main source of dust pollution. The traffic, pedestrian movement and wind generate dust from backfilled section. Therefore, road restoration has been undertaken immediately.

106. **Surface Water Quality.** Run-off from stockpiled materials and chemicals from fuels and lubricants during construction works can contaminate downstream surface water quality of the water bodies, fishery ponds, streams and rivers. Project area receives considerable rainfall, although mostly confined during the monsoon months. There are a number of water bodies/ponds along the roads, where pipelines have been laid. It is important that runoff from the construction areas, which may contain silt and chemical traces do not enter these water bodies. Impact is temporary, but needs to be mitigated. Construction contractor is required to:

- All earthworks be conducted during the dry season to prevent the problem of soil run-off during monsoon season;
- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- Prioritize re-use of excess spoils and materials in the construction works. If spoils are disposed, only designated disposal areas are used
- Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. specially for piling activities of OHRs and pipeline canal crossing.
- Place storage areas for fuels and lubricants away from any drainage leading to water bodies
- Store fuel, construction chemicals etc., on an impervious floor, also avoid spillage by careful handling
- Dispose any wastes generated by construction activities in designated sites; and Conduct surface quality inspection according to the environmental management works during non-monsoon season certainly helps, but due to high water table, water may collect in pits as they are excavated. The water collected in excavated pits contain silt and disposal of this in drainage channels lead to silting. To avoid this the contractor is implementing the following measures:
- Create a temporary drainage channel around the work area to arrest the entry of runoff from upper areas into the work area;
- Pump out the water collected in the pits/excavations to a temporary sedimentation pond; dispose of only clarified water into drainage channels/streams after sedimentation in the temporary ponds;
- Consider safety aspects related to pit collapse due to accumulation of water.

107. **Generation of Construction Wastes.** Solid wastes generated from the construction activities are excess excavated earth (spoils), discarded construction materials, cement bags, wood, steel, oils, fuels and other similar items. Domestic solid wastes are also generated from the workers' camp. Improper waste management could cause odour and vermin problems, pollution and flow obstruction of nearby watercourses and could negatively impact the landscape. The following mitigation measures are being implemented at sites by the contractor to minimize impacts from waste generation.

- Prepare and implement a Construction Waste Management Plan;
- As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc.;
- Avoid stockpiling any excess spoils at the site for long time. If required excess excavated soils are disposed off at approved designated areas immediately;
- If disposal is required, the site shall be selected preferably from barren, infertile lands; site should be located away from residential areas, forests, water bodies and any other sensitive land uses;
- Domestic solid wastes are properly segregated in biodegradable and non-biodegradable for collection and disposal to designated solid waste disposal site; create a compost pit at workers' camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material is collected separately and sold in the local recycling material market;
- Residual and hazardous wastes such as oils, fuels, and lubricants are disposed of in disposal sites approved by WBPCB;
- Burning of construction and/or domestic waste are strictly prohibited;
- Ensured that wastes are not haphazardly thrown in and around the project site; provide proper collection bins, and create awareness to use the dust bins;
- Conduct site clearance and restoration to original condition after the completion of construction work; PIU to ensure that site is properly restored prior to issuing of construction completion certificate.

108. Safe practices are adopted for Horizontal Directional Drilling (HDD) process in large diameter pipeline and canal crossings.

- Muck & bentonite-based drilling mud released through horizontal directional drilling (HDD) method during laying and canal crossing will be managed properly to prevent spillage
- Abandoned drill holes will be filled or sealed to prevent any contamination
- Mud recycling systems will be used as per requirement to remove large particles like rocks and sand
- Muck will be dried in sunlight and reused for backfilling
- Regular dumping of excess muck will be done through dumping van in pre identified designated place

109. **Noise and Vibration Levels.** Most of the works are being implemented in rural setting, with thickly populated habitation areas and surrounding extensively cultivated agricultural lands. Noise and vibration impacts are minimal as most of the OHR sites are located outside habitation in agricultural lands. Few OHR sites are located adjoining schools and habitation areas, where there are houses, religious places and businesses. The sensitive receptors are the general population in these areas. Increase in noise level will be caused by breaking of bitumen roads for

laying of pipelines, operation of construction equipment like concrete mixers, and the transportation of equipment, materials, and people. Vibration generated from construction activity, for instance from the use of pneumatic drills, is expected to have impact on nearby buildings. This impact is negative but short-term, and reversible by mitigation measures. The construction contractor has been instructed to:

- Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which is expected to result in least disturbance;
- Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and
- Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity;
- Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;
- Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.

110. **Accessibility.** Excavation along the roads for laying of pipelines, hauling of construction materials and operation of equipment on-site can cause traffic problems. Roads connecting GLSR to OHR sites are main roads, but are narrow and carry considerable local traffic, mainly comprise bicycles, 2 wheelers, Mini trucks, auto rickshaws, buses etc., Vegetable cultivation is predominant in Bhangar II block, and large number of vehicles carrying vegetable produce to market can be seen in the area. Habitation areas mostly consists of very narrow streets, but the traffic is limited mostly to bicycles and two wheelers, and other transport vehicles. Distribution line works within habitation may result in accessibility issues to surrounding houses. Works related to OHRs are being confined to the selected sites, therefore there is no direct interference of these works with the traffic and accessibility. Hauling of construction material, equipment, construction waste, etc., to and from the work site may increase the road traffic on local roads, which are not in good condition. This is expected to cause inconvenience to the local community and road users. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor has been given the following responsibilities:

Hauling (material, waste/debris and equipment) Activities

- Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites
- Schedule transport and hauling activities during non-peak hours;
- Locate entry and exit points in areas where there is low potential for traffic congestion;
- Drive vehicles in a considerate manner
- Notify affected public by public information notices, providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.

Pipeline Works

- Confine work areas along the roads to the minimum possible extent; all the activities, including material and waste/surplus soil stocking should be confined to this area. Provide

barricading; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the as and when required

- Leave spaces for access between mounds of soil to maintain access to the houses/ properties
- Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access.
- Inform the affected local population 1-week in advance about the work schedule
- Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum.
- Keep the site free from all unnecessary obstructions;
- Coordinate with Police for temporary road diversions, where necessary, and for provision of traffic aids if transportation activities cannot be avoided during peak hours

111. **Socio-Economic – Income.** Due to non-availability of suitable government owned lands, OHRs are proposed on privately owned land parcels, which are either vacant or under agriculture. These land parcels have been purchased at market price with the willingness of the land owners to sell their property for the project. Resettlement and social issues are being studied in a parallel resettlement planning study of this subproject. Blocking of access to the business / livelihood activities, especially during pipeline laying along the roads, may impact the income of households. However, given mostly rural settlements, and also the measures suggested for ensuring accessibility during pipeline works, no notable impact is envisaged.

112. **Socio-Economic – Employment.** Manpower is required during the construction stage. This is resulting in generation of temporary employment and increase in local revenue. Thus, potential impact is positive and long-term. The construction contractor is engaging temporary local labours as far as possible.

113. **Occupational Health and Safety.** Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Potential impacts are negative and long-term but reversible by mitigation measures. The construction contractor is committed to:

- Comply with all national, state and local labour laws (**Appendix 6**);
- Develop and implement site-specific occupational health and safety (OHS) Plan and Supplementary H & S plan for COVID 19 issues as per the “**Standard Operating Procedure for Prevention and Risk Minimization of Corona Virus Disease (COVID-19) at the Facilities and Work Sites**” developed by PMU (**Appendix 15**) and implemented which includes measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment; (c) OHS Training⁸ and COVID 19 awareness H & S training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;

⁸ Some of the key areas that may be covered during training as they relate to the primary causes of accidents include, (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; (iv) workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker

- Ensure that qualified first-aid is provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;
- Provide medical insurance coverage for workers;
- Secure all installations from unauthorized intrusion and accident risks;
- Provide health and safety orientation training including COVID 19 awareness to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
- Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;
- Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
- Ensured moving equipment is outfitted with audible back-up alarms;
- Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate;
- The use of hearing protection shall be enforced actively.
- Provide supplies of potable drinking water;
- Provide clean eating areas where workers are not exposed to hazardous or noxious substances.

114. Standard Operating Procedure (SOP) for the project and Supplementary H & S plan for COVID 19, which is standalone document to be followed by contractor has been prepared for the project and specific package, which cover,

- General instruction to follow to prevent the spread of COVID-19 in construction workplace
- Detail (step-by-step) work procedure to getting the workplace ready under COVID-19 situation
- Worksite prevention practice and disinfection procedure at work site, office, during meeting, travelling, etc.
- Precaution taken at workmen habitat/ camp
- Control measures taken for deploying new workmen at site
- Use of PPEs: face mask – hand gloves, maintaining social distancing, disinfection, requirement of awareness covered under the H & S plan

115. **Asbestos Materials.** No Asbestos containing material (ACM) is proposed to be used in the subproject construction. There are however ACM in the existing water supply infrastructure, which will not be disturbed or come in contact with the workers and general public. It is pertinent to note here that to date no AC pipe has been encountered while working in this sub-project.

116. **Community Health and Safety.** Pipeline works along the road, and hauling of equipment and vehicles have potential to create safety risks to the community. Hazards posed to the public, specifically in high-pedestrian areas may include traffic accidents and vehicle collision with pedestrians. Potential impact is negative but short-term and reversible by mitigation measures. The construction contractor committed to,

- Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency)
- Enforce strict speed limit (20-30 kmph) for plying on unpaved roads, construction tracks
- Night-time driving is allowed by exception only, as approved by the PIU to minimise driving risk and disturbance to communities
- Adopt standard and safe practices for micro tunnelling
- Temporary traffic control (e.g. flagmen) and signs is being provided where necessary to improve safety and provide directions
- All drivers will undergo safety and training
- Public access to all areas where construction works are on-going is being restricted through the use of barricading and security personnel
- Warning signs, blinkers are being attached to the barricading to caution the public about the hazards associated with the works, and presence of deep excavation
- The period of time when the pipeline trench is left open is being minimized through careful planning
- Control dust pollution – implement dust control measures as suggested under air quality section
- Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.
- Provide road signs and flag persons to warn of on-going trenching activities.

117. **Construction Camps.** Contractor sets up construction camps – for temporary storage of construction material (pipes, cement, steel, fixtures, fuel, lubricants etc.), and stocking of surplus soil, which also include separate living areas for migrant workers. The contractor is being encouraged to engage local workers as much as possible. Outside workers will be not allowed due to widespread of COVID 19 infection. Operation of work camps can cause temporary air, noise and water pollution, and may become a source of conflicts, and unhealthy environment if not operated properly. Potential impacts are negative but short-term and reversible by mitigation measures. The construction contractor ensures that:

- As far as possible located the camp site within the work sites; if any camp to be established outside, then select a camp site away from residential areas (at least 100m buffer shall be maintained);
- Avoid tree cutting for setting up camp facilities;
- Camp site shall not be located near (100 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas
- Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit
- Provide proper temporary accommodation with proper materials, adequate lighting and ventilation, appropriate facilities for winters and summers; ensure conditions of liability at work camps are maintained at the highest standards possible at all times;
- Consult PIU before locating project offices, sheds, and construction plants;
- Minimize removal of vegetation and disallow cutting of trees
- Ensure conditions of liability at work camps are maintained at the highest standards possible at all times; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit- in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be allowed as accommodation for workers

- Camp should be protected from COVID 19 health risk. All Health and safety procedure to follow for operation of camp (H & S plan for COVID 19 will be used as ref. document) during stay, cooking, eating, use of toilet- common space etc.
- Self- hygiene, disinfection of entire camp and toilet, maintaining of social distancing to be continued for protection from COVID 19 infection
- Unknown person not allowed within the camp
- Maintenance of hygienic environment at staying area, cooking area and toilet
- Camp provided with proper drainage, there shall not be any water accumulation
- Provide drinking water, water for other uses, and sanitation facilities for employees
- Prohibit employees from cutting of trees for firewood; contractor should be providing proper facilities including cooking fuel (oil or gas; fire wood not allowed)
- Train employees in the storage and handling of materials which can potentially cause soil contamination
- Recover used oil and lubricants and reuse or remove from the site
- Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market
- Remove all wreckage, rubbish, or temporary structures which are no longer required
- At the completion of work, camp area shall be cleaned and restored to pre- project conditions, and submit report to PIU; PIU to review and approve camp clearance and closure of work site.

C. Operation and Maintenance Impacts

118. Once the construction is over the O&M of the water distribution system will be carried out by PHED (up to habitation) and Gram Panchayat (within habitation). Prior to supply of water, it will be ensured that the newly laid pipes are properly cleaned and disinfected. In water supply distribution system project, the impacts are primarily due to construction phase activities, and are not generally associated with any significant impacts as a result of activities during operation. During the system design life (15/30 years for mechanical/civil components) it shall not require major repairs or refurbishments and should operate with little maintenance beyond routine actions required to keep the equipment in working order. The stability and integrity of the system will be monitored continuously and any problems detected will be promptly restored. Any repairs which will be small-scale involving manual, temporary, and short-term works involving regular checking and recording of performance for signs of deterioration, servicing and replacement of parts.

119. Recurrence of pipe bursting and leakage problems can be managed by the leak detection, rectification and water auditing surveys. PHED will be required to ensure that the leak detection and rectification time is minimized.

120. Biological hazards are among the environmental risks that may adversely impact the health and wellness of the workers and the community. Breakouts of diseases such as diarrhea, flu or pandemics such as the COVID-19 shall be avoided. Designs and implementation of treatment systems shall ensure that disease-causing pathogens or viruses are disinfected and will not cause any health issues. The World Health Organization has released an interim guidance on Water, Sanitation, Hygiene and Waste Management for the COVID-19 virus. Measures on managing wastewater and faecal waste and keeping water supplies safe is critical to avoid the start or spread of any disease.

121. The citizens of the Bhangar II block will be the major beneficiaries of the improved water supply system, as they will be provided with a constant supply of potable water, piped into their

homes at an appropriate pressure. The project will improve the over-all health condition of the village as water borne diseases will be expected to be reduced, so people should spend less on healthcare and lose fewer working days due to illness, so their economic status should also improve, as well as their overall health. This should also improve the environment of these areas, should deliver major improvements in individual and community health and well-being.

122. The project is designed to deliver potable water in sufficient quantities to the consumers in their homes with proper terminal pressure. To ensure that water delivered to consumers at all times meets the drinking water standards, the following measures are suggested:

- Preparation and implementation of a water quality surveillance program including development of a laboratory as part of the project to ensure that supplied water meets the drinking water standards.
- Water quality surveillance program to cover consumer end water quality.

VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Overview

123. The active participation of stakeholders including local community, NGOs/CBOs, etc., in all stages of project preparation and implementation is essential for successful implementation of the project. It will ensure that the subprojects are designed, constructed, and operated with utmost consideration to local needs, ensures community acceptance, and will bring maximum benefits to the people. Public consultation and information disclosure are a must as per the ADB policy.

124. Most of the main stakeholders have already been identified and consulted during preparation of this IEE, and any others that are identified during project implementation can be brought into the process in the future. Primary stakeholders of the subproject are: residents, shopkeepers and businesspeople who live and work near sites where facilities are being built (OHRs and distribution lines), PHED, government and utility agencies responsible for provision of various services in project area, and West Bengal Pollution Control Board. Secondary stakeholders are: NGOs and CBOs working in the area, community representatives, beneficiary community in general, government agencies, Government of India and the ADB.

B. Public Consultation

1. Consultation during Project Preparation

125. Institutional consultations were conducted with the project agencies, and Government Departments such as PHED, Pollution Control Board, Kolkata Port Trust etc. The subproject proposal is formulated in consultation with the local bodies in the project area to suit their requirements.

126. Focus-group discussions with affected persons and other stakeholders were conducted to learn their views and concerns. A socio-economic household survey has been conducted in the project area, covering sample households, to understand the household characteristics, health status, and the infrastructure service levels, and also the demand for infrastructure services. General public and the people residing along the project activity areas were also consulted during visits to the project sites. Important issues or concerns that were raised by the stakeholders during consultations along with photographs and attendance sheets are provided in **Appendix 10**.

127. It has been observed that people are very happy about the project as the project area currently faces severe water problem due to lack of any potable water supply system as the groundwater in the area is arsenic contaminated. People are very much willing to extend their cooperation as the project will provide much needed potable water and enhance living standard of the public. There are no negative impacts perceived by the community, however, project team explained the likely issues during construction and proposed EMP to manage the negative impacts. Increasing traffic and disturbance to agricultural vehicle movement (vegetable transport from fields to market) during the work was raised during the meetings, and it was informed that proper care is being taken for movement of construction vehicles including traffic management plan, prior information to people etc., It was also informed no road closures are anticipated due to this work, and if needed during the construction phase, alternative access will be provided. These measures are included in the EMP.

2. Consultation during Construction

128. Prior to start of construction, PIU in coordination with the local bodies has conducted information dissemination sessions at various places and solicited the help of the local community, leaders/prominent citizens for successful implementation of the work. Focus Group Discussion (FGD) have been conducted to discuss and plan construction work (mainly pipeline work) with local communities to reduce disturbance and other impacts and also regarding the project grievance redress mechanism (GRM). A constant communication network has been established with the affected communities to redress the environmental issues likely to surface during construction phase. The summary of public consultations conducted during construction phase is attached in the **Appendix 10** along with attendance sheets, photographs and a sample public consultation sheet used at site has been attached in **Appendix 10**.

C. Information Disclosure

129. Executive summary of the IEE is translated in Bengali and made available at the offices of PMU, PIU, Block offices, and also displayed on their notice boards. Hard copies of the IEE are accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. Electronic version of the further updated IEE in English and Executive Summary in Bengali will be placed in the official website of the PHED, by PMU after approval of the IEE by Government and ADB. Stakeholders will also be made aware of grievance register and redress mechanism.

130. Public information campaigns to explain the project details to a wider population is being conducted. Public disclosure meetings are also being conducted at key project stages to inform the public of progress and future plans. Prior to start of construction, the PMU/PIU will issue Notification on the start date of implementation in local newspapers. A board showing the details of the project displayed at the construction site for the information of general public.

131. Local communities are being continuously consulted regarding location of construction camps, access and hauling routes and other likely disturbances during construction. The road closure together with the proposed detours are being communicated via advertising, pamphlets, radio broadcasts, road signage, etc.

D. Update on Public Consultation

132. The Safeguard and Gender Team jointly conducted public consultations at 21 places of Bhangar II block till August 2023. The consultations were held with Panchayat Pradhan, Upo-Pradhan, Gram Panchayat members, public representatives, beneficiaries/local villagers, land Sellers, housewives and PHED engineers. Table below provides details of locations where these consultations were conducted and the number of participants present during the consultation process. A total of 375 participants attended the consultation meetings out of which 168 (45%) were female participants. These consultations helped to understand the view of community about the project. Informal telephonic conversations with EHS officer and site supervisors of Bhangar II has been carried out regularly. **Table 15** summarised public consultation details.

Table 15: Details of Public Consultation Meeting in Bhangar II Block

| No. | Location | Date of Consultation | Zones covered under GP | Total No. of Participants | No. of Female Participants |
|---|----------------------------------|----------------------|------------------------|---------------------------|----------------------------|
| 1 | Bhogali-I GP | 11.07.19 | 9 & 17 | 27 | 12 |
| 2 | Polerhat I GP | 25.07.19 | 4 & 7 | 21 | 6 |
| 3 | Uttar Rajapur village | 26.12.19 | 16 | 10 | 1 |
| 4 | Chaltaberia Bijoyganj School | 14.01.20 | 13, 15 & 16 | 47 | 43 |
| 5 | Chaltaberia GP | 14.01.20 | 13, 15 & 16 | 35 | 20 |
| Consultation during Third Party Certification | | | | | |
| 6 | Sastyangachhi, Polerhat-I GP | 28.05.19 | 4 | 24 | 8 |
| 7 | Katadanga, Bhogali-II GP | 30.05.19 | 12 | 30 | 5 |
| 8 | Uttar Baniyara, Bhogali-II GP | 30.05.19 | 13 | 14 | 3 |
| 9 | ShanpukurKamarpara, Shanpukur GP | 31.05.19 | 10 | 24 | 19 |
| 10 | Kachua, Chaltaberiya GP | 03.12.19 | 15 | 27 | 11 |
| 11 | Joynagar, Polerhar I GP | 15.10.20 | 7 | 41 | 16 |
| 12 | Jawapur | 18.11.20 | 16 | 15 | 8 |
| 13 | Bhogali | 09.12.20 | 17 | 18 | 9 |
| 14 | Paikan, Bhangar II | 15.12.20 | 3 | 13 | 2 |
| 15 | Kulberia | 04.12.20 | 2 | 12 | 5 |
| 16 | Maniktala, Shanpukur GP | 31.05.22 | 10 | 3 | - |
| 17 | Dhapa Manpur | 08.08.22 | 1 | 3 | - |
| 18 | Dhapa Manpur | 17.08.22 | 1 | 2 | - |
| 19 | Polerhat II GP | 08.10.22 | 5 | 3 | - |
| 20 | Bhagwanpur GP | 03.02.23 | 14 | 3 | - |
| 21 | Shanpukur GP | 26.08.23 | 8 | 3 | - |

133. The public consultations were aimed to discussing on goals of the Project – (i) to supply safe Arsenic free drinking water to reduce health problem, (ii) use of surface water to save the ground water, (iii) livelihood generation for the poor and marginalized sections of the society, (iv) provision for Income augmentation as an attempt to stop migration, and (v) women empowerment.

134. Attendees mainly spoke about their happiness as the area was selected for this project. Land sellers expressed gratitude to be a part of this project. Some of the participants expressed concern about affordability to pay water tax, if imposed. However, majority agreed to pay the water charges for the safe drinking water to be made available through water connections to households, commercial units, educational, religious and health institutions. The consultations also helped to clarify that all pipelines will be installed in government land along roads and will be laid below ground.

135. All participants were informed about the roles and responsibilities of all stakeholders right from ADB, PHED, Consultants to the GP and VWSC (Village Water & Sanitation Committee), about training mechanism for GP/VWSC nominated persons for Operation and Maintenance of implemented systems. With special emphasis to women’s empowerment and their livelihood issues. Women members of the VWSC in the Gram Panchayat would be able to take leadership training and other training to perform their envisaged role.

136. Detailed discussions on Grievance Redress Mechanism (GRM) and ways to register Complaints/ Questions/ Comments/ suggestions was also elaborated to the GP members and participants during consultation. Organogram of GRM was provided to GP with request to distribute among public with phone no of Pradhan and GP members in every Gram Sansad. It was informed that one grievance registers were available at all sites for writing down comments / suggestions / complaints, if any. It was intimated that problems could be resolved through discussions at the site level. Summary of public consultations are noted in **Appendix 10**.

VII. GRIEVANCE REDRESS MECHANISM

137. A common GRM has been put in place to redress social, environmental or any other project and/or subproject related grievances. The GRM described below has been developed in consultation with stakeholders. Public awareness campaign has been conducted to ensure that awareness on the project and its grievance redress procedures is generated. The campaign ensured that the poor, vulnerable and others are made aware of grievance redress procedures and entitlements per project entitlement matrix, and PMU and concerned PIUs ensure that their grievances are addressed.

138. Affected persons have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaints/suggestion boxes or through telephone hotlines at accessible locations, by e-mail, by post, or by writing in a complaint register in Gram Panchayat office or PMU or PIU office. Careful documentation of the name of the complainant, date of receipt of the complaint, address / contact details of the person, location of the problem area, and how the problem was resolved is recorded. The names of the persons to be included in the Field Level GRM are already suggested. The Sample Grievance Registration Form has been translated in Bengali (**Appendix 11**). Sample grievance register is attached as **Appendix 11**. Notification was issued on constitution and function of GRC. GRC Notifications of PMU, PIU levels are attached in **Appendix 12**.

139. PMU Head, Safeguards and Gender Officer (HSGO) together with PIU Safeguard Officers are entrusted with the joint responsibility for timely grievance redressal on safeguards and gender issues and for registration of grievances, related disclosure, and communication with the aggrieved party. The affected persons are encouraged to seek a complaint registration number through the PIU.

140. The Grievance Redress Mechanism provides an accessible, inclusive, gender-sensitive and culturally appropriate platform for receiving and facilitating resolution of affected persons' grievances related to the project. A two-tier grievance redress mechanism is conceived, one, at project level and another, beyond project level. For the project level GRM, a Grievance Redress Cell is being established at PIU; the safeguards officers of the ESSU PIU, supported by the social safeguards specialist of DSICS is responsible for conducting periodic community meetings with affected communities to understand their concerns and help them through the process of grievance redressal including translating the complaints into Bengali or English, recording and registering grievances of non-literate affected persons and explaining the process of grievance redress mechanism. All expedient and minor grievances plan to resolved at field level; should the PIU fail to resolve any grievance within the stipulated time period, the PMU is being consulted and suggested actions by PMU taken by PIU with DSISC support, within specified time. PIU is also responsible for follow-through for each grievance, periodic information dissemination to complainants on the status of their grievance and recording their feedback (satisfaction/dissatisfaction and suggestions). In the event that certain grievances cannot be resolved at project level, they are being referred to the district steering committee (DSC), which also acts as grievance redress committee (GRC), particularly in matters related to land purchase/acquisition, payment of compensation, environmental pollution etc. Any higher than district level inter-departmental coordination or grievance redress required have been referred to the state level Steering Committee.

141. The GRM aims to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. All grievances – major or minor, are being registered. In case of grievances that are immediate and urgent in the perception of the

complainant, the contractor, and supervision personnel from the PIU supported by design, supervision and institutional support consultant (DSISC) tries to successfully resolve them in consultation with the Member, Panchayat and the Gram Panchayat Pradhan. In case of larger issues, they will seek the advice and assistance of the SE PIU. Grievances not redressed through this process within/at the project level within stipulated time period is referred to the DSC/GRC.

142. The DSC has been set up to monitor project implementation in each district. In its role as a GRC, the DSC will meet every month (if there are pending, registered grievances), determine the merit of each grievance, and resolve grievances within specified time upon receiving the complaint-filing which the grievance is being addressed by the state-level Steering Committee. The Steering Committee will resolve escalated/unresolved grievances received. Grievances remaining unresolved by Steering Committee may be referred by affected persons to appropriate courts of law. The multi-tier GRM for the project is outlined below (**Figure 8**), each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required. The GRC continues to function throughout the project duration. The PMU shall issue notifications to concerned PHE Divisions to establish the respective PIU (and field) level GRCs, with details of composition, process of grievance redress to be followed, and time limit for grievance redress at each level.

143. An aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

144. **Composition of Grievance Redress Committee and District Steering Committee.** The DSC, acting as GRC have District Magistrate (Chairperson), Superintending Engineer, PIU as Member Secretary, Additional Executive Officer, Zilla Parishad, Assistant (Social and Environmental) Safeguard Officers of the Environment and Social Safeguard Units (ESSU) of the PIU, Institutional Support and Capacity Building Officer, PIU, Block Development Officers from respective blocks, and representatives from the affected village panchayat and / or community, if any, eminent citizens, CBOs and NGOs. The DSC/GRC must have a minimum of two women members. In case of any indigenous people impacts in future subprojects, the DSC/GRC must have representation of the affected indigenous people community, including at least one female indigenous person, the chief of the tribe or a member of the tribal council as traditional arbitrator (to ensure that traditional grievance redress systems are integrated) and an NGO working with indigenous people groups.

145. The Hon'ble District Magistrate, North 24 Parganas suggested that PHED should put up the proposal for formation of the Steering Committee. The names/ positions of ADM, Zilla Parishad; ISGP Coordinator; Secretary, Zilla Parishad; NRDMS Coordinator and the CEO of NKDA are considered in the Steering Committee. The Importance of creating a WhatsApp group for effective communication is also considered. The steering committee is already formed for state and district level and copy is attached in **Appendix 12**.

146. **Areas of Jurisdiction.** The areas of jurisdiction of the GRC, headed by the District Magistrate covers (i) all locations or sites within the district where subproject facilities are proposed, or (ii) their areas of influence within the District. The Steering Committee has jurisdictional authority across the state (i.e., areas of influence of subproject facilities beyond district boundaries, if any).

147. **Record keeping.** Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and

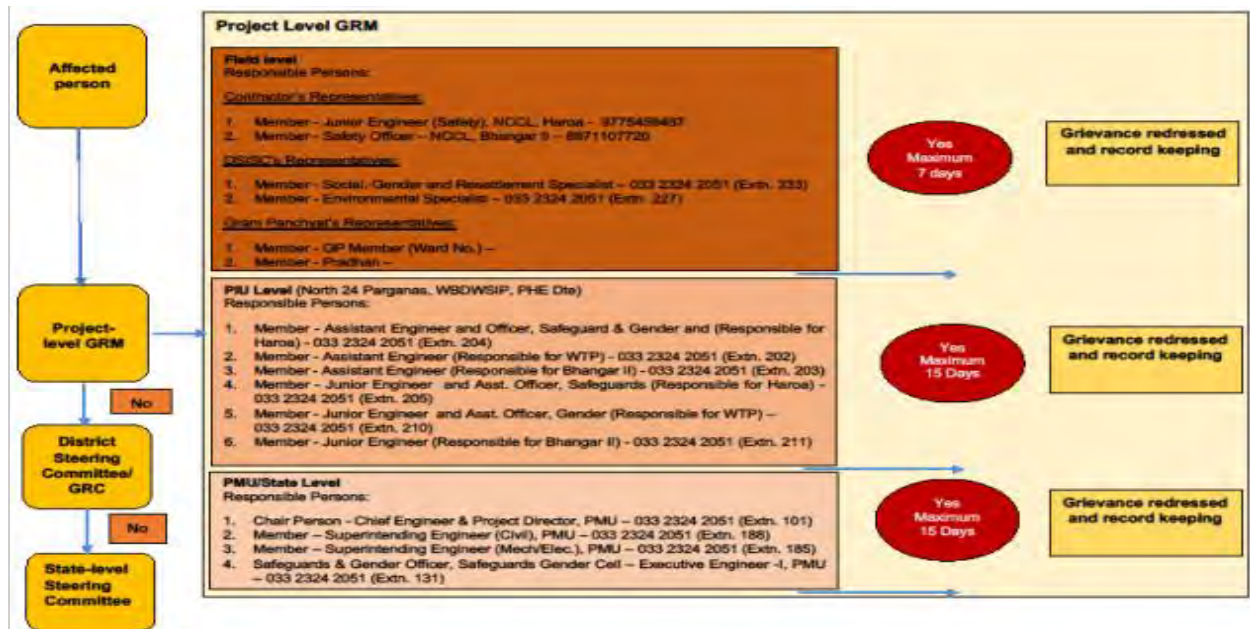
the date these were affected and final outcome is being kept by PIU (with the support of DSISC) and submitted to PMU.

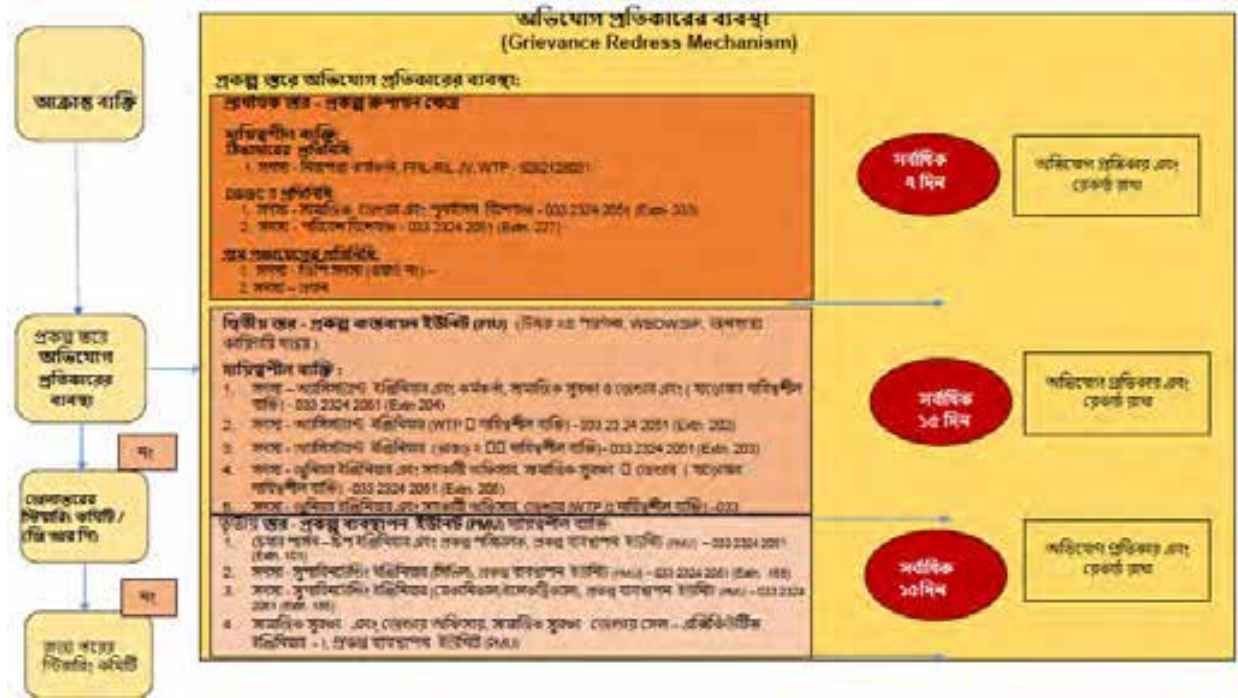
148. **Information Dissemination Methods of the GRM.** The PIU, assisted by DSISC is responsible for information dissemination to affected persons on grievance redressal procedure. Gram Panchayat/coverage area/affected area-wide public awareness campaigns are being conducted to ensure that awareness on grievance redress procedures is generated through the consultation and participation plan. Public awareness campaign is being conducted to ensure that awareness on the project and its grievance redress procedures is generated. The PIU assistant safeguard officers (environment and social) are assisted by DSISC safeguards specialists with information/collateral/awareness material etc. and in conducting project awareness campaigns. The campaign ensures that the poor, vulnerable and others are made aware of grievance redress procedures and entitlements per agreed entitlement matrix including who to contact and when, where/how to register grievance, various stages of grievance redress process, time likely to be taken for redressal of minor and major grievances, etc. Grievances received and responses provided are documented and reported back to the affected persons. The number of grievances recorded and resolved and the outcomes is displayed/disclosed in the PMU and PIU offices, Gram Panchayat/concerned local panchayat notice boards and on the web, as well as reported in the semi-annual environmental and social monitoring reports to be submitted to ADB. A Sample Grievance Registration Form as well as Sample site grievance register has been attached in **Appendix 11**.

149. **Periodic review and documentation of lessons learned.** The PMU Head, Safeguards and Gender Officer (HSGO) periodically reviews the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the PIU's ability to prevent and address grievances.

150. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) is being borne by the PMU. Cost estimates for grievance redress are included in resettlement cost estimates. Updated grievance redress committee (contact no.) in English and local language (Bengalee) is shown in **Figure 9**.

Figure 9: Grievance Redress Mechanism English & Bengali





DSISC=Design, Supervision and Institutional Support Consultant; ESSU=environmental and social safeguards unit, GRC=grievance redress committee; GRM=grievance redress mechanism, PIU= project implementation unit, PRD = Panchayat and Rural Development; PMU =project management unit, PHED=public health engineering department; SGC=safeguards and gender cell

151. **ADB's Accountability Mechanism.** In the event that the established GRM is not in a position to resolve the issue, the affected person can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB India Resident Mission. The complaint can be submitted in any of the official languages of ADB's developing member countries. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make a good faith effort to resolve their problems by working with the concerned ADB operations department (in this case, the resident mission). Only after doing that, and if they are still dissatisfied, they could approach the Accountability Mechanism. The ADB Accountability Mechanism information is included in the project-relevant information to be distributed to the affected communities, as part of the project GRM.

VIII. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan

152. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels.

153. The EMP guides environmentally-sound construction of the subproject and ensure efficient lines of communication between PHED, project management unit (PMU), project implementing unit (PIU), consultants and contractors. The EMP (i) ensures that the activities are undertaken in a responsible non-detrimental manner; (ii) provides a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guides and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) details specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (v) ensures that safety recommendations including COVID 19 related issues are complied with. The EMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It includes observations on- and off-site, document checks, and interviews with workers and beneficiaries.

154. The contractor submits to PIU, for review and approval, a site-specific environmental management plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; and (iv) budget for SEMP implementation. Contractor already submitted Site Specific Environment Management plan for the sites where construction has commenced. Detail status of SEMPs is given in **Table 3**. SEMPs are being developed for the zones where detailed design is completed and construction activities started. No works are allowed to commence prior to approval of SEMPs zone wise.

155. A copy of the EMP/approved SEMP is kept on site during the construction period at all times. The EMP is included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

156. For civil works, the contractor has committed to (i) carry out all mitigation and monitoring measures set forth in the approved SEMP; and (ii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer may prepare from time to time to monitor implementation of this IEE and SEMP. The contractor has allocated budget for compliance with these SEMP measures, requirements, and actions.

157. The following tables shows the potential environmental impacts, proposed mitigation measures and responsible agencies for implementation and monitoring for all the zones.

Table 16: Design Stage Environmental Impacts and Mitigation Measures

| Field | Anticipated Impact | Mitigation Measures | Responsibility of Mitigation | Cost and Source of Funds |
|--|---|--|---|--------------------------|
| Design of water supply system | Source sustainability and efficiency | (i) Gravity distribution system: Designed the entire system to maintain optimal flow and terminal pressure, and optimizing the overall energy usage (ii) To meet the drinking water standards, Implementation of a water quality surveillance program including development of a laboratory as part of the project is being carried out (iii) Minimizing water losses from pipelines by perfect jointing and alignments using appropriate techniques (iv) Steps have been taken to reduce the incidence of water borne diseases by providing 100% population including rural poor with potable water supplies | Contractor/ Project Implementation Unit (PIU) | Project Costs |
| Use of low-lying lands / ponds for project | Socio economic impact – loss fishery area | (i) Avoided low-lying lands / ponds for construction of overhead reservoirs (OHRs) (ii) Reviewed the applicability of West Bengal Inland Fisheries Act, 1984 to determine whether any of the site falls under the definition of fisheries area – to date no such site has been identified (iii) Obtain permission from Fisheries Department if required prior to start of construction | PIU | - |
| | Impact to natural drainage | (i) Some of these low-lying lands might be part of local natural drainage system. Therefore, filling of these lands should be done in such a way as not to hinder local natural drainage. For this purpose, if required, drains/ culverts should be constructed. (ii) While purchasing land, land types e.g. “jola”, “nayanjuli”, etc. denoting water bodies, should be avoided. If such lands must be purchased then local hydrology should be carefully studied and construction design be prepared accordingly so as not to hinder natural drainage pattern. | PIU/ DSISC | Project Costs |
| Layout plan of OHRs and pipeline alignment | Tree cutting | (i) Minimized removal of trees by adopting to site condition and with appropriate layout design of OHRs within the sites (ii) Avoided cutting of trees by adopting suitable alignment changes as required during laying of pipelines (iii) Till date no tree cutting requirement has been encountered for the sites where construction is undergoing. However, in future if such requirements arise appropriate permission will be obtained from concerned authority. (iv) In case of requirements, 5 trees for each tree that will be removed, will be planted and maintained. | Contractor/PIU | Project Costs |

Table 17: Pre-construction Stage Environmental Impacts and Mitigation Measures

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Monitoring of Mitigation | Cost and Source of Funds |
|--|---|---|---|---|--------------------------|
| Utilities | Telephone lines, electric poles and wires, water lines within proposed project area | (i) Operators of these utilities have been identified and included in the detailed design documents to prevent unnecessary disruption of services during construction phase; (ii) Construction contractor has prepared a contingency plan to include actions to be taken in case of unintentional interruption of services; and (iii) Contractor has prepared spoils (waste)management plan zone wise (Refer SEMP) and traffic management plan zone wise (Refer SEMP) | Contractor in collaboration with project implementation unit (PIU) and with approval of project management unit (PMU) | (i) List of affected utilities and operators; (ii) Bid document to include requirement for a contingency plan for service interruptions (example provision of water if disruption is more than 24 hours), waste management plan and traffic management plan. | Project cost |
| Construction work camps, stockpile areas, storage areas, and disposal areas. | Conflicts with local community; disruption to traffic flow and sensitive receptors | (i) Areas within or nearest possible vacant space in the project location have been identified; (ii) If it is deemed necessary to locate elsewhere, sites are being considered that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems; (iii) Residential areas are not being considered; (iv) Extreme care has been taken in selecting sites to avoid direct disposal near water body which may inconvenience the community. (v) Till date, no requirement for excess spoil disposal has been | Contractor to finalize locations in Consultation and approval of PIU | (i) List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas. (ii) Written consent of landowner/s (not lessee/s) | Project cost |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Monitoring of Mitigation | Cost and Source of Funds |
|----------------------|---|--|--|---|--------------------------|
| | | <p>encountered. If required, for excess spoil disposal, (a) sites will be selected from barren, infertile lands. In case agricultural land selected, written consent will be taken from landowners; (b) debris disposal site will be selected 200 m away from surface water bodies; (c) no residential areas be located within 50 m downwind side of the site; and (d) site will be selected 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.</p> <p>(vi) Spoil Management plan prepared zone wise and attached within SEMP</p> | | | |
| Sources of Materials | <p>Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, pond and water logging, and water pollution</p> | <p>(i) Construction materials are obtained only from government approved quarries with further approval (ii) PIU ensured that quarry sources have all necessary clearances/ permissions in place prior to approval (iii) Contractor submitted to PIU on a monthly basis documentation on material obtained from each source (quarry/ borrow pit) (iv) Creation of new borrow areas, quarries etc., have been avoided for the project to date; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance prior to approval by PIU</p> | <p>Contractor to prepare list of approved quarry sites and sources of materials with the approval of PIU</p> | <p>List of approved quarry sites and sources of materials</p> | <p>Project cost</p> |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Monitoring of Mitigation | Cost and Source of Funds |
|---|---|--|---|---|---|
| Consents, permits, clearances, No Objection Certificates (NOCs), etc. | Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works | (i) All necessary consents, permits, clearance, NOCs, etc. prior to award of civil works have been obtained. (ii) Permission for pipeline laying activities particularly road cutting has been obtained from GP, PWD and from irrigation department permission for canal crossing has been obtained. (iii) All necessary approvals for construction have been obtained by contractor before start of construction (iv) It has been acknowledged in writing and report on compliance of all obtained consents, permits, clearance, NOCs, etc. are provided. (Refer SEMP) (v) Detailed design drawings and documents are included. | PIU/ DSISC and Project Management Consultant (PMC)-before start of construction and contractor during implementation. | Incorporated in final design and communicated to contractors. | Cost of obtaining all consents, permits, clearance, NOCs, etc. prior to start of civil works responsibility of PIU. |
| Asbestos Cement Pipes | Health risk due to exposure to asbestos materials | (i) Details on location of underground Asbestos Cement pipes will be noted, if encountered (ii) To avoid encountering AC pipes the new pipes has been aligned carefully (iii) Asbestos Cement pipes, if encountered, will be left undisturbed in the ground. Sample chance find protocol attached as Appendix 14 | Contractor in coordination with PIU and PMC | Detailed construction drawing showing alignment of AC pipes | No cost required. Mitigation measures are part of terms of reference (TOR) of PIU and DSISC |

Table 18: Construction Stage Environmental Impacts and Mitigation Measures

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|---|--|--|----------------------------|--|
| Environmental Management Plan (EMP) Implementation Training including COVID 19 H & S plan | Irreversible impact to the environment, workers, and community | <ul style="list-style-type: none"> ✓ Project manager and all key workers have undergone training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OHS) including COVID 19 H & S awareness, core labour laws, applicable environmental laws, etc. ✓ All condition specified in the NOC from EKWMA shall be complied with. | Contractor | Project cost/project management unity (PMU) cost |
| Air Quality | Emissions from construction vehicles, equipment, and machinery used for installation of pipelines resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons. | <p>For all construction works</p> <ul style="list-style-type: none"> ✓ The air pollution / dust control measures for construction activities stipulated by the “Direction of West Bengal Department of Environment under the Air Act, 1981 Direction No. EN/3170/T-IV-7 /001/2009 dated: 10 December 2009” have been complied with. ✓ The soil and stockpiled material are damped down on site by water sprinkling ✓ Tarpaulins are used to cover the loose material (soil, sand, aggregate etc.) when transported by trucks; ✓ A dust screen/high compound wall around the construction sites (overhead reservoirs or OHRs) are provided. ✓ Wheels and undercarriage of haul trucks are cleaned prior to leaving construction site/quarry ✓ Sprinkling water and unloading inside the barricaded area have been made to Control dust generation while unloading the loose material (particularly aggregate, soil) at the site ✓ Surface soils are stabilized, where loaders, support equipment and vehicles operate, by using water ✓ Water is used prior to levelling or any other earth moving activity to keep the soil moist throughout the process ✓ Access is controlled to work area, preventing unnecessary movement of vehicle, public trespassing into work areas; limiting soil disturbance to minimize dust generation ✓ Unnecessary movement of vehicle are prevented to limit the soil disturbance which minimize dust generation. ✓ All construction equipment and machineries are fitted with pollution control devices and have a valid pollution under control (PUC) certificate <p>Pipeline works</p> | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|-----------------------|---|---|----------------------------|--|
| | | <ul style="list-style-type: none"> ✓ Construction areas are barricaded ✓ After barricading the site, site clearance is initiated and excavation work is done ✓ All the material, excavated soil, debris, equipment, machinery (excavators, cranes etc.), are confined within the barricaded area ✓ Sites are controlled from the stocking of excavated material and excess soil is reused on-site same day for backfilling of trenches ✓ Undertake the work section wise ✓ Sequentially excavation, pipe laying, backfilling and pipe testing section-wise (for a minimum length as possible) are conducted, so that backfilling, stabilization of soil can be done, this avoided stocking of material, and minimized the dust. ✓ Remove the excavated soil of first section to the disposal site; as the work progresses, sequentially, by the time second section is excavated, the first section will be ready for back filling, use the freshly excavated soil for back filling, this will avoid stocking of material, and minimize the dust. ✓ Backfilled trench at any completed section after removal of barricading is the main source of dust pollution. The traffic, pedestrian movement and wind generated dust from backfilled section. Road restoration is undertaken immediately and completed on the same-day. | | |
| Surface water quality | <p>Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during construction can contaminate nearby surface water quality.</p> <p>Ponding of water in the pits /foundation excavations</p> | <ul style="list-style-type: none"> ✓ All earthworks are conducted during the dry season to prevent the problem of soil run-off during monsoon season; ✓ Stockpiling of earth fill especially during the monsoon season are avoided unless covered by tarpaulins or plastic sheets; ✓ Excess spoils and debris are re-used in the construction works. Only designated area, if required, are used for soil disposal ✓ Temporary silt traps or sedimentation basins are installed along the drainage leading to the water bodies specially for piling activities of OHRs and pipeline canal crossing. ✓ Storage areas for fuels and lubricants have been placed away from any drainage leading to water bodies. ✓ Fuel, construction chemicals etc., are stored on an impervious floor, also spillage is avoided by careful handling ✓ Construction wastes are disposed in designated sites ✓ Temporary drainage channels are created around the work area to arrest the entry of runoff from upper areas into the work area ✓ The water collected in the pits / excavations are pumped to a temporary | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|---|---|--|----------------------------|--|
| | | sedimentation pond; clarified water is then disposed into drainage channels/streams after sedimentation in the temporary ponds ✓ Safety aspects are considered related to pit collapse due to accumulation of water | | |
| Noise Levels | Increase in noise level due to earth- moving and excavation equipment, and the transportation of equipment, materials, and people | ✓ Activities are planned in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which results in least disturbance; ✓ Horns are not be used unless it is necessary to warn other road users or animals of the vehicle's approach; ✓ Vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers are used in construction equipment to minimize sound impact to surrounding sensitive receptor; and ✓ Buildings which are at risk from vibration damage are identified and use of pneumatic drills or heavy vehicles in the vicinity are avoided. ✓ Local communities are consulted in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals. | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |
| Landscape and aesthetics – waste generation | Impacts due to excess excavated earth, excess construction materials, Bentonite sludge, Muck and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items | ✓ Construction Waste Management Plan is prepared and implemented ✓ As far as possible the debris and excess soil are utilized in construction purpose, for example for raising the ground level or construction of access roads etc., ✓ Stockpiles, lubricants, fuels, and other materials are located away from steep slopes and water bodies ✓ If required, for disposal, the site selected will be preferably from barren, infertile lands; site would be located away from residential areas, forests, water bodies and any other sensitive land uses ✓ Domestic solid wastes are properly segregated into biodegradable and non-biodegradable for collection and disposal to designated solid waste disposal site; compost pit is created at workers' camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material is collected separately and sold in the local recycling material market ✓ Residual and hazardous wastes such as oils, fuels, and lubricants are disposed of through approved vendors by West Bengal Pollution Control Board (WBPCB); ✓ Burning of construction and/or domestic waste are prohibited; ✓ Wastes are not haphazardly dumped/ thrown within and around the project site and adjacent areas; proper collection bins are provided, and | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|--|---|--|----------------------------|--|
| | | <p>awareness is created to use the dust bins.</p> <ul style="list-style-type: none"> ✓ Site clearance and restoration are done immediately after the completion of construction work to restore to the original condition; PIU ensures that site is properly restored prior to issuing of construction completion certificate ✓ Safe practices are adopted for Horizontal Directional Drilling (HDD) process in large diameter pipeline and canal crossings <ul style="list-style-type: none"> • Muck & bentonite-based drilling mud released through horizontal directional drilling (HDD) method during laying and canal crossing will be managed properly to prevent spillage • Abandoned drill holes will be filled or sealed to prevent any contamination • Mud recycling systems will be used as per requirement to remove large particles like rocks and sand • Muck will be dried in sunlight and reused for backfilling • Regular dumping of excess muck will be done through dumping van in pre identified designated place | | |
| Existing Infrastructure and Facilities | Disruption of service and damage to existing infrastructure at specified project location | <ul style="list-style-type: none"> ✓ List of affected utilities and operators are prepared if required; contingency plan is prepared to include actions to be done in case of unintentional interruption of service | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |
| Ecological Resources– Terrestrial | Loss of vegetation and tree cover | <ul style="list-style-type: none"> ✓ Removal of vegetation is minimized and cutting of trees has been disallowed, by adopting best site layout and pipeline alignments. ✓ Till date no tree cutting requirement has been encountered for the sites where construction is undergoing. However, in future if such requirements arise appropriate permission will be obtained from concerned authority. ✓ 5 native trees will be planted for every one that will be removed. | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |
| Accessibility | Traffic problems and conflicts near project locations and haul road | <p>Hauling (material, waste/debris and equipment) activities</p> <ul style="list-style-type: none"> ✓ Transportation routes has been planned so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites ✓ Transport and hauling activities are scheduled during non-peak hours; ✓ Entry and exit points are located in areas where there is low potential for traffic congestion; ✓ Vehicles are driven in a considerate manner | Construction Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|--------------------------------|--|---|----------------------------|--|
| | | <ul style="list-style-type: none"> ✓ Affected public are notified by public information notices, providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints. Pipeline works ✓ Work areas are confined along the roads to the minimum possible extent; all the activities, including material and waste/surplus soil stocking are confined to this area. barricading is provided; material/surplus soil stocking in congested areas is avoided – immediately reused on-site or removed from site/ or as and when required ✓ Spaces are left for access between mounds of soil to maintain access to the houses / properties ✓ Pedestrian access is provided at all the locations; wooden/metal planks are provided over the open trenches at each house to maintain the access. ✓ Affected local population are informed 1-week in advance about the work schedule ✓ The work is planned and executed in such a way that the period of disturbance/ loss of access is minimum. ✓ The site is kept free from all unnecessary obstructions; ✓ Coordinated with Police for temporary road diversions, where necessary, and for provision of traffic aids if transportation activities could not be permitted during peak hours | | |
| Socio- Economic - Employment | Generation of temporary employment and increase in local revenue | <ul style="list-style-type: none"> ✓ Local labour force is employed as far as possible ✓ Labour laws are complied with | Contractor | Contractor costs |
| Occupational Health and Safety | Occupational hazards which can arise during work | <ul style="list-style-type: none"> ✓ All national, state and local core labour laws are complied with (Appendix 6). Labour license is obtained and renewed. ✓ Develop and implement site-specific occupational health and Site-specific occupational health and safety (OHS) Plan and Supplementary H & S plan for COVID 19 have been developed and implemented which included measures such as: (a) excluding public from the site; (b) maintaining social distancing for protection from COVID 19 infection; (c) ensuring all workers are provided with and use personal protective equipment like helmet, gumboot, safety belt, gloves, nose mask, face mask and ear plugs; (d) OHS Training and COVID 19 awareness H & S training for all site personnel; (e) documented procedures to be followed for all site activities including follow of SOP for COVID 19 as developed for the project and H & S plan; and (f) | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|-------|--------------------|---|----------------------------|--------------------------|
| | | <p>documentation of work-related accidents;</p> <ul style="list-style-type: none"> ✓ Qualified first-aiders have been provided at all times. Equipped first-aid stations are easily accessible throughout the site; ✓ Medical tie-up with local hospitals is provided for workers; ✓ WC policy for workers obtained. ✓ All installations are secured from unauthorized intrusion and accident risks; ✓ Potable drinking water is provided; ✓ Clean eating areas are provided where workers are not exposed to hazardous or noxious substances; ✓ Health and safety orientation training are provided to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; ✓ Visitor orientation is provided if visitors to the site can gain access to areas where hazardous conditions or substances may be present. visitor/s are not allowed to enter hazardous areas unescorted; ✓ All workers and visitors at each operating site must be screened for symptoms of COVID-19 and appropriate mitigation measures such as mask, sanitization and social distancing, to the extent feasible, should be employed. SOP developed for COVID-19 shall be implemented at site. ✓ Visibility of workers is ensured through the use of high visibility vests when working in or walking through heavy equipment operating areas; ✓ Moving equipment are outfitted with audible back-up alarms; ✓ Sign boards are provided for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage is in accordance with international standards and are well known to, and easily understood by workers, visitors, and the general public as appropriate; ✓ Accident register/ PPE register has been maintained. ✓ Standard Operating Procedure (SOP) for the project and Supplementary H & S plan for COVID 19 prepared which cover, <ul style="list-style-type: none"> ○ General instruction to follow to prevent the spread of COVID-19 in construction workplace ○ Detail (step-by-step) work procedure to getting the workplace ready under COVID-19 situation ○ Worksite prevention practice at work site, office, during meeting, travelling, etc. | | |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|--------------------------------|---|--|----------------------------|--|
| | | <ul style="list-style-type: none"> ○ Precaution taken at workmen habitat/ camp ○ Control measures taken for deploying new workmen at site ○ Use of PPEs: face mask – hand gloves, maintaining social distancing, disinfection, requirement of awareness covered under the H & S plan. <p>(Separate H & S plan for COVID 19 as supplementary document developed and keep as standalone document to mitigate COVID 19 health risk)</p> | | |
| Asbestos Cement (AC) Materials | Health risks associated with AC pipes | No Asbestos containing material (ACM) is proposed to be used in the subproject construction. There are however ACM in the existing water supply infrastructure, which will not be disturbed or come in contact with the workers and general public. It is pertinent to note here that to date no AC pipe has been encountered in any of the zones where construction has commenced | Contractor | Contractor costs |
| Community Health and Safety. | Traffic accidents and vehicle collision with pedestrians during material and waste transportation | <ul style="list-style-type: none"> ✓ Movements of construction vehicles are restricted to defined access roads and demarcated working areas (unless in the event of an emergency) ✓ Strict speed limit (20-30 kph) is enforced for plying on unpaved roads, construction tracks ✓ Night-time haulage is by exception only, as approved by the PIU to minimize driving risk and disturbance to communities ✓ Safe practices are adopted for micro tunneling ✓ Temporary traffic control (e.g. flagmen) and signs are provided where necessary to improve safety and provide directions ✓ All drivers went through safety and training sessions ✓ Public access to all areas where construction works are on-going are restricted through the use of barricading and security personnel ✓ Warning signs, blinkers are attached to the barricading to caution the public about the hazards associated with the works, and presence of deep excavation ✓ The period of time when the pipeline trench is left open have been minimized through careful planning ✓ Control dust pollution – dust control measures are implemented as suggested under air quality section ✓ Vehicles are regularly maintained and manufacturer- approved parts are used to minimize potentially serious accidents caused by equipment malfunction or premature failure. Road signs and flag persons are there to | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|--------------------------|---|--|----------------------------|--|
| | | warn of on-going trenching activities. | | |
| Work Camps and worksites | <p>Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants</p> <p>Unsanitary and poor living conditions for workers</p> | <ul style="list-style-type: none"> ✓ Camp site is usually within the work sites; any camp site established outside are away from residential areas (at least 100 m buffer is maintained) ✓ Tree cutting for setting up camp facilities is avoided ✓ Camp site is not located near (100 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas ✓ The workers living areas and material storage areas are separated clearly with a fencing and separate entry and exit ✓ proper temporary accommodation with proper materials, adequate lighting and ventilation are provided, appropriate facilities are provided for winters and summers; conditions of livability at work camps are ensured and maintained at the highest standards possible at all times; ✓ PIU is consulted before locating project offices, sheds, and construction plants; ✓ Removal of vegetation is minimized and cutting of trees disallowed without permission from concerned authorities ✓ Conditions of livability at work camps are ensured and maintained at the highest standards possible at all times; living quarters and construction camps are provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., are not used as accommodation for workers ✓ Camp should be protected from COVID 19 health risk. All Health and safety procedure to follow for operation of camp (H & S plan for COVID 19 will be used as ref. document) during stay, cooking, eating, use of toilet-common space etc. ✓ Self- hygiene, regular disinfection of entire camp and toilet, maintaining of social distancing to be continued for protection from COVID 19 infection ✓ Unknown person not allowed within the camp ✓ Camps are provided with proper drainage, without any water accumulation ✓ Maintenance of hygienic environment at staying area, cooking area and toilet ✓ Drinking water, water for other uses, and sanitation facilities for employees are provided. ✓ Employees are prohibited from cutting of trees for firewood; contractor | Contractor | Cost for implementation of mitigation measures |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|---|---|--|----------------------------|--|
| | | <p>provided proper facilities including cooking fuel (oil or gas; fire wood not allowed)</p> <ul style="list-style-type: none"> ✓ Employees are trained in the storage and handling of materials which can potentially cause soil contamination ✓ Used oil and lubricants are recovered and removed from the site ✓ Solid waste is managed according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit is provided for biodegradable waste, and non-biodegradable / recyclable waste are collected and sold in local market ✓ All wreckage, rubbish, or temporary structures which are no longer required are removed ✓ At the completion of work, camp area will be cleaned and restored to pre-project conditions, and report will be submitted to PIU; PIU to review and approve camp clearance and closure of work site | | |
| Chance Finds | There are no protected properties in the subproject sites. However, in case of chance finds, contractors will be required to follow a protocol as defined in the mitigation measures. | <ul style="list-style-type: none"> ✓ In case of chance findings, Consult Archaeological Survey of India (ASI) or and West Bengal State Archaeology Department to be consulted to obtain an expert assessment of the archaeological potential of the site ✓ Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums will be included as project stakeholders so that their expertise can be made available. ✓ In case of chance finds, works must be stopped immediately until such time chance finds are cleared by experts | Contractor | Contractor cost |
| Submission of EMP implementation report | Unsatisfactory compliance to EMP | <ul style="list-style-type: none"> ✓ Appointment of Environment, Health and Safety (EHS) Supervisor to ensure EMP implementation ✓ Timely submission of monitoring reports including pictures | Contractor | Contractor cost |
| Post-construction clean-up | Damage due to debris, spoils, excess construction materials | <ul style="list-style-type: none"> ✓ Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required ✓ All excavated roads shall be are reinstated to original condition. ✓ All disrupted utilities restored ✓ All affected structures rehabilitated/compensated ✓ The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. | Contractor | Cost for implementation of mitigation measures responsibility of contractor. |

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|-------|--------------------|---|----------------------------|--------------------------|
| | | <ul style="list-style-type: none"> ✓ All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and re-grassed using the guidelines set out in the revegetation specification that forms part of this document. ✓ The contractor must arrange the cancellation of all temporary services. ✓ Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. | | |

Table 19: Operation Stage Environmental Impacts and Mitigation Measures

| Field | Anticipated Impact | Mitigation Measures | Responsible for Mitigation | Cost and Source of Funds |
|---|---|---|---|--------------------------|
| Check for blockage and leakage problems reducing the water losses | Loss of water, increased demand and inconvenience to consumers and general public | Effectiveness of leak detection and water auditing to reduce the water losses | Public Health Engineering Department (PHED) | Operating costs |
| Occupational health and safety | Health, social and economic impacts on the workers | <ul style="list-style-type: none"> (i) Provide appropriate PPE and training on its proper use and maintenance. (ii) Provide specific training on COVID 19 issues and availability of relevant specific PPEs for protection (COVID 19 H & S plan as ref material) (iii) Strictly follow H & S protocol as developed for COVID 19 pandemic during operation and maintenance (iv) Use fall protection equipment when working at heights. (v) Maintain work areas to minimize slipping and tripping hazards. (vi) Implement a training program for operators who work with chlorine regarding safe handling practices and emergency response procedures. Prepare escape plans from areas where there might be a chlorine emission. (vii) Install safety showers and eye wash stations near the chlorine equipment and other areas where hazardous chemicals are stored or used. (viii) Prohibit eating, smoking, and drinking except in designated areas. | PHED | Operating costs |
| Increased in sewage generation | Water pollution, and impacts on public health and environment | (i) Sanitation and sewerage/seepage facilities needs to be improved/provided in the project area to suit the increased sewage generation | PHED and respective local bodies (gram panchayat) | To be identified |

Table 20: Construction Stage Environmental Monitoring Plan

| Monitoring Field | Monitoring Location | Monitoring Parameters | Frequency | Responsibility | Cost and Source of Funds |
|---|--|--|---|--|--|
| Construction disturbances, nuisances, public and worker safety, | All work sites | Implementation of dust control, noise control, traffic management, and safety measures. Site inspection checklist to review implementation is maintained | Weekly during construction | Supervising staff and safeguards specialists | No costs required |
| Ambient air quality | 5 locations (to be selected during implementation to represent the overall project area) | <ul style="list-style-type: none"> PM₁₀, PM_{2.5}, NO₂, SO₂, CO | (i) Once before start of construction. (ii) Yearly 3 times (for seasons: pre-monsoon, post-monsoon and winter) during construction (3-years period considered) | Contractor | Cost for implementation of monitoring measures responsibility of contractor (45 samples x ₹4500 + 20 samples x ₹5000) = ₹ 3,02,500 ⁹ |
| Ambient noise | 5 locations (same as air quality monitoring) | <ul style="list-style-type: none"> Day time and night time noise levels (24 hours) | (i) Once before start of construction. (ii) Yearly 3 times (for seasons: pre-monsoon, post-monsoon and winter) during construction (3-years period considered) | Contractor | Cost for implementation of monitoring measures responsibility of contractor (45 samples x ₹1350 + 20 samples x ₹1500) = ₹ 90,750 ¹⁰ |
| Surface water quality | 2 locations (to be selected during implementation) | <ul style="list-style-type: none"> pH, Oil and grease, Cl, F, NO₃, TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity | Once before start of construction Half yearly during construction (3 - year construction period considered) | Contractor | Cost for implementation of monitoring measures responsibility of contractor (10 samples x ₹2860 + 8 samples x ₹4000 = ₹ 60,600 ¹¹ |
| COVID-19 Health Monitoring | At all operating sites | <ul style="list-style-type: none"> Known symptoms of COVID-19 e.g. fever, cough, etc. | Daily | Contractor | Cost for implementation of monitoring measures responsibility of contractor (10 thermal guns x 2000 per gun = 20,000) |

⁹ Cost revised and approved with increase in project implementation period.

¹⁰ Cost revised and approved with increase in project implementation period.

¹¹ Cost revised and approved with increase in project implementation period.

| Monitoring Field | Monitoring Location | Monitoring Parameters | Frequency | Responsibility | Cost and Source of Funds |
|-------------------------|--|---|--|-----------------------|---|
| Chance Finds | Areas protected by ASI or West Bengal State Archaeology Department | <ul style="list-style-type: none"> • Chance finds protocol | Before finalization of detailed design, consult with ASI or West Bengal State Archaeology Department | Contractor | Cost for implementation of monitoring measures responsibility of contractor |

Table 21: Operation Stage Environmental Monitoring Plan

| Monitoring Field | Monitoring Location | Monitoring Parameters | Frequency | Responsibility | Cost and Source of Funds |
|--|--|---|------------------|-----------------------|---|
| Monitoring of quality of water supplied to consumers | Consumer end- random sampling in all zones | pH, Nitrite, Nitrate, Turbidity BOD, Total Alkalinity, Total coliform and Faecal coliform | Monthly once | PHED | O&M costs (water quality will be tested at the internal laboratory part of water treatment plant) |

B. Implementation Arrangements

158. PHED is the executing agency and implementing agency for the WBDWSIP, responsible for management, coordination and execution of all activities funded under this sector project. PMU, established within the PHED, is implementing the project. PMU is supported by district level project implementation units (PIUs). PMU is headed by a Project Director (PD) as an IAS cadre. Each PIU is headed by a Superintending Engineer (SE), reporting to the PD. PMU with the support of PIUs is responsible for planning, implementation, monitoring and supervision, and coordination of all activities under the WBDWSIP. PMU is supported by project management consultant (PMC) to supervise, monitor and oversee the implementation. Each PIU is supported by a Design, Supervision and Institutional Support Consultant (DSISC).

159. **Safeguards Compliance Responsibilities.** A Safeguard and Gender Cell (SGC) has been established in PMU with the overall responsibility of ensuring compliance with ADB SPS to ensure consistency with PAM. SGC is headed by a Head, Safeguards and Gender Officer (HSGO) and reports to the Project Director directly. The HSGO has overall responsibility in implementation of the resettlement framework, EARF, RPs, EMPs, SEMP, GESI action plan, and appropriate monitoring and reporting responsibilities. Key safeguard tasks and responsibilities at the PMU level are as follows:

- Ensure subprojects confirms to exclusion criteria and project selection guidelines as stipulated in the EARF;
- Approve subproject environmental category;
- Approve IEEs; ensure that updated IEEs/EMPs reflect final project designs;
- Ensure that EMPs are included in bidding documents and civil works contracts;
- Ensure proper implementation of EMPs by contractors;
- Facilitate and ensure compliance with all government rules and regulations regarding site and environmental clearances, as well as any other environmental requirements (e.g. location clearance certificates, environmental clearance certificates), as relevant;
- Oversee public consultation and disclosure;
- Approve quarterly EMP implementation reports;
- Review and approve semi-annual monitoring reports prepared by PMC; and submit to ADB;
- Oversee grievances redress process and ensure timely redress;
- Undertake regular review of safeguards related loan covenants, and the compliance in program implementation; and
- Organize periodic capacity building and training programs for WBDWSIP stakeholders, PHED, PMU and PIU staff on safeguards.

160. The SGC is supported by environmental, social and gender safeguard specialists in the PMC. Key safeguard tasks and responsibilities of the PMC on safeguards are as follows:

- Review and finalize REA checklist and classify the project;
- Review and confirm project selection/ design; ensure compliance with exclusion criteria and project environmental selection guidelines;
- Review and finalize IEE reports including EMPs prepared/updated by PIUs/DSISCs;
- Oversee public consultation and information disclosure activities; ensure timely disclosure;
- Provide advise/support in obtaining government clearance/approvals;
- Review and confirm that IEEs/EMPs are included in bids and contracts;

- Review and confirm SEMP prepared by contractor;
- Oversee the implementation of SEMP by contractors and ensure corrective actions, where necessary;
- Review and approve quarterly environmental monitoring reports submitted by PIU/DSISCs;
- Conduct site visits of project facilities and work sites to oversee implementation;
- Prepare semi-annual environmental monitoring reports and submit to PMU SGC HSGO;
- Oversee grievance redress process; advise on critical grievance related to environmental issues and concerns; and
- Organize training and capacity development programs.

161. **Project Implementation Unit.** At each PIU, an Assistant Engineer has been given additional responsibilities of safeguard tasks and has been designated as Assistant Safeguards Officer (SO). The SO oversees the safeguards implementation at PIU level, coordinate public consultations, information disclosure, regulatory clearances and approvals, resettlement plan implementation, EMP implementation and grievance redressal. Key safeguard tasks and responsibilities of SO are as follows:

- Coordinate public consultation and information disclosure;
- Liaise with local offices of regulatory agencies in obtaining clearances /approvals; assist PMU for clearances obtained at state level;
- Review and approve contractors SEMPs;
- Oversee day-to-day implementation of SEMPs by contractors, including compliance with all government rules and regulations;
- Take necessary action for obtaining rights of way;
- Ensure continuous public consultation and awareness;
- Coordinate grievance redress process and ensure timely actions by all parties;
- Review monthly contractor's SEMP Monitoring Reports;
- Review and forward quarterly monitoring reports to PMU;
- Inform PMU of unanticipated impacts and formulate corrective action plan; and
- Recommend issuance of work construction work completion certification to the contractor upon verification of satisfactory post-construction clean-up.

162. The PIUs are assisted by DSISC teams which includes an Environmental Specialist (ES) and a Social Safeguards Specialist. Following are the key tasks:

- Assist PIU in identifying projects/components in compliance with the project exclusion criteria and selection guidelines stipulated in EARF;
- Prepare environmental screening checklists and submit to PMU for categorization; update checklist and category as and when required to reflect projects, and report to PMU;
- Work closely with PIU and design teams to include environmental considerations in project location, design and technical specifications;
- Identify statutory clearance / permissions / approvals required for subproject; assist PIU in obtaining them;
- Assist in including standards/conditions, if any, stipulated in regulatory clearances, consents in the project design;

- Update IEE and EMP to reflect any changes in subproject during detail design / implementation; IEE shall reflect the final project design;
- Lead/assist PIU in public consultation in compliance with the EARF; reflect inputs from public consultation in IEEs, EMPs, and project design;
- Advise / assist PIU in disclosing relevant information on safeguards to stakeholders, affected people etc.;
- Assist/ ensure all EMP measures related to project design and location and included in the detailed designs;
- Integrate EMP in to the bid and contract documents (for item rate contracts, include full IEE including EMP in bids);
- Advise contractor in preparation of SEMP as per the final design, prior to start of construction;
- Ensure that all necessary clearances/permission (including those required by Contractor) are in place prior to start of construction;
- Monitor implementation of SEMP;
- Ensure Contractors including subcontractors, if any, comply with the measures set forth in the EMP;
- Assist PIU in establishing GRM for the Project:
- Assist PIU in grievance redress, advise the contractor on appropriate actions on grievances, ensure timely resolution and proper documentation;
- Identify, if any, non-compliance or unanticipated impacts; initiate corrective actions, report to PMU;
- Review and approve monthly monitoring reports submitted by Contractor; consolidate and prepare quarterly Environmental Monitoring Reports (EMR) and submit to PMU; and
- Conduct training and capacity building activities (workshops, hands-on trainings, visits etc.) in EMP implementation.

163. **Civil works contracts and contractors.** IEEs are included in bidding and contract documents. The PMU and PIUs ensured that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable labour laws and core labour standards on (a) prohibition of child labour as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labour; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, COVID 19 risk to employees and local communities surrounding the project sites. The contractor is required to appoint an Environment, Health and Safety (EHS) supervisor to implement EMP. The EHS Supervisor updates the EMP and submits a SEMP for approval of PIU. Contractors are carrying out all environmental mitigation and monitoring measures outlined in EMP, approved SEMP and their contracts. Key responsibilities of the EHS supervisor are:

- Prepare SEMP and submit to PIU for approval prior to start of construction;
- Conduct orientation and daily briefing sessions to workers on environment, health and safety including risk and protection measures for COVID 19;
- Ensure that appropriate worker facilities are provided at the work place and labour camps as per the contractual provisions;
- Records accidents and undertake remedial actions;
- Implement SEMP measures and report to PIU/DSISC if any new impacts are surfaced; seek guidance from as required in EMP implementation;
- Conduct environmental monitoring (air, noise etc.) as per the monitoring plan

- Ensure conduct of water quality surveillance program;
- Prepare monthly EMP monitoring reports and submit to PIU;
- Work closely with PIU Safeguards Officer and consultants to ensure communities are aware of project-related impacts, mitigation measures and GRM; and
- Address any public compliance and grievances effectively and in timely manner.

C. Capacity Building and Training

164. PMU HSGO and PIU Safeguard Officers have been trained by PMC and DSISC's safeguards experts on safeguards issues related to the project, GESI action plan and GRM. The EARF, Resettlement Framework, IPPF and GESI action plan provided indicative capacity building program which included modules on: (i) introduction and sensitization to ADB SPS on environmental, involuntary resettlement and indigenous people policies and requirements; (ii) project related requirements as provided in the EARF, resettlement framework, PPF and Gender, ESI action plan, (iii) review, updating and preparation of the IEEs, SEMP, resettlement plans, DDRs and IPPs (as required) upon the completion of project detailed design; (iii) improved coordination within nodal departments; iv) monitoring and reporting system; and (v) project GRM. Briefings on safeguards principles, GRM and GESI action plan have been conducted to the contractors upon their mobilization by PIU Safeguard Officers supported by DSISCs.

165. The following **Table 22** presents the outline of capacity building program to ensure EMP implementation. The estimated cost is ₹250,000 (excluding trainings of contractors which will be part of EMP implementation cost during construction) and covered by the project's capacity building program. The detailed cost and specific modules have been customized for the available skill set after assessing the capabilities of the target participants and the requirements of the project by the Environmental Safeguard of PMC.

Table 22: Outline Capacity Building Program on EMP Implementation

| Description | Target Participants and Venue | Estimate (Rupees) | Cost and Source of Funds |
|---|--|---------------------------|---------------------------------------|
| 1. Introduction and Sensitization to Environmental Issues (1 day) - ADB Safeguards Policy Statement - Government of India and West Bengal applicable safeguard laws, regulations and policies including but not limited to core labor standards, occupational health and safety, etc. - Incorporation of environmental management plan (EMP) into the project design and contracts Monitoring, reporting and corrective action planning | All staff and consultants involved in the project At project management unit (PMU) (combined program for all subprojects) | Rs. 100,000.00 | Included in the overall program cost |
| 2. EMP implementation (1/2 day) -- EMP mitigation and monitoring measures | All project implementation unit (PIU) staff, contractor staff and consultants | Rs. 100,000.00 (Lump sum) | Included in subproject cost estimates |

| Description | Target Participants and Venue | Estimate (Rupees) | Cost and Source of Funds |
|---|--|--------------------------|--------------------------|
| <ul style="list-style-type: none"> - Roles and responsibilities -- Public relations, - Consultations -- Grievance redress -- Monitoring and corrective action planning -- Reporting and disclosure -- Construction site standard operating procedures (SOP) - Health & safety, specifically health risk from COVID 19. -- Chance find (archeological) protocol --AC pipe protocol Traffic management plan --Waste management plan --Site clean-up and restoration | involved in the subproject at PIU | | |
| <p>3. Contractors Orientation to Workers (1/2 day)</p> <ul style="list-style-type: none"> - Environment, health and safety in project construction - Health impact and protection from COVID 19 | <p>Once before start of work, and thereafter regular briefing every month once.</p> <p>Daily briefing on safety prior to start of work</p> <p>All workers (including unskilled laborers)</p> | Rs. 50,000.00 (Lump sum) | Contractor's cost |

D. Monitoring and Reporting

166. Immediately after mobilization and prior to commencement of the works, the contractor submitted a compliance report to PIU that all identified pre-construction mitigation measures as detailed in the EMP have been undertaken. Contractor has confirmed that the staff for EMP implementation (EHS supervisor) has been mobilized. PIU reviewed, and approved the report and permitted commencement of works.

167. During construction, results from internal monitoring by the contractor has reflected in their monthly EMP implementation reports to the PIU. DSISC has reviewed and advised contractors for corrective actions wherever necessary. Quarterly report summarizing compliance and corrective measures taken has been prepared by PMC and submitted to PMU. During operation, the contractor is required to conduct management and monitoring actions as per the operation stage EMP, and submit to PMU a quarterly report on EMP implementation and compliance.

168. Based on monthly and quarterly reports and measurements received from DSISC through PIU, PMU (assisted by PMC) has submitted semi-annual environmental monitoring report (SEMR) (Template referred as **Appendix 13**). Once concurrence from the ADB is received the report will be disclosed on PHED/PMU websites.

169. ADB reviews project performance against the WBDWSIP commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities are commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards are integrated into the project performance management system.

170. ADB's monitoring and supervision activities are carried out on an on-going basis until a Project Completion Report (PCR) is issued. ADB issues a PCR within 1-2 years after the project is physically completed and in operation.

E. Environmental Management Plan Implementation Cost

171. Most of the mitigation measures require the contractors to adopt good site practices, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. The costs which are specific to EMP implementation and are not covered elsewhere in the projects are given below.

Table 23: Cost Estimates to Implement the Environmental Management Plan

| | Particulars | Stages | Unit | Total Number | Rate (₹) | Cost (₹) | Costs Covered By |
|-----------|---|--------------|-----------------|--------------|-------------|------------------|------------------------|
| A. | Implementation staff | | | | | | |
| 1 | Environment, health and safety (EHS) supervisor | Construction | per month | 36 | 50,000 | 1,800,000 | Civil works contract |
| | Subtotal (A) | | | | | 1,800,000 | |
| B. | Mitigation Measures | | | | | | |
| 1 | Provision for tree cutting and compensatory plantation measures (1:5 ratio replantation) | Construction | Per tree | 150 | 1,000 | 150,000 | Civil works contract |
| 2 | Traffic management at work sites (Pavement Markings, Channelizing Devices, Arrow Panels and Warning Lights) | Construction | Lump sum | - | - | 250,000 | Civil works contract |
| 3 | Provision for COVID-19 preventive measures e.g mask, sanitizer, etc. | Construction | Lump sum | - | - | 180,000 | Health & Safety budget |
| | Subtotal (B) | | | | | 580,000 | |
| C. | Monitoring Measures | | | | | | |
| 1 | Air quality monitoring | Construction | per sample | 45 & 20 | 4500 & 5000 | 3,02,500 | item rate contract |
| 2 | Noise levels monitoring | Construction | Per sample | 45 & 20 | 1350 & 1500 | 90,750 | item rate contract |
| 3 | Surface water monitoring | Construction | Per sample | 10 & 8 | 2860 & 4000 | 60,600 | item rate contract |
| 4 | COVID-19 health monitoring at operating sites | Construction | Per thermal gun | 10 | 2000 | 20,000 | item rate contract |
| 5 | Water quality monitoring at consumer end | Operation | Lump sum / | - | - | 10,000 | item rate contract |

| | Particulars | Stages | Unit | Total Number | Rate (₹) | Cost (₹) | Costs Covered By |
|--|--|-------------------------------|----------|--------------|----------|-------------------|--------------------|
| | | | year | | | | |
| | Subtotal (C) | | | | | 483,850 | |
| D. | Capacity Building | | | | | | |
| 1. | Training on environmental management plan (EMP) implementation | Pre-construction | lump sum | | | 100,000 | PMU |
| 2. | Preparation of plans and protocols (traffic management plan, waste (spoils) management plan etc. | Pre-construction | Lump sum | | | 25,000 | item rate contract |
| 3. | Contractors Orientation to Workers on EMP implementation | Prior to dispatch to worksite | Lump sum | | | 50,000 | item rate contract |
| | Subtotal (D) | | | | | 175,000 | |
| | Total (A+B+C+D) | | | | | 30,038,850 | |
| Contractor Cost- Rs. 29,038,850/- | | | | | | | |
| PMU Cost – Rs.100,000/- | | | | | | | |
| Total- Rs.30,038,850/- | | | | | | | |

IX. CONCLUSION AND RECOMMENDATIONS

172. The process described in this document has assessed the environmental impacts of all elements of the proposed water supply distribution system subproject for Bhangar II Block. All potential impacts were identified in relation to pre-construction, construction, and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning and design process wherever possible; thus, environmental impacts as being due to the project design or location were not significant.

173. The main design impacts of water supply system in general are due to abstraction of water. This subproject does not include any new source development or augmentation of existing sources or water treatment. Treated water for the subproject will be provided from bulk water supply system that is being developed under a parallel subproject, and the environmental impacts of which are assessed through another IEE.

174. Due to non-availability of suitable government owned land, most of the selected OHR sites are privately owned agricultural or vacant lands, some of which are low-lying lands/ ponds. No significant negative impacts envisaged due to filling up and raising of these low-lying lands or ponds, provided overall natural drainage system is maintained. Based on the NOC obtained from authority, it is confirmed that these lands do not fall under the Sundarban. There are trees in some selected OHR sites (e.g., Shanpukuria, Joynagar, Tona, OHRs), and also along the roads where pipelines are being laid. Measures have been suggested to avoid, minimize, and carryout compensatory tree plantation in a ratio of 1:5. Proposed pipelines are laid along all the roads in the project area.

175. South 24 Parganas district is home to environmental sensitive areas like Sundarbans Biosphere Reserve (SBR) and East Kolkata Wetland (EKW). Based on detailed designs, no works is being conducted in the Sundarban Biosphere Reserve areas, except for small civil works in Bhangar II block of 24 South Parganas where the site for GLSR and small pipes are in the outer periphery of the transition zone of Sundarban biosphere reserve. The project preparatory team has noted that the site and alignment are in developed areas and construction is allowed. The project has not considered any components in the buffer or core areas. Chintamani Kar Bird Sanctuary is in the southwest of the project area at about 20-30 km from the project area. NOC from Sundarban Biosphere reserve has been obtained.

176. Based on the detailed design and survey it has been found that water supply distribution pipes laying route in three zones will passes through EKW areas (zone 1, zone 2 and zone 18) under the jurisdiction of EKW Management Authority. Accordingly, no overhead reservoir constructions will be done in these three distribution zones and application was submitted to the EKW Management Authority (EKWMA) for granting permission for pipe laying works in the EKW area falling under. The EKWMA has given NOC for pipe laying in these three EKW zones. Further, land for overhead reservoirs in zone 2 and zone 18 have been procured outside the EKW, while the OHR for zone -1 has been constructed in the same location as for zone-18.

177. Construction activities are confined to the selected sites, so that the interference with the general public and community around is minimal. There are temporary negative impacts, arising mainly from construction dust and noise, hauling of construction material, waste and equipment on local roads (traffic, dust, safety etc.), mining of construction material, occupation health and safety aspects including COVID 19 risks and prevention. During the construction phase of pipeline work along the public roads, impacts arise from the construction dust and noise; from movement of JCBs for the pipe laying, and from the need to dispose of large quantities of waste soil. The

social impacts (access disruptions) due to construction activities are minimal. These are all general impacts of construction in habitation areas, and there are well developed methods of mitigation that are suggested in the EMP.

178. Anticipated impacts of water distribution system during O&M are expected to be related to detection and repair of leaks, pipe bursts. These are, however, likely to be minimal, as proper design and selection of good quality pipe material shall mean that leaks are minimal. Leak repair work is similar to the pipe-laying work. Therefore, no notable operation phase impacts are anticipated from the subproject.

179. The public participation processes undertaken during project design ensured stakeholders are engaged during the preparation and updation of the IEE. The planned information disclosure measures and process for carrying out consultation with affected people has facilitated their participation during project implementation.

180. The project's grievance redress mechanism has provided the citizens with a platform for redress their grievances, and describes the informal and formal channels, time frame, and mechanisms for resolving complaints about environmental performance.

181. The EMP has assisted the project agencies and contractor in mitigating the environmental impacts, and guide them in the environmentally sound execution of the proposed project.

182. A copy of the EMP/approved SEMP is kept on-site during the construction period at all times. The EMP has been made binding on all contractors operating on the site, and is included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

183. The project will benefit the public by contributing to the long-term improvement of water supply system and community liability in the project block of Bhangar II. The potential adverse environmental impacts are mainly related to construction period, which can be minimized by the mitigating measures and environmentally sound engineering and construction practices.

184. Therefore, as per ADB SPS, the project is classified as environmental category B and does not require further environmental impact assessment.

185. This is updated IEE finalized after finalization of design for all zones in respect to OHRs and distribution networks. No additional impact is noted during finalization of design for all the zones. No tree felling is required even after finalization of all designs. This IEE document will be updated in case of any change in design & location and will be reviewed by PMU, and further submitted to ADB for approval.

186. **Recommendations.** PMU, PIUs, and contractors to ensure that: (i) package wise details and evidences such as photographs/ display board for grievance redress mechanism (GRM)/ health and safety (H&S) measures taken at work sites due to COVID 19 pandemic are included in monthly monitoring report; and (ii) ensure that efficient implementation of the H&S Plan developed by the project in response to COVID-19 pandemic. Important protocols or measures in the H&S Plan are to ensure that the following are complied with at the offices and worksites of the project: (i) screening of employees and workers; (ii) record keeping of screening results; (iii) availability and use of appropriate PPEs; (iv) social distancing; (v) proper office set up reconfiguration to ensure social distancing; (vi) new office and work site meeting arrangements; and (vii) regular disinfection of work areas, vehicles and equipment; among others. PIU

safeguards officer with the assistance of the safeguard experts of PMC/DSISCs and Contractors EHS officers of all districts are reminded to take precautions, provide continuous induction and continue conducting regular safeguards implementation trainings including implementation monitoring of regular usage of PPEs and COVID-19 related safety measures. Key reminders for the PMU, PIUs, contractors, and workers to comply with the following occupational health and safety measures as stated in the agreed OHS Plan:

- (i) Ensure project staff, consultants, contractors, and workers have in their mobile devices the Aarogya Setu App, which is a mobile application developed and recommended by the government to proactively reach out to and inform the users of the app regarding risks, best practices and relevant advisories pertaining to the containment of COVID-19;
- (ii) Mandatory isolation of the personnel or workers, either asymptomatic or showing symptoms, who have had direct contact with anyone tested positive for COVID-19. Follow the isolation procedures issued by the government;
- (iii) Proper disposal of used PPE following guidelines and procedures issued by the government;
- (iv) Conduct daily briefing on the developments of COVID-19 in the state or country, either through emails, meetings or daily toolbox talks;
- (v) When possible, allow work from home arrangement based on the nature of jobs;
- (vi) If necessary, pick up and drop off facility be extended to staff (based on the distance of the staff residence from office and on availability of safe mode of transport);
- (vii) Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing. Do not convene in-person meetings of more than 10 people;
- (viii) If possible, conduct all meetings via conference calls. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussions;
- (ix) Contractor to help its workers arrange a systematic procurement of all daily needs and groceries at worksites. This will avoid each and every worker going to shops for these daily needs;
- (x) Contractor to arrange for contactless payment of wages to workers, where possible;
- (xi) Allow distributed breaktimes for workers to maintain social distancing and reduce contact;
- (xii) Remind employees and workers to maintain good health by getting adequate sleep; eating a balanced and healthy diet, avoiding alcohol/smoking; and consuming plenty of fluids; and
- (xiii) Remind employees and workers to extend their adherence to the H&S protocols at their respective homes. Infection may happen beyond the borders of offices and work sites.

APPENDIX 1: RAPID EA CHECKLIST

UPDATED RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST

Country/Project Title: India / West Bengal Drinking Water Sector Improvement Project – Water Supply Distribution System for Bhangar II Community Development Blocks

Sector Division: Urban Development and Water Division

| Screening Questions | Yes | No | Remarks |
|--|-----|----|---|
| Water Supply | | | |
| A. Project Siting Is the project area... | | | |
| ▪ Densely populated? | √ | | Subproject activities extend to the entire Bhangar II block including the densely populated areas. There are no major negative impacts envisaged, because pipeline will be located within ROW alongside the existing roads and can be constructed without causing any permanent impact to houses, and commercial establishments. OHRs site is sufficient away from habitations. |
| ▪ Heavy with development activities? | | √ | Now a day's urban expansion is considerable |
| ▪ Adjacent to or within any environmentally sensitive areas? | √ | | South 24 Parganas district is home to environmental sensitive areas like Sundarbans Biosphere Reserve (SBR) and East Kolkata Wetland (EKW). No impact is envisaged due to any project components. |
| • Cultural heritage site | | √ | |
| • Protected Area | | √ | |
| • Wetland | | √ | Based on the detailed design and survey it has been found that water supply distribution pipes laying route in three zones will pass through EKW areas (zone 1, zone 2 and zone 18) under the jurisdiction of EKW Management Authority. Alternative land for three OHRs outside the EKW are being identified and application has been submitted to the EKW Management Authority (EKWMA) for granting permission for pipe laying works in the EKW area falling under three distribution zones. The EMWMA has given NOC for pipe laying in the three EKW zone |
| • Mangrove | | √ | |
| • Estuarine | | √ | |
| • Buffer zone of protected area | | √ | |
| • Special area for protecting biodiversity | | √ | Based on detailed designs, no works is being conducted in the Sundarban Biosphere Reserve areas, except for small civil works in Bhangar II block of 24 South Parganas where the site for GSLR and small pipes are in the outer periphery of the transition zone of Sundarban biosphere reserve. The project preparatory team has noted that the site and alignment are in developed areas and construction is |

| Screening Questions | Yes | No | Remarks |
|---|-----|----|---|
| | | | allowed. The project has not considered any components in the buffer or core areas. Chintamani Kar Bird Sanctuary is in the southwest of the project area at about 20-30 km from the project area. NOC from Sundarban Biosphere reserve has been obtained |
| • Bay | | √ | |
| B.Potential Environmental Impacts Will the Project cause. | | √ | |
| • Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion run off? | | √ | Subproject deals with provision of distribution system. No source augmentation or treatment are part of this. Treated water will be supplied from bulk water supply system being developed under a parallel subproject, and the treated water quality will meet the drinking waters standards |
| • Impairment historical/cultural monuments/ areas loss/ damage to sites? | | √ | Project will have no any effect on historical/cultural monuments as there are no such monuments within influence of proposed works |
| • Hazard of land subsidence caused by excessive ground water pumping? | | √ | Only surface water will be used for water supply, no ground water pumping will be required |
| • Social conflicts arising from displacement of communities? | | √ | Project does not involve land acquisition /displacement. Land purchased at market rates. Social impacts are assessed through Resettlement Planning study of subproject |
| • Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters? | | √ | Not applicable; subproject development/operation. does not involve source |
| • Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)? | √ | | Raw water may contain pathogens or mineral constituents and efficient treatment process will be required under the project |
| • Delivery of unsafe water to distribution system? | √ | | Unsafe water may be delivered if efficient water treatment is not done at WTP |
| • Inadequate protection of intake works or wells, leading to pollution of water supply? | √ | | Protection of intake works should be ensured |
| • Over pumping of ground water, leading to salinization and ground subsidence? | | √ | No ground water will be used in the project |
| • Excessive algal growth in storage reservoir? | √ | | Excessive algal growth may occur if storage reservoirs are not maintained regularly. Proper treatment, post chlorination and regular cleaning of storage reservoirs will be conducted during operation |
| • Increase in production of sewage beyond capabilities of community facilities? | √ | | Water supply rate considered (70 lpcd) appropriately, however, improvement in sanitation and sewerage facilities is necessary. |
| • Inadequate disposal of | | √ | Not applicable |

| Screening Questions | Yes | No | Remarks |
|--|-----|----|--|
| Sludge from water treatment plants? | | | |
| <ul style="list-style-type: none"> Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities? | √ | | Low noise pumps and machineries should be used in pumping stations to avoid noise to nearby public |
| <ul style="list-style-type: none"> Impairments associated with transmission lines and access roads? | √ | | Temporary impairments may be anticipated along the new transmission line routes during construction stage. |
| <ul style="list-style-type: none"> Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals. | | √ | Not applicable |
| <ul style="list-style-type: none"> Health and safety hazards to workers from the management of chlorine used for disinfection and other contaminants? | | √ | Not applicable |
| <ul style="list-style-type: none"> Dislocation or involuntary resettlement of people | | √ | Project does not involve land acquisition /displacement. Land purchased at market rates. Social impacts are assessed through Resettlement Planning study of subproject |
| <ul style="list-style-type: none"> Social conflicts between construction workers from other areas and community workers? | | √ | The contractor will be utilizing the local labour force as far as possible; in case if it is unavoidable, labour camps and facilities will be provided appropriately. No conflicts envisaged |
| <ul style="list-style-type: none"> Noise and dust from construction activities? | √ | | All the construction machineries employed will comply with noise emission standards of Central Pollution Control Board. Dust suppression measures such as water sprinkling will be employed |
| <ul style="list-style-type: none"> Increased road traffic due to interference of construction activities? | √ | | Excavation and laying pipelines along public roads will interfere with the traffic. Construction material transport will increase traffic on the local roads. Proper traffic management and construction planning will be ensured to minimize the interference |
| <ul style="list-style-type: none"> Continuing soil erosion/silt runoff from construction operations? | √ | | Construction work during monsoon shall be carried out with due care so that silt run off due to construction operation is prevented. No construction will be allowed during rains. |
| <ul style="list-style-type: none"> Delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems? | | √ | Unsafe water may be delivered if efficient water treatment is not done at WTP Appropriate O&M will be conducted |
| <ul style="list-style-type: none"> Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals? | | √ | Not envisaged. Non corrosive materials pipe will be used for distribution networks |

| Screening Questions | Yes | No | Remarks |
|---|-----|----|--|
| • Accidental leakage of chlorine gas? | | √ | Not applicable |
| • Excessive abstraction of water affecting downstream water users? | | √ | Not applicable |
| • Competing uses of water? | | √ | Not applicable. Water for the project is allocated by Government and only allocated water shall be used for water supply services |
| • Increased sewage flow due to increased water supply | √ | | Sanitation and sewerage need to be improved |
| • Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant | √ | | Sanitation and sewerage need to be improved |
| • large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? | | √ | Most of the unskilled workers will be hired locally, some of skilled workers will be brought from outside but numbers will not so large to have impacts on social infrastructure and services |
| • social conflicts if workers from other regions or countries are hired? | | √ | Outside workers will remain in labor camps and no social conflicts will be envisaged |
| • risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction? | | √ | No explosives shall be used in project. Fuel and other chemicals will be used in very less quantities which will not have significant impact on community health and safety. Safe handling of fuels and chemicals will be ensured by contractor. |
| • Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? | √ | | Community safety risk may be there during construction during excavation for pipe laying, equipment and vehicle operation, etc. for which mitigation measures will be required by contractor |

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: India / West Bengal Drinking Water Sector Improvement Project – Water Supply Distribution System for Bhangar II Community Development Blocks

Sector: Urban Development

Subsector: Water Supply

Division/Department: SARD/SAUW

| Climate Change and Disaster Risk Questions | Yes | No | Remarks |
|---|-----|----|---------------------------------------|
| The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks. | | | |
| Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes? | √ | | Area is prone for floods and cyclones |
| Could changes in temperature, precipitation, or extreme events patterns over the Project lifespan affect technical or financial sustainability (e.g., changes in rainfall patterns disrupt reliability of water supply; sea level rise creates salinity intrusion into proposed water supply source)? | | √ | No |
| Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)? | | √ | No |
| Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by using water from a vulnerable source that is relied upon by many user groups, or encouraging settlement in earthquake zones)? | | √ | No |

APPENDIX 2: NATIONAL AMBIENT QUALITY STANDARDS

Table 1: Ambient Air Quality Standards

| Parameter | Location ^a | India Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ^b | WHO Air Quality Guidelines ($\mu\text{g}/\text{m}^3$) | | Applicable Per ADB SPS ^e ($\mu\text{g}/\text{m}^3$) |
|-------------------------|--|--|---|-----------------------------------|--|
| | | | Global Update ^c 2005 | Second Edition 2000 | |
| PM ₁₀ | Industrial Residential, Rural and Other Areas | 60 (Annual) 100 (24-hr) | 20 (Annual) 50 (24-hr) | - | 20 (Annual) 50 (24-hr) |
| | Sensitive Area | 60 (Annual) 100 (24-hr) | 20 (Annual) 50 (24-hr) | - | 20 (Annual) 50 (24-hr) |
| PM ₂₅ | Industrial Residential, Rural and Other Areas | 40 (Annual) 60 (24-hr) | 10 (Annual) 25 (24-hr) | - | 10 (Annual) 25 (24-hr) |
| | Sensitive Area | 40 (Annual) 60 (24-hr) | 10 (Annual) 25 (24-hr) | - | 10 (Annual) 25 (24-hr) |
| SO ₂ | Industrial Residential, Rural and Other Areas | 50 (Annual) 80 (24-hr) | 20 (24-hr) 500 (10-min) | - | 50 (Annual) 20 (24-hr) 500 (10-min) |
| | Sensitive Area | 20 (Annual) 80 (24-hr) | 20 (24-hr) 500 (10-min) | - | 20 (Annual) 20 (24-hr) 500 (10-min) |
| NO ₂ | Industrial Residential, Rural and Other Areas | 40 (Annual) 80 (24-hr) | 40 (Annual) 200 (1-hr) | - | 40 (Annual) 80 (24-hr) 200 (1-hr) |
| | Sensitive Area | 30 (Annual) 80 (24-hr) | 40 (Annual) 200 (1-hr) | - | 30 (Annual) 80 (24-hr) 200 (1-hr) |
| CO | Industrial Residential, Rural and Other Areas | 2,000 (8-hr) 4,000 (1-hr) | - | 10,000 (8-hr) 100,000 (15-min) | 2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min) |
| | Sensitive Area | 2,000 (8-hr) 4,000 (1-hr) | - | 10,000 (8-hr) 100,000 (15-min) | 2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min) |
| Ozone (O ₃) | Industrial Residential, Rural and Other Areas | 100 (8-hr) 180 (1-hr) | 100 (8-hr) | | 100 (8-hr) 180 (1-hr) |
| | Sensitive Area | 100 (8-hr) 180 (1-hr) | 100 (8-hr) | | 100 (8-hr) 180 (1-hr) |
| Lead (Pb) | Industrial, Residential, Rural and Other Areas | 0.5 (Annual) 1.0 (24-hr) | | 0.5 (Annual) | 0.5 (Annual) 1.0 (24-hr) |

| Parameter | Location ^a | India Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ^b | WHO Air Quality Guidelines ($\mu\text{g}/\text{m}^3$) | | Applicable Per ADB SPS ^e ($\mu\text{g}/\text{m}^3$) |
|--|---|--|---|---------------------|--|
| | | | Global Update ^c 2005 | Second Edition 2000 | |
| | Sensitive Area | 0.5 (Annual) 1.0 (24-hr) | | 0.5 (Annual) | 0.5 (Annual) 1.0 (24-hr) |
| Ammonia (NH ₃) | Industrial Residential, Rural and Other Areas | 100 (Annual) 400 (24-hr) | | | 100 (Annual) 400 (24-hr) |
| | Sensitive Area | 100 (Annual) 400 (24-hr) | | | 100 (Annual) 400 (24-hr) |
| Benzene (C ₆ H ₆) | Industrial Residential, Rural and Other Areas | 5 (Annual) | | | 5 (Annual) |
| | Sensitive Area | 5 (Annual) | | | 5 (Annual) |
| Benzo(o)p yrene (BaP) particulate phase only | Industrial Residential, Rural and Other Areas | 0.001 (Annual) | | | 0.001 (Annual) |
| | Sensitive Area | 0.001 (Annual) | | | 0.001 (Annual) |
| Arsenic (As) | Industrial Residential, Rural and Other Areas | 0.006 (Annual) | | | 0.006 (Annual) |
| | Sensitive Area | 0.006 (Annual) | | | 0.006 (Annual) |
| Nickel (Ni) | Industrial Residential, Rural and Other Areas | 0.02 (Annual) | | | 0.02 (Annual) |
| | Sensitive Area | 0.02 (Annual) | | | 0.02 (Annual) |

^a Sensitive area refers to such areas notified by the India Central Government.

^b Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

^c WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. Global update 2005. WHO 2006

^d Air Quality Guidelines for Europe Second Edition. WHO 2000

^e Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS

Ambient Noise Quality standards

| Area code | Category of area/zone | Limit dB(A) | |
|-----------|-----------------------|-------------|------------|
| | | Day time | Night time |
| A | Industrial area | 75 | 70 |
| B | Commercial area | 65 | 55 |
| C | Residential area | 55 | 45 |
| D | Silence zone | 50 | 40 |

APPENDIX 3: VEHICLE EXHAUST EMISSION NORMS

VEHICLE EXHAUST EMISSION NORMS

1. Passenger Cars

| Norms | CO(g/km) | HC+ NOx(g/km) |
|------------------------|------------|-----------------|
| 1991Norms | 14.3-27.1 | 2.0(Only HC) |
| 1996 Norms | 8.68-12.40 | 3.00-4.36 |
| 1998Norms | 4.34-6.20 | 1.50-2.18 |
| India stage 2000 norms | 2.72 | 0.97 |
| Bharat stage-II | 2.2 | 0.5 |
| Bharat Stage-III | 2.3 | 0.35 (combined) |
| Bharat Stage-IV | 1.0 | 0.18 (combined) |

2. Heavy Diesel Vehicles

| Norms | CO(g/kmhr) | HC (g/kmhr) | NOx (g/kmhr) | PM(g/kmhr) |
|------------------------|------------|-------------|--------------|------------|
| 1991Norms | 14 | 3.5 | 18 | - |
| 1996 Norms | 11.2 | 2.4 | 14.4 | - |
| India stage 2000 norms | 4.5 | 1.1 | 8.0 | 0.36 |
| Bharat stage-II | 4.0 | 1.1 | 7.0 | 0.15 |
| Bharat Stage-III | 2.1 | 1.6 | 5.0 | 0.10 |
| Bharat Stage-IV | 1.5 | 0.96 | 3.5 | 0.02 |

Source: Central Pollution Control Board

CO = Carbon Monoxide; g/kmhr = grams per kilometer-hour; HC = Hydrocarbons; NOx = oxides of nitrogen; PM = Particulates Matter

APPENDIX 4: AIR POLLUTION FROM CONSTRUCTION ACTIVITY

DEPARTMENT OF ENVIRONMENT'S DIRECTION UNDER AIR ACT, 1981 FOR CONTROL OF AIR POLLUTION FROM CONSTRUCTION ACTIVITIES IN WEST BENGAL



Department of Environment
Government of West Bengal
Writers' Buildings, "G" Block, (2nd. Floor),
Kolkata-700 001.

No. EN/3170/T-IV-7/001/2009

Dated: December 10th, 2009.

DIRECTION

WHEREAS, Department of Environment, Govt. of West Bengal is entrusted to look after the execution of the different environmental laws within the territorial jurisdiction of West Bengal and also responsible for maintaining pollution free environment and also responsible for restraining different environment hazardous activities which are causing serious impact on human beings, other living creatures, plant, micro-organism, property or the environment ;

AND WHEREAS, Department of Environment has already taken different steps for controlling air pollution in the atmosphere generated from the different sources i.e. industrial source, vehicular source and burning of bio-mass;

AND WHEREAS, Department of Environment in exercising the power conferred under section 19 of the Air (Prevention & Control of Pollution) Act, 1981, has already declared entire West Bengal as 'Air Pollution Control Area';

AND WHEREAS, West Bengal Pollution Control Board conducted a study with the help of the Asian Development Bank and it is revealed that the contribution of the construction activities is one of the source of air pollution in Kolkata and its surroundings ;

AND WHEREAS, it is further revealed that burning of old tyres in hot mix plant as a fuel during construction and repairs of road for melting coal tar contributes significant obnoxious element into the air which cause a serious problem of the human beings ;

HENCE, in view of the above and in consultation with the West Bengal Pollution Control Board and in exercise of the power conferred under Air (Prevention & Control of Pollution) Act, 1981 and Environment (Protection) Act, 1986, all the municipalities, local authorities and all other concerned Govt. Departments within the State of West Bengal, are now directed to take immediate steps to implement the following norms which need to be strictly followed by the developers, contractors or any other infrastructure developers ;

- Preventive measures need to be taken: -
 - a) Wrap construction area/buildings with geotextile fabric, installing dust barriers, or other actions, as appropriate for the location,
 - b) Apply water and maintain soils in a visible damp or crusted condition for temporary stabilization,
 - c) Apply water prior to levelling or any other earth moving activity to keep the soil moist throughout the process;
 - d) Limit vehicle speeds to 15 mph on the work site.
 - e) Clean wheels and undercarriage of haul trucks prior to leaving construction site.
 - f) Apply and maintain dust suppressant on haul routes.
 - g) Apply a cover or screen to stockpiles and stabilize stockpiles at completion of activity by water and maintain a dust palliative to all outer surfaces of the stockpiles;
 - h) Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in a stabilized condition where loaders, support equipment and vehicles will operate;
 - i) Stabilize adjacent disturbed soils following paving activities with immediate landscaping activity or installation of vegetative or rock cover.
 - j) Maintain dust control during working hours and clean track out from paved surfaces at the end of the work shift/day. Track out must now extend 50 feet or more and must be cleaned daily, at the minimum.
 - k) Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slope,
 - l) Disposal of debris in consultation with the local authorities following proper environmental management practice.
 - m) During construction work, including cutting of marbles, ambient noise level should not exceed more than 65 dB(A).

Local Police Station is also directed to render all necessary help to the Local Authorities to implement the aforementioned direction in a befitting manner.

This order will take effect from 01-01-2010 through out the State of West Bengal.

By Order,
Sd/-
(M. L. Meena)
Principal Secretary to the Govt. of West Bengal.
Department of Environment.

APPENDIX 5:C & D WASTE MANAGEMENT RULES
EXTRACT FROM CONSTRUCTION and DEMOLITION MANAGEMENT RULES, 2016

[Published In the Gazette of India, Part-II, Section-3, Sub-section (ii)]
Ministry of Environment, Forest and Climate Change

NOTIFICATION

New Delhi, the 29th March, 2016

G.S.R. 317(E).-Whereas the Municipal Solid Wastes (Management and Handling) Rules, 2000 published vide notification number S.O. 908(E), dated the 25th September, 2000 by the Government of India in the erstwhile Ministry of Environment and Forests, provided a regulatory frame work for management of Municipal Solid Waste generated in the urban area of the country;

And whereas, to make these rules more effective and to improve the collection, segregation, recycling, treatment and disposal of solid waste in an environmentally sound manner, the Central Government reviewed the existing rules and it was considered necessary to revise the existing rules with a emphasis on the roles and accountability of waste generators and various stakeholders, give thrust to segregation, recovery, reuse, recycle at source, address in detail the management of construction and demolition waste.

And whereas, the draft rules, namely, the Solid Waste Management Rules, 2015 with a separate chapter on construction and demolition waste were published by the Central Government in the Ministry of Environment, Forest and Climate Change vide G.S.R. 451 (E), dated the 3rd June, 2015 inviting objections or suggestions from the public within sixty days from the date of publication of the said notification;

And Whereas, the objections or suggestions received within the stipulated period were duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sections 6, 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Municipal Solid Wastes (Management and Handling) Rules, 2000, except as respect things done or omitted to be done before such supersession, the Central Government hereby notifies the following rules for Management of Construction and Demolition Waste –

1. Short title and commencement.-(1) These rules shall be called the Construction and Demolition Waste Management Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Application.-The rules shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organisation or authority who generates construction and demolition waste such as building materials, debris, rubble.

3. Definitions –(1) In these rules, unless the context otherwise requires,-

(a) "ACT" means the Environment (Protection) Act, 1986 (29 of 1986);

(b) "**construction**" means the process of erecting of building or built facility or other structure, or

building of infrastructure including alteration in these entities.;

- (c) **"construction and demolition waste"** means the waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure;
 - (d) **"de-construction"** means a planned selective demolition in which salvage, re-use and recycling of the demolished structure is maximized;
 - (e) **"demolition"** means breaking down or tearing down buildings and other structures either manually or using mechanical force (by various equipment) or by implosion using explosives.
 - (f) **"form" means a Form annexed to these rules;**
 - (g) **"local authority"** means an urban local authority with different nomenclature such as municipal corporation, municipality, nagarpalika, nagarnigam, nagarpanchayat, municipal council including notified area committee and not limited to or any other local authority constituted under the relevant statutes such as gram panchayat, where the management of construction and demolition waste is entrusted to such agency;
 - (h) **" schedule"** means a schedule annexed to these rules;
 - (i) **"service provider"** means authorities who provide services like water, sewerage, electricity, telephone, roads, drainage etc. often generate construction and demolition waste during their activities, which includes excavation, demolition and civil work;
 - (j) **"waste generator"** means any person or association of persons or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defence establishments who undertakes construction of or demolition of any civil structure which generate construction and demolition waste.
- (2) Words and expressions used but not defined herein shall have the same meaning defined in the ACT.

(4) Duties of the waste generator -

- (1) Every waste generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority in consonance with these rules.
- (2) The generator shall ensure that other waste (such as solid waste) does not get mixed with this waste and is stored and disposed separately.
- (3) Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar and shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work and keep the concerned

authorities informed regarding the relevant activities from the planning stage to the implementation stage and this should be on project to project basis.

(4) Every waste generator shall keep the construction and demolition waste within the premise or get the waste deposited at collection centre so made by the local body or handover it to the authorised processing facilities of construction and demolition waste; and ensure that there is no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.

(5) Every waste generator shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities; Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall have to pay for the processing and disposal of construction and demolition waste generated by them, apart from the payment for storage, collection and transportation. The rate shall be fixed by the concerned local authority or any other authority designated by the State Government.

(5) Duties of service provider and their contractors -

(1) The service providers shall prepare within six months from the date of notification of these rules, a comprehensive waste management plan covering segregation, storage, collection, reuse, recycling, transportation and disposal of construction and demolition waste generated within their jurisdiction.

(2) The service providers shall remove all construction and demolition waste and clean the area every day, if possible, or depending upon the duration of the work, the quantity and type of waste generated, appropriate storage and collection, a reasonable timeframe shall be worked out in consultation with the concerned local authority.

(3) In case of the service providers have no logistics support to carry out the work specified in sub-rules (1) and (2) , they shall tie up with the authorised agencies for removal of construction and demolition waste and pay the relevant charges as notified by the local authority.

(6) Duties of local authority-The local authority shall,-

(1) issue detailed directions with regard to proper management of construction and demolition waste within its jurisdiction in accordance with the provisions of these rules and the local authority shall seek detailed plan or undertaking as applicable, from generator of construction and demolition waste;

(2) chalk out stages, methodology and equipment, material involved in the overall activity and final clean up after completion of the construction and demolition ;

(3c) seek assistance from concerned authorities for safe disposal of construction and demolition waste contaminated with industrial hazardous or toxic material or nuclear waste if any;

(4) shall make arrangements and place appropriate containers for collection of waste and shall remove at regular intervals or when they are filled, either through own resources or by appointing private operators;

- (5) shall get the collected waste transported to appropriate sites for processing and disposal either through own resources or by appointing private operators;
- (6) shall give appropriate incentives to generator for salvaging, processing and or recycling preferably in-situ;
- (7) shall examine and sanction the waste management plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission;
- (8) shall keep track of the generation of construction and demolition waste within its jurisdiction and establish a data base and update once in a year;
- (9) shall devise appropriate measures in consultation with expert institutions for management of construction and demolition waste generated including processing facility and for using the recycled products in the best possible manner;
- (10) shall create a sustained system of information, education and communication for construction and demolition waste through collaboration with expert institutions and civil societies and also disseminate through their own website;
- (11) shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads.

(7) Criteria for storage, processing or recycling facilities for construction and demolition waste and application of construction and demolition waste and its products-

- (1) The site for storage and processing or recycling facilities for construction and demolition waste shall be selected as per the criteria given in **Schedule I**;
- (2) The operator of the facility as specified in sub- rules (1) shall apply in **Form I** for authorization from State Pollution Control Board or Pollution Control Committee.
- (3) The operator of the facility shall submit the annual report to the State Pollution Control Board in **Form II**.
- (3) Application of materials made from construction and demolition waste in operation of sanitary landfill shall be as per the criteria given in **Schedule II**.

(8) Duties of State Pollution Control Board or Pollution Control Committee-

- (1) State Pollution Control Board or Pollution Control Committee shall monitor the implementation of these rules by the concerned local bodies and the competent authorities and the annual report shall be sent to the Central Pollution Control Board and the State Government or Union Territory or any other State level nodal agency identified by the State Government or Union Territory administration for generating State level comprehensive data. Such reports shall also contain the comments and suggestions of the State Pollution Control Board or Pollution Control Committee with respect to any comments or changes required;

(2) State Pollution Control Board or Pollution Control Committee shall grant authorization to construction and demolition waste processing facility in **Form-III** as specified under these rules after examining the application received in **Form I**;

(3) State Pollution Control Board or Pollution Control Committee shall prepare annual report in **Form IV** with special emphasis on the implementation status of compliance of these rules and forward report to Central Pollution Control Board before the 31st July for each financial year.

(9) Duties of State Government or Union Territory Administration-

(1) The Secretary in-charge of development in the State Government or Union territory administration shall prepare their policy document with respect to management of construction and demolition of waste in accordance with the provisions of these rules within one year from date of final notification of these rules.

(2) The concerned department in the State Government dealing with land shall be responsible for providing suitable sites for setting up of the storage, processing and recycling facilities for construction and demolition waste.

(3) The Town and Country planning Department shall incorporate the site in the approved land use plan so that there is no disturbance to the processing facility on a long term basis.

(4) Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.

(10) Duties of the Central Pollution Control Board - (1) The Central Pollution Control Board shall,-

(a) prepare operational guidelines related to environmental management of construction and demolition waste management;

(b) analyze and collate the data received from the State Pollution Control Boards or Pollution Control Committee to review these rules from time to time;

(c) coordinate with all the State Pollution Control Board and Pollution Control Committees for any matter related to development of environmental standards;

(d) forward annual compliance report to Central Government before the 30th August for each financial year based on reports given by State Pollution Control Boards of Pollution Control Committees.

(11) Duties of Bureau of Indian Standards and Indian Roads Congress -The Bureau of Indian Standards and Indian Roads Congress shall be responsible for preparation of code of practices and standards for use of recycled materials and products of construction and demolition waste in respect of construction activities and the role of Indian Road Congress shall be specific to the standards and practices pertaining to construction of roads.

Schedule III
Timeframe for Planning and Implementation
[See Rule 13]

| Sl. No. | Compliance Criteria | Cities with population of 01 million and above | Cities with population of 0.5-01 million | Cities with population of less than 0.5 million |
|---------|--|--|--|---|
| 1 | Formulation of policy by State Government | 12 months | 12 months | 12 months |
| 2 | Identification of sites for collection and processing facility | 18 months | 18 months | 18 months |
| 3 | Commissioning and implementation of the facility | 18 months | 24 months | 36 months |
| 4 | Monitoring by SPCBs | 3 times a year – once in 4 months | 2 times a year – once in 6 months | 2 times a year – once in 6 months |

**The time Schedule is effective from the date of notification of these rules.*

FORM – I
See [Rule 7 (2)]
Application for obtaining authorisation

To,
The Member Secretary

_____ Name of the local authority or Name of the agency ;
appointed by the municipal authority

| | |
|---|---|
| Correspondence address Telephone No. Fax No. | |
| Nodal Officer and designation (Officer authorized by the competent authority or agency responsible for operation of processing or recycling or disposal facility) | |
| Authorisation applied for (Please tick mark) | Setting up of processing or recycling facility of construction and demolition waste |
| Detailed proposal of construction and demolition waste processing or recycling facility to include the following Location of site approved and allotted by the Competent Authority. Average quantity (in tons per day) and composition of construction and demolition waste to be handled | |

APPENDIX 6: LABOUR LAWS

SALIENT FEATURES OF MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN CONSTRUCTION OF CIVIL WORKS

- (i) Workmen Compensation Act, 1923 - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- (ii) Payment of Gratuity Act, 1972 - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days' wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- (iii) Employees' PF and Miscellaneous Provisions Act, 1952 - The Act provides for monthly contributions by the employer plus workers @10 % or 8.33 %. The benefits payable under the Act are: (a) Pension or family pension on retirement or death as the case may be; (b) deposit linked insurance on the death in harness of the worker; (c) payment of PF accumulation on retirement/death etc.
- (iv) Maternity Benefit Act, 1951 - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- (v) Contract Labour (Regulation and Abolition) Act, 1970 - The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labour.
- (vi) Minimum Wages Act, 1948 - The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employment.
- (vii) Payment of Wages Act, 1936 - It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.
- (viii) Equal Remuneration Act, 1979 - The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (ix) Payment of Bonus Act, 1965 - The Act is applicable to all establishments employing 20 or more workmen. The Act provides for payments of annual bonus subject to a minimum of 8.33 % of wages and maximum of 20 % of wages to employees drawing ₹3,500/- per month or less. The bonus to be paid to employees getting ₹2,500/- per month or above up to ₹3,500/- per month shall be worked out by taking wages as ₹2,500/- per month only. The Act does not apply to certain establishments. The newly set up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of the Act.
- (x) Industrial Disputes Act, 1947 - The Act lays down the machinery and procedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (xi) Industrial Employment (Standing Orders) Act, 1946 - It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the employer on matters provided in the Act and get the same certified by the designated Authority.
- (xii) Trade Unions Act, 1926 - The Act lays down the procedure for registration of trade unions of workmen and employees. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (xiii) Child Labour (Prohibition and Regulation) Act, 1986 - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of

children in all other occupations and processes. Employment of child labour is prohibited in Building and Construction Industry.

(xiv) Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 - The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.

(xv) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996 - All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay Cess at rate not exceeding 2% of the cost of construction as may be notified by the Government. The employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

APPENDIX 7: DRINKING WATER STANDARDS

DRINKING WATER STANDARDS

| Group | National Standards for Drinking Water ^a | | | WHO Guidelines for Drinking-Water Quality, 4 th Edition, 2011 ^b | Applicable Per ADB SPS ^{c, d} |
|-------------|--|-------------|---|---|---|
| | Parameter | Unit | Max. Concentration Limits ^d | | |
| Physical | Turbidity | NTU | 1 (5) | - | 1 (5) |
| | pH | | 6.5 – 8.5 | none | 6.5 – 8.5 |
| | Color | Hazen units | 5 (15) | none | 5 (15) |
| | Taste and Odor | | Agreeable | - | Agreeable |
| | TDS | mg/l | 500 (2,000) | - | 500 (2,000) |
| | Iron | mg/l | 0.3 | - | 0.3 |
| | Manganese | mg/l | 0.1 (0.3) | - | 0.1 (0.3) |
| | Arsenic | mg/l | 0.01 (0.05) | 0.01 | 0.01 |
| | Cadmium | mg/l | 0.003 | 0.003 | 0.003 |
| | Chromium | mg/l | 0.05 | 0.05 | 0.05 |
| | Cyanide | mg/l | 0.05 | none | 0.05 |
| | Fluoride | mg/l | 1 (1.5) | 1.5 | 1 (1.5) |
| | Lead | mg/l | 0.01 | 0.01 | 0.01 |
| Ammonia | mg/l | 0.5 | none established | 0.5 | |
| Chemical | Chloride | mg/l | 250 (1,000) | none established | 250 (1,000) |
| | Sulphate | mg/l | 200 (400) | none | 200 (400) |
| | Nitrate | mg/l | 45 | 50 | 45 |
| | Copper | mg/l | 0.05 (1.5) | 2 | 0.05 (1.5) |
| | Total Hardness | mg/l | 200 (600) | - | 200 (600) |
| | Calcium | mg/l | 75 (200) | - | 75 (200) |
| | Zinc | mg/l | 5 (15) | none established | 5 (15) |
| | Mercury | mg/l | 0.001 | 0.006 | 0.001 |
| | Aluminum | mg/l | 0.1 (0.3) | none established | 0.1 (0.3) |
| | Residual Chlorine | mg/l | 0.2 | 5 | 0.2 |
| Micro Germs | E-coli | MPN/100ml | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml sample |
| | Total Coliform | MPN/100ml | | | |

^a Bureau of India Standard 10500: 2012.

^b Health-based guideline values.

^c As per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

^d Figures in parenthesis are maximum limits allowed in the absence of alternate source.

APPENDIX 8: NOC FOR SUNDARBAN BIOSPHERE
NOC FROM SUNDARBAN BIOSPHERE FROM SUNDARBAN BIOSPHERE AUTHORITY

DIRECTORATE OF FORESTS
OFFICE OF THE ADDL. PRINCIPAL CHIEF CONSERVATOR OF FORESTS & DIRECTOR
SUNDARBAN BIOSPHERE RESERVE, WEST BENGAL
BIKASH BHAWAN, 3RD FLOOR, NORTH BLOCK
SALT LAKE CITY, KOLKATA - 700 091
TELEFAX 2321-1750/1529, E-MAIL :sbrdir@gmail.com

No. 1095 /SBR/C-21/17

Dated: 05.03.2019

From : The APCCF & Director, Sundarban Biosphere Reserve
West Bengal.

To : The Project Director, PMU
West Bengal Drinking Water Sector Improvement Project
PHE Dte., Govt. of West Bengal

Sub : Construction of ground level storage reservoir and small pipelines in
Haroa and Bhangar -II blocks of North and South 24 Parganas requirement of
regulatory permission, if any.

Ref : Your Memo No. PMU/WBDWSIP/PHED/06/79 dt. 25.01.2019

With reference to the above noted communication this is to inform you that Haroa and Bhangar -II blocks of North and South 24 Parganas does not have Forest land & does not required any permission from this end.

APCCF & Director
Sundarban Biosphere Reserve
West Bengal

Murmu/HC/SBR/05.03.19

APPENDIX 8A: NOC FOR EKWMA

NOC FROM EAST KOLKATA WETLAND MANAGEMENT AUTHORITY



Government of West Bengal
 Department of Environment
 East Kolkata Wetlands Management Authority
 Pranisampad Bhaban, 5th Floor, LB-2, Sector- III, Salt Lake, Kolkata- 700 106
 Ph: 91-33-2335 2002, Fax: 91-33-2335 6402

No: 015 - CTO/EN/097/2009-10

Date: 08.01.2020

From: Niraj Singhal, IFS
 Chief Technical Officer, EKWMA &
 Member, State Wetlands Authority

To: Chief Engineer & Project Director, PMU
 WBDWSIP, PHE Dte. Government of West Bengal
 Utility Building, 1st Floor, (Premises No.-09/1-0024)
 AA-1A (Tank No. 3)
 New Town, Kolkata-700 156

Sub: No Objection Certificate (NOC)

Ref: Your memo no. PMU/WBDWSIP/PHED/138/1195 dt 24.12.2019

Sir,

With reference to the above, you are hereby accorded NOC subject to following terms and conditions

1. The project proponent should abide by the Wetlands (Conservation and Management) Rules, 2017 notified by the Ministry of Environment, Forest and Climate Change, Government of India.
2. The project proponent should also abide by the East Kolkata Wetlands (Conservation and Management) Act, 2006.
3. No permanent structure shall be created. All structures shall be purely temporary in nature and easily removable.
4. No water body shall be filled in any way or polluted in any manner.
5. Any change of character of land/ mode of use of land/conversion for non-wetland uses including encroachment of any kind is prohibited.
6. Any kind of waste/effluent/slurry if generated during the operation will not be discharged/dumped into water bodies within the boundary of the East Kolkata Wetlands.
7. Permission is temporary – only for the period of work or 31.12.2021 whichever is earlier.
8. Members/ officers / staff of EKWMA shall reserve the right to inspect the work at any time without notice.
9. Any liability due to adverse claim or direction/orders passed by any court of law or any statutory authority against the project shall be entirely borne by you.
10. The EKWMA reserves the right to recall the NOC granted at any time without incurring any liability.

These terms and conditions have been imposed so that the project work does not in any way adversely affect the wetlands. Any violation of the abovementioned terms and conditions will lead to cancellation and withdrawal of the NOC granted with immediate effect.

2704 TE/DS/SC
 Work may be taken up subject to the above enumeration
 Date 10/01/20
 Time - 12:30 PM
 Signature
 Niraj Singhal
 Executive Engineer
 PHE Dte. WBDWSIP, PHE Dte.
 Govt. of West Bengal
 08/01/2020
 (Niraj Singhal)
 Sivarabha
 10/01/20

Memo NO-59/EE(S)PEUN-2A1 Dated - 09/01/2020

Forwarded to Mr. SC/PMU/WIP, for information & necessary action please.
 09/01/2020
 EE(Civil), P.U. N 24 Pgm PI.
 9/1/2020
 Superintending Engineer
 P.U., North 24-Parganas
 WBDWSIP, P.H.E. Dte.
 Govt. of West Bengal

APPENDIX 9: ACTIVITIES AT CONSTRUCTION SITES – PHOTO ILLUSTRATIONS

PHOTO ILLUSTRATION: BHANGAR II BLOCK



Superstructure at zone-16 OHR, Bhangar-II Block completed



Column Concreting at zone -11 OHR, Bhangar-II Block



SCADA building work at zone -6 OHR, Bhangar-II Block



Cage structure at zone -8 Pipeline crossing, Bhangar-II Block



Piling work at zone -9 OHR, Bhangar-II Block



Visit & Orientation at zone -14 OHR, Bhangar-II Block



Load test for column at zone -5 OHR, Bhangar-II Block



Completed superstructure at zone -2 OHR, Bhangar-II Block



HIV-AIDS training at zone -14 OHR, Bhangar-II Block



Boundary work at zone -3 OHR, Bhangar-II Block



Superstructure at zone -6 OHR, Bhangar-II Block



Superstructure at zone -12 OHR, Bhangar-II Block completed

APPENDIX 10: STAKEHOLDER CONSULTATION

STAKEHOLDER CONSULTATIONS

Consultation with Local Community Members at Bhangar (Dated 13.08.2017)

| | Block | Mouza | Gram Panchayat | OHR/GLR Zone Code | No. of Participants | Concerns/Issues Discussed |
|---|--------------|--------------|-----------------------|--|-------------------------------------|---|
| 1 | Bhangar- II | Satulia | Bhagabanpur | GLR SITE | Male : 7 Female : 2 Total : 9 | <p>Requirement of piped water supply in the area is broadly accepted by all the participants.</p> <p>Poor quality of drinking water causing threat for the health of local villagers and cattle's too.</p> <p>Ground Water can be contaminated by Arsenic hence, surface water is ideal.</p> <p>Apart from domestic connection, if possible, the authority may consider to expand the scope of use of piped water to agricultural purpose also.</p> <p>A reasonable and affordable water tariff fixed by the Govt. will be gladly accepted by all.</p> |
| 2 | Bhangar- II | Satulia | Bhagabanpur | Irrigation Department land near approach to GLR site | 8 women 2 girls Total=10 | <p>A cluster of squatter households is located on Irrigation Department land close to the proposed GLR site, Bhangar. On being asked where they collect water from at present, the participants replied that women and girl children had to travel almost 1 Km distance to fetch water from a tube well, and spend about 2 hours each day for the same. As squatter/non-titleholder households, they were concerned whether they would receive water from the project. Every household was desirous of an individual connection and indicated willingness to pay a reasonable user charge, while expressing inability to bear connection charge at one go. In case the project could not provide individual connections, they urged that their cluster be provided with Stand posts, which they would maintain.</p> |

| | Block | Mouza | Gram Panchayat | OHR/GLR Zone Code | No. of Participants | Concerns/Issues Discussed |
|---|-------------|--------------|----------------|-------------------|------------------------------------|---|
| 3 | Bhangar- II | Pithapukuria | Bhagabanpur | Bamunia sch (Z-1) | Male: 8 Female: 2 Total : 10 | <p>(i) Consultation with the local people revealed that, they are aware about the side effects of consuming arsenic contaminated water. As they do not have any alternate choices so they choose to use the same. Local tube wells are checked periodically through Panchayats and health dept officials.</p> <p>(ii) The proposed water supply project of PHED will solve their problem permanently. Treated Surface water will not only be good for their health but at the same time people purchasing water from private source will be able save money. Health related expenses due to water will be reduced which will indirectly increase the savings. Women & children are expected to have more benefits.</p> <p>(iii) In the question of affordability, the respondents unanimously said that they are willing to pay charges if provided individual household connections.</p> |



List of Participants in Consultation: Bhangar



13/8/17

| Sl. NO | Name | Ph. NO | Signature |
|--------|----------------------|------------|-----------|
| 1. | Haran chandra Mondal | 9933506809 | Brahm. |
| 2. | ... | No | |
| 3. | ... | No | |
| 4. | ... | No | |
| 5. | ... | No | |
| 6. | ... | No | |
| 7. | ... | 8001274900 | |
| 8. | ... | 7074078961 | |
| 9. | Subhas Chandra | 9735241611 | Pachha |
| 10. | ... | 9733298984 | |
| 11. | ... | 9733651201 | |
| 12. | ... | 9733678188 | |
| 13. | ... | 9836866159 | |
| 14. | ... | 8001415018 | |
| 15. | ... | 9883916454 | |
| 16. | ... | 9735366524 | |
| 17. | ... | 9677 | |
| 18. | ... | 9732559525 | |
| 19. | ... | 8016672290 | |
| 20. | ... | No | |
| 21. | ... | No | |
| 22. | ... | 9732707676 | |
| 23. | ... | No | |
| 24. | ... | No | |
| 25. | ... | No | |
| 26. | ... | No | |
| 27. | ... | No | |
| 28. | ... | No | |
| 29. | ... | No | |
| 30. | ... | No | |
| 31. | ... | No | |
| 32. | ... | No | |
| 33. | ... | No | |
| 34. | ... | 9139175206 | |
| 35. | ... | No | |

Stakeholder Consultations



Public consultation, Uttar Rajapur village, Zone-16, Bhangar II

| Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|------------|---|------|--|--|---|
| Bhangar II | Date: 26.12.2019 At Uttar Rajapur village, Chaltaberia GP | 16 | Total - 10 Male - 09 Female - 01 | <p>Discussion:</p> <ul style="list-style-type: none"> • Discussion on Benefits of project, how the project works, why the project is taken by the Govt. • 70 lpcd potable water through metered house connections on a 24/7 basis. • The main goal of the project is to supply safe drinking water to every person. • All educational, commercial, religious, health etc. institutions will also get the same potable water from this project. • In Bhangar II block 18 Overhead Reservoirs (OHRs) will be constructed and from those OHRs water will be supplied to the houses and other community & government institutions. • The project is to supply safe Arsenic free drinking water to reduce health problem and use surface water to save ground level water. • Water quality issue was also discussed - Arsenic in ground water is a big issue in Bhangar II block, hence in entire Bhangar II block surface water will be supplied after proper treatment. • Reduce time for women to fetch water. • Operation & Maintenance (O&M) - the project will be finally handed over to the Gram Panchayats for maintenance and distribution of water. • People can write their grievances/ suggestions/ opinions and ask questions to know specific things about the project and Grievance Registers should be available with the supervisor working at the site. • People don't need to pay anything to anybody for pipeline distribution work now. At their premises pipelines and meters will be installed by PHED. • Safety & security of the labors has been taken care off in the project. At all sites, handholding training programs on First Aid were organized for the labors. <p>Concerns of the Participants:</p> <ul style="list-style-type: none"> • Capacity of Gram Panchayat to maintain the project of this kind properly is insufficient. They wanted to know who will take responsibility of training for capacity building. <p>They wanted to know how much may have to be paid by them for drinking water?</p> |   |

Attendance Sheet


West Bengal Drinking Water Sector Improvement Project


ATTENDANCE SHEET



Programme - Public Consultation
 Venue - Uttar Rajapur, zone - 16, Bhangan II
 Date - 26/11/2019
 Time - 3 to 5 pm


| Sl. No | Name | Designation | Contact No. | Signature |
|--------|------------------|-----------------------------------|-------------|--------------------|
| 01 | Bilayet Ali | Villager | 7659091094 | বিলয়েট আলি |
| 02 | Subbat Ali Molla | Villager | | সুব্বাত আলি মোল্লা |
| 03 | Emdadul Molla | Villager | | ইমদাদুল মোল্লা |
| 04 | Nasimuddin Molla | Villager | 6256457269 | |
| 05 | Bhazakari Mondal | Villager | | ভেজাকারি মন্ডল |
| 06 | Soham Ullah | Teacher | 6756183308 | Soham |
| 07 | Satishul Molla | Villager | | সত্যশুল মোল্লা |
| 08 | Amuara Bibi | Villager | | |
| 09 | Dilip Kumar Das | Support Staff Social Safeguard | 9333996972 | Dilip |
| 10 | Rahim Kumar | Support Staff Env. Safeguard. | 9230496255 | Rahim |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |

SUMMARY OF PUBLIC CONSULTATION DURING CONSTRUCTION

| Sl. | Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|-----|------------|-----------------------------|--------|--|--|--|
| 1 | Bhangar II | Dated 11.07.19 at Bhogali-I | 9 & 17 | Total - 27 Male - 15 Female - 12 | <p>Discussions:</p> <ul style="list-style-type: none"> • Discussed on what is the project, how it benefited the peoples, who will operate & maintained the project, what is the role & responsibility of GP and VWSC (Village Water & Sanitation Committee). • <i>Goals of the Project:</i> 1) The project is to supply safe Arsenic free drinking water to reduce health problem. 2) Use the surface water to save the ground level water. 3) This project also generates the livelihood for the poor & marginalized sections of the society. 4) Provision for Income augmentation as an attempt to stop migration. 5) Women empowerment is a key component. • For Operation & Maintenance training will be given to selected persons nominated by GP/VWSC. • Target is to provide purified water 70 liters per capita per day through metered house connection on 24/7 basis. Also, this project will give the safe water to all Commercial, Educational Religious and Health institutions. • All participants are informed about the roles & responsibilities of all stakeholders right from PHED and its consultants to the VWSCs. • PHED should bear all cost of pipe line distribution and meter connection of each house. • VWSC formation or reformation is very important for the project. The appointed NGO will give training to strengthen the VWSCs and finally PHED will hand over all assets to the Gram Panchayats. • 33% of the Members of VWSC should be female as per Institutional set up, • ADB wants to give special emphasis to women's empowerment & their livelihood issues. Women members of the VWSC in the Gram Panchayat can take leadership training and other training to perform their envisaged role. • Detail discussion on GRM and how to register Complaints/ Questions/ Comments/ suggestions was elaborated to the GP members and participants. Organogram of GRM provided to GP. And asked them to distribute in public with phone no of Pradhan & GP member in every Gram Sansad. • It was informed that one grievance register should be available with site supervisor at all sites. People can write down their comments/ suggestions/ complains in that. Many problems can be resolved through discussions |  |

| Sl. | Block | Date & Place | Zone | No of Participants | <i>Concerns/ Issues Discussed</i> | Photographs |
|-----|-------|--------------|------|--------------------|---|---|
| | | | | | <p>with the contractor's people in the site.</p> <ul style="list-style-type: none"> • Connection of pipeline will be one in every single structure, even the brothers are separated. • Pipelines will be installed in government land beside the road. And It will be Underground. • Soft copy of the National Population Register of the GP is necessary for same unique ID of every household. • DISCS specialist asked the participants to look after the safety of the worker. If they are not following the rules then public can complain in Grievance Register. And also ask for cooperation to the project because the project will not be completed without support of villagers/GP members. <p>Concerns of the Participants:</p> <ul style="list-style-type: none"> • Who will take responsibility for Income Generation activities training? • Two or three brothers are in one house, but all are separated now. Will they get separate water pipeline connections for each one of them? • After preparing the National Population Register many families have been separated and new families are not enrolled. In this case what will be the Unique ID of those families? • About the pipeline laying on the road or underground? • About the pipeline laying middle of the road or one side of the road? |  |

| Sl. | Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|-----|------------|---------------------------------|-------|---------------------------------------|--|---|
| 2 | Bhangar II | Date: 25.07.19 at Polerhat I | 4 & 7 | Total - 21 Male - 15 Female - 6 | <p>Discussions:</p> <ul style="list-style-type: none"> • <i>Goals of the Project:</i> 1) The project is to supply safe Arsenic free drinking water to reduce health problem. 2) Use the surface water to save the ground level water. 3) This project also generates the livelihood for the poor & marginalized sections of the society. 4) Provision for Income augmentation as an attempt to stop migration. 5) Women empowerment is a key component. • Target is to provide purified water 70 liters per capita per day through metered house connection on 24/7 basis. Also, this project will give the safe water to all Commercial, Educational Religious and Health institutions. • Connection of pipeline will be one in every single structure, even the brothers are separated. • Village Water & Sanitation Committee (VWSC) of Gram Panchayat is the most important committee to this project. Because Government will hand over the assets and operations & maintenance will be the responsibilities of the GPs. • According to ADB norms 33% members of the VWSC should be females. • Women members of the VWSC in the Gram Panchayat can take leadership training and other training to perform their envisaged role. • Detail discussion on GRM and how to register Complaints/ Questions/ Comments/ suggestions was elaborated to the GP members and participants. Organogram of GRM provided to GP. And asked them to distribute in public with phone no of Pradhan & GP member in every Gram Sansad. • It was informed that one grievance register should be available with site supervisor at all sites. People can write down their comments/ suggestions/ complains in that. Many problems can be resolved in field through discussions with the contractor's people in the site. |   |
| | | | | | <ul style="list-style-type: none"> • All the working labours are given training on First aid for the safety & security of them. There have to kept First aid box in every work site for their safety. | |

| Sl. | Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|-----|-------|--------------|------|--------------------|--|---|
| | | | | | <ul style="list-style-type: none"> • Soft copy of the National Population Register of the GP is necessary for same unique ID of every household. • It is essential that needs to support of all communities to complete the project. <p>Concerns of the Participants:</p> <ul style="list-style-type: none"> • Who will bear the cost of tap with metered connection? • The pipe line didn't reach some places. • The road damaged when JCB excavate the road edge. So the road has been inadequate for walking in rain. • Najrul Islam, Ex GP member of Polerhat GP informed that Bagdi para after crossing to polarhat bazaar, during the pipeline laying the entire stretch (Width) was occupied. People could not even move with their bi-cycles & Motor cycles. Requested to the contractor's people to work from one side of the road, but the contractor's people used abusive languages. • Mr. Sirajul Islam, Sansad member of Swastyengachhi village informed that there is no survey from house of Saidul Master's house to Abdar Rahim Molla's house. • Mr. Mijanur Alam, Member of Panchayat Samiti informed that from Anantapur More to Pakapol Bazaar (approx 3.5 km) piling was done by the Jila Paroshad for preparation of the new road construction. But the contractor is working from inside the piling, which maybe causes the weakness of the new road. |  |

Attendance sheet Public Consultation - Bhogali GP

| | | | | |
|--|--|-------|--|--|
| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Parganas District | | | | |
| under | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBDSIP), An Initiation of Asian Development Bank (ADB) | | | | |
| Attendance Sheet for Induction Meeting at Bhogali IGP, Bhargar II Block | | | | |
| Venue: | | Date: | | |

| Sl. No. | Name of Participants | Designation | Mobile No/ Email Address | Signature |
|---------|----------------------|-------------|--------------------------|------------------|
| 1 | স্বপ্না কুমার | সহকারী 10 | 9564752788 | স্বপ্না কুমার |
| 2 | গঙ্গাধর স্মি. | সহকারী 80% | 9733588743 | গঙ্গাধর স্মি. |
| 3 | Pratima Mandal | সহকারী 130% | 9732714249 | Pratima Mandal |
| 4 | Nurunnascha kibi | সহকারী 60% | 8001767411 | Nurunnascha kibi |
| 5 | Moya Mandal | Sup 10% | 9091436681 | Mandal |
| 6 | Tripki Mandal | ASHA | 9735008943 | T. Mandal |
| 7 | Aleya Khakun | ASHA | 9732705326 | A. Khakun |
| 8 | Taslima Khakun | ASHA | 9733270893 | T. Khakun |
| 9 | Sabina Jesmin | A.W.W | 9647704647 | S. Jesmin |
| 10 | Kamafara Khakun | A.W.W | 9733835069 | K. Khakun |
| 11 | Krishna Gain | Supervisor | 9733574116 | Krishna Gain |
| 12 | Rowsonara Bibi | Supervisor | 9735599409 | Rowsonara Bibi |


| | | | | |
|----|---------------------|--|------------|-------------------|
| 13 | স্বপ্না কুমার | সহকারী 12 | 9775504732 | স্বপ্না কুমার |
| 14 | Sk. Obaydur Rahman | SUP. sam-2 | 9093593326 | Sk. Obaydur |
| 15 | Kaotic Das | Sup sam-7 | 9733906686 | Kaotic Das |
| 16 | Abdul Mujit Khair | Sup sam-4 | 7407336231 | Abdul Mujit Khair |
| 17 | Suluzz Malla | Sup sam-9 | 6296791926 | Sulla |
| 18 | Nurul Hasan Molla | | | Nur |
| 19 | Baidus Mondal | | | Baidus |
| 20 | Ashok w. Bhosua. | Sahajak | 9038312539 | Ashok |
| 21 | Sadhan Mondal | Supervisor | 8509373326 | Sadhan |
| 22 | md. Sahibun. Khom | Supervisor | 9733903018 | Sahibun |
| 23 | Jayanta Chakrabarty | Social, Facilitator & Gender Expert | 8761305667 | Jayanta |
| 24 | Mozaffar Ahmad | Facilitator | 9732570012 | Mozaffar |
| 25 | Dr. Amriddha Dey | Social, Gender & Settlement Specialist | 948107612 | Dr. Amriddha |
| 26 | Partha Chatterjee | JE - PIU | 9152770599 | Partha |
| 27 | Dilip Kumar Ray | Support Staff and Engineer | 9732996972 | Dilip |
| 28 | | ESIS | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |

ATTENDANCE SHEET

Programme – Public Consultation
 Venue- Polerhat I Gram Panchayat , Bhargar II
 Date – 25.07.2019
 Time- 3.15 pm

| Sl. No | Name | Designation | Contact No. | Signatura |
|--------|----------------------|--|-------------|--------------------|
| 01 | Rajia Bibi | Prodhane (Polerhat - I) | 9609306089 | <i>[Signature]</i> |
| 02 | <i>[Signature]</i> | Polerhat-I | 9733842634 | <i>[Signature]</i> |
| 03 | Dimamath Biswas | Polerhat-I | 9732591171 | <i>[Signature]</i> |
| 04 | Nazma Ahmed Bibi | ^{C. H (Member)} Polerhat-I | 9734604038 | N. Ahmed Bibi |
| 05 | Radhika Kant'sardar | ^{Member} Polerhat-I | 9064373746 | R. Sardar |
| 06 | Sabina Bibi Molla | Polerhat-I | 8019305685 | S. a. Bibi |
| 07 | Tripti Ghosh | ^(Member) Polerhat-I | 9732618600 | <i>[Signature]</i> |
| 08 | Tapasi Mondal | Polerhat-I | 9775659938 | <i>[Signature]</i> |
| 09 | Ume Habiba parvin | Polerhat I | 9733861560 | U. H. P |
| 10 | <i>[Signature]</i> | Member | 9775213459 | <i>[Signature]</i> |
| 11 | Saffar Rahman | Polerhat-I | 9732739988 | S. Rahman |
| 12 | Amal Adhikary | ^{Sahayak} Polerhat-I | 9732142338 | <i>[Signature]</i> |
| 13 | Risajojeel Barman | ^{Secretary} Polerhat-I | 8967265899 | <i>[Signature]</i> |
| 14 | <i>[Signature]</i> | | 9609306089 | <i>[Signature]</i> |
| 15 | Khokan Mondal | Polerhat I | 9775659938 | K. Mondal |
| 16 | Manik Sardar | Polerhat I | 9064373746 | <i>[Signature]</i> |
| 17 | Nazma Bibi / S. Zann | POLERHAT | 8019305685 | N. Islam |
| 18 | Md. Mijam Alan | ^{P.S. Member} Bhargar II | 7907-975243 | <i>[Signature]</i> |
| 19 | Dibakar Panigrahi | N.S. | 9748812302 | <i>[Signature]</i> |
| 20 | Aniruddha Dey | ^{Social Gender & Resettlement Specialist} NSIS | 9748107612 | <i>[Signature]</i> |
| 21 | Dilip Roy | ^{Support Staff} Social Safeguard | 9933996977 | <i>[Signature]</i> |

Public consultation at Bijoyganj school, Chaltaberia GP, Bhangar II

| Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|------------|--|-------------|---------------------------------------|---|--|
| Bhangar II | Dated 14.01.2020 at Chaltaberia Bijoyganj School | 13, 15 & 16 | Total - 47 Male - 5 Female - 43 | <p>Discussions:</p> <ul style="list-style-type: none"> • As a result of conducting regular awareness activities village women has become totally conversant on the activities under this project. In the presence of ADB Safeguard Consultant, NGO workers and representatives of DSISC one woman excellently described a chart containing all components of the Project. • ADB Safeguard Consultant appreciated the activity highly. He cleared all apprehensions of the village women on the availability of per capita water per day. • Representatives of DSISC explained about grievance redressal mechanism created under the project. • All the discussions were on interactive mode and village women seem to be very articulate and active on different aspects of the ongoing drinking water project. • All women were assured by the team that all the households in the village will get water from this project. • Participants are well-known about the project. They know why the West Bengal Government chose this project. What are the benefits of this project. • They described the role of VWSC and why this project is primarily focused on women. • Participants are concern about the Taxes, if they have to pay in future. ADB consultant, Mr. Kali Sankar Ghosh briefly describe to them that till now as per the Government rule there is no charges and we will discuss again if any order/policies comes in the future from Government. • Participants are asking whether they can use 70ltr on the head daily or they can use this water as drinking water only. • Why meter connections have to install if there are no charges applied for water use. And they have been persuaded that the meter is not intended to collect water tax, it's for monitor the water flow and uses. • Participates are interest about the Training programs which will be provided by this project. |  |

Attendance Sheet

SSK Rajaygunge Basak

| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Pargana District | | | | | | |
|---|-----------------|-------|---------------------------|-------|--------------|-------------------|
| under | | | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBDSIP) | | | | | | |
| supported by: WARDEN | | | | | | |
| Attendance Sheet for Woman Oriented Meeting | | | | | | |
| Gram Panchayat :- Chaltakuria | | | | | | Date:- 14.01.2020 |
| ক্রমিক সংখ্যা | নাম | লিঙ্গ | সাধারণ তপসিলি জাতি উপজাতি | পদ | মোবাইল নম্বর | স্বাক্ষর |
| 1 | Farida Bibi | F | G | A.W.W | 9564707953 | F. Bibi |
| 2 | Susama Mondal | F | S.C | A.W.W | 9735560695 | S. Mondal |
| 3 | Halima Begum | F | G | A.W.W | 9735518006 | H. Begum |
| 4 | Khadija Khatun | F | G | A.W.W | 9153893158 | K. Khatun |
| 5 | Milina Khatun | F | G | A.W.W | 6291435299 | M. Khatun |
| 6 | Ashura Khatun | F | G | A.W.W | 9735051154 | A. Khatun |
| 7 | Susmita Nandi | F | S.C | A.W.W | 7797120757 | S. Nandi |
| 8 | Chandana Bacher | F | S.C | A.W.W | 9564048710 | C. Bacher |
| 9 | Mahamuda Khatun | F | G | A.W.W | 9434739788 | M. Khatun |
| 10 | Morcom Kundu | F | G | A.W.W | 7449155199 | M. Kundu |
| 11 | Mithu Roy | F | S.C | A.W.W | 9735408093 | M. Roy (S.C) |


| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Pargana District | | | | | | |
|---|---------------------|-------|---------------------------|--------|--------------|--------------|
| under | | | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBDSIP) | | | | | | |
| supported by: WARDEN | | | | | | |
| Attendance Sheet for Woman Oriented Meeting | | | | | | |
| Gram Panchayat :- | | | | | | Date:- |
| ক্রমিক সংখ্যা | নাম | লিঙ্গ | সাধারণ তপসিলি জাতি উপজাতি | পদ | মোবাইল নম্বর | স্বাক্ষর |
| 12 | Salima Paiti | F | G | A.H.W. | 6291720692 | S. Paiti |
| 13 | Kalati Paul | F | G | A.W.W | 9593470494 | K. Paul |
| 14 | Santosi Sardar | F | S.T | A.W.W | 9609212582 | S. Sardar |
| 15 | Punitlata Mukherjee | F | G | A.W.W | 9732425516 | P. Mukherjee |
| 16 | Hemanga Khatun | F | G | A.W.W | 8670739353 | H. Khatun |
| 17 | Rajia Sultana | F | G | A.W.W | 6297854921 | R. Sultana |
| 18 | Jayshri Biswas | F | G | A.W.W | 9749452094 | J. Biswas |
| 19 | Chhabi Ray | F | G | A.W.W | 9732880384 | C. Ray |
| 20 | Sabita Dasgupta | F | S.T | A.W.W | 9564589127 | S. Dasgupta |
| 21 | Ara Biswas | F | S.C | A.H.W. | 9882305296 | A. Biswas |
| 22 | Ahmeda Khan | F | G | A.W.W | 8642022695 | A. Khan |

SSK Rajyogya Basas, Dhanyu-1
No. 1 Akhau

(C)

| Accounting and Billing Computer for Sustainable Livelihoods and HIV/AIDS Control | | | | | | |
|--|--------------------|-------------------------------|-----|---------|------------|-------------|
| 2000 Budget Training Area Cycle Implementation 2 | | | | | | |
| Support of 100% | | | | | | |
| Activity Area 100% of 100% | | | | | | |
| Date: 14.01.2010 | | | | | | |
| Sl. No. | Name | Category | Sex | Address | Phone No. | Signature |
| 1 | Dahi Bala Sarda | A.W.W. | F | S.T. | 909340113 | D.B. Sarda |
| 2 | Jyotsna Desai | A.W.W. | F | G.N. | 9732403482 | J.D. Desai |
| 3 | Rita Mahesh | A.W.W. | F | G.N. | 9775282927 | Rita Mahesh |
| 4 | M. Katarinassa | A.W.W. | F | S.T. | 9734620843 | M.K. Bibi |
| 5 | Anecha Khatun | A.W.W. | F | G.N. | 8327286150 | A. Khatun |
| 6 | Serina Bibi | A.W.W. | F | G.N. | 9794232784 | S.B. Bibi |
| 7 | M. Katarinassa | A.W.W. | F | G.N. | 9785222-65 | M.K. Bibi |
| 8 | Nisa Bano Hamed | A.W.W. | F | S.C. | 9732963459 | N.B. Hamed |
| 9 | Masuda Khatun | A.W.W. | F | G.N. | 9593185488 | M. Khatun |
| 10 | Ratna Ray | A.W.W. | F | S.C. | 9732909554 | R. Ray |
| 11 | Rozin Bibi | A.W.W. | F | G.N. | 9775081404 | R. Bibi |
| 12 | Farina Malla | A.W.W. | F | G.N. | 8337885251 | F. Malla |
| 13 | N. Khatun | A.W.W. | F | G.N. | 9051701895 | N. Khatun |
| 14 | N. Khatun | A.W.W. | F | G.N. | 9734566897 | N. Khatun |
| 15 | Marwa Khatun | A.W.W. | F | A. | 97 | M. Khatun |
| 16 | Relia Dubay | Social Support Skill Devel | F | G. | 9903995201 | R. Dubay |
| 17 | Ratna Suman Sanyal | Social Support Skill Devel | F | G. | 9936122771 | R. Sanyal |
| 18 | Deep Kumar Das | Social Support Skill Devel | M | CBL | 9937996977 | D. Das |
| 19 | Ratan Kumar | Social Support Skill Devel | M | G.N. | 7364804748 | R. Kumar |
| 20 | Suman Pat | Community Participation | F | G.N. | 8961241534 | S. Pat |

Public consultation at Chaltaberia GP, Bhangar II

| Block | Date & Place | Zone | No of Participants | Concerns/ Issues Discussed | Photographs |
|------------|--|----------------|--|---|--|
| Bhangar II | Dated 14.01.2020 at Chaltaberia Gram Panchayat | 13, 15 & 16 | Total - 35 Male - 15 Female - 20 | <p>Discussions:</p> <ul style="list-style-type: none"> • Meeting was held in Gram Panchayat (GP) office with members of Sangsads and other common villagers. • ADB Safeguard Consultant were present in the meeting along with NGO and DSISC Safeguard team. • A few members had raised grievance on quality of back filling after the pipe laying work is finished by the Contractor. • Representative of DSISC Safeguard Team had assured that the matter will be immediately raised at proper level and a field verification will take place next day where Engineer from implementation team will also accompany DSISC Safeguard Team. |  |

Attendance Sheet

| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Parganas District | | | | | | |
|--|-----------------------------|-------|---------------------------|-----------------|-------------------------|-----------------------------|
| under | | | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBOWSIP) | | | | | | |
| supported by: <u>WATER</u> | | | | | | |
| Attendance Sheet for VWSC Meeting. | | | | | | |
| Gram Panchayat > <u>Chakabanga</u> | | | VWSC | | Date: <u>14/01/2020</u> | |
| ক্রমিক সংখ্যা | নাম | লিঙ্গ | সাধারণ তপসিলি জাতি/উপজাতি | পদ | মোবাইল নম্বর | স্বাক্ষর |
| ১ | <u>পুলকান্ত সেন</u> | M | SC | <u>সি.এস.ও.</u> | 9602775142 | <u>Badal</u> |
| ২ | <u>নাজমাতুল হক</u> | F | <u>সহকারী</u> | <u>সি.এস.ও.</u> | 9732668508 | <u>নাজমাতুল হক</u> |
| ৩ | <u>তাহমিনা বেগম</u> | F | <u>সহকারী</u> | <u>সি.এস.ও.</u> | 9674671002 | <u>তাহমিনা বেগম</u> |
| ৪ | <u>Abdur Samad</u> | M | OBC | <u>সি.এস.ও.</u> | 9064369336 | <u>AS.Mad</u> |
| ৫ | <u>Parvina Bibi</u> | F | <u>সহকারী</u> | | 8195982169 | <u>Parvina Bibi</u> |
| ৬ | <u>Annabibi</u> | F | | <u>সি.এস.ও.</u> | 6289658241 | <u>Annabibi</u> |
| ৭ | <u>Hasnukhena Khatun</u> | F | <u>সহকারী</u> | <u>সি.এস.ও.</u> | 8348090737 | <u>H. Khatun</u> |
| ৮ | <u>Sabirun Bibi</u> | F | OBC | <u>সি.এস.ও.</u> | 8327838348 | <u>S. Bibi</u> |
| ৯ | <u>Sanjur Khatun Bibi</u> | F | OBC | <u>সি.এস.ও.</u> | 9569049992 | <u>Sb</u> |
| ১০ | <u>সাহাবুদ্দীন সিদ্দিকী</u> | F | OBC | <u>সি.এস.ও.</u> | 97 | <u>সাহাবুদ্দীন সিদ্দিকী</u> |

| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Parganas District | | | | | | |
|--|------------------------------|-------|---------------------------|--------------------|--------------|-----------------------------|
| under | | | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBOWSIP) | | | | | | |
| supported by: <u>WATER</u> | | | | | | |
| Attendance Sheet for VWSC Meeting. | | | | | | |
| Gram Panchayat > | | | | | Date: | |
| ক্রমিক সংখ্যা | নাম | লিঙ্গ | সাধারণ তপসিলি জাতি/উপজাতি | পদ | মোবাইল নম্বর | স্বাক্ষর |
| 11 | <u>Abed Ali Sardar</u> | M | General | <u>UPA Pradhan</u> | 9609020161 | <u>Abdullah</u> |
| 12 | <u>Amirul Islam</u> | M | " | <u>Member</u> | 9732667723 | <u>Islam</u> |
| 13 | <u>Panbinahar Molla</u> | F | " | <u>Member</u> | 9732667723 | <u>Panbinahar Molla</u> |
| 14 | <u>Abdur Rahaman</u> | M | OBC | - | 9734535942 | <u>Abdur Rahaman</u> |
| 15 | <u>সাহাবুদ্দীন সিদ্দিকী</u> | M | OBC | - | 9775263897 | <u>সাহাবুদ্দীন সিদ্দিকী</u> |
| 16 | <u>সাহাবুদ্দীন সিদ্দিকী</u> | M | OBC | <u>Member</u> | 8535894990 | <u>SAHABUDDIN</u> |
| 17 | <u>Muhammad Parvina Bibi</u> | M | SC | <u>Pradhan</u> | 9735637765 | <u>Parvina</u> |
| 18 | <u>সাহাবুদ্দীন সিদ্দিকী</u> | | | | 9330796969 | |
| 19 | <u>Amirul Islam</u> | M | OBC | <u>Sanchallak</u> | 9732932648 | <u>Islam</u> |

| Support Enabling and Skilling Communities for Sustainable Operation and Management of Services- North 24 Parganas District | | | | | | |
|--|-------------------|-------|--------------------------------|---|-------------------|-------------------|
| under | | | | | | |
| West Bengal Drinking Water Sector Improvement Project (WBDWSIP) | | | | | | |
| supported by: HRIDEC | | | | | | |
| Attendance Sheet for VWSC Meeting. | | | | | | |
| Gram Panchayat :- Chalkabanya | | | WVSC | | Date:- 14/07/2022 | |
| ক্রমিক সংখ্যা | নাম | লিঙ্গ | সাধারণ উপস্থিতি জাতি/উপজাতি | পদ | মোবাইল নম্বর | স্বাক্ষর |
| 20 | শ্যামলী বিক্র | F | Gen | সহায় | 9732889971 | শ্যামলী বিক্র |
| 21 | আঞ্জলি বিক্র | F | Gen | সহায় | 983097198 | আঞ্জলি বিক্র |
| 22 | বাসুদেবী বিক্র | F | Gen | সহায় | 9732908662 | বাসুদেবী বিক্র |
| 23 | প্রিয়া বিক্র | F | Gen | সহায় | 9735097989 | প্রিয়া বিক্র |
| 24 | সার্বানন্দী বিক্র | F | Gen | সহায় | 8317826944 | সার্বানন্দী বিক্র |
| 25 | Doham Hossain | # M | GTENV | উপস্থিত | 8609257 912 | Doham |
| 26 | Srabani Sanyal | F | Gen | Social Gender Facilitator (S/G) | 9836022781 | Sanyal |
| 27 | Rohis Doley | F | Gen | Support Staff Social Safeguard, DSISC | 9903995901 | Rohis |
| 28 | Dilip Kumar | M | OPC | Support Staff Social Safeguard DSISC | 9333996972 | Dilip |
| 29 | Rohand Kumar | M | Gen | Support Staff En. Safety guard | 7564304746 | Rohand |
| 30 | Suvarata P.H | F | Gen | Community Mobilizing Committee & Capacitor | 8961241539 | Suvarata |
| 31 | Rin Sanyal | F | Gen | Building Operat (Housing) | 8433056388 | Rin |
| 32 | Prithwish Kr Saha | M | IT | Team leader | | Prithwish |

SAMPLE PUBLIC CONSULTATION DURING CONSTRUCTION PHASE

Report of the Site Visit and Consultation
Conducted by the DSISC Team along with the Contractor's Team.

Date: 8th July, 2022
Bhangar-II, zone-02

Persons presents:

| Sl. | Name | Designation | Contact Number |
|-----|-------------------------|---|----------------|
| 1 | Hasan Ali | Local villager | 7586852394 |
| 2 | AsadulSk | Labor | 8137084435 |
| 3 | SamirulSk | Labor | 7797453616 |
| 4. | Rinku Sk | Labor | 9832744897 |
| 5. | RajikulSk | Labor | 9641554533 |
| 6. | Saradindu Gain | Safety Officer, NCC | 9775459487 |
| 7. | Rohan Kumar | Support Staff, Environment Safeguard, DSISC | 9330496255 |
| 8. | Swarnabha Bandyopadhyay | Environment Safeguard Specialist, DSISC | 8017668861 |
| 9. | Prithwish Kr Saha | Support Staff, Environment Safeguard, DSISC | 8373003438 |

The safeguard team have conducted a site visit walking through zone 2 area near OHR of Bhangar –II Block along with the contractor's team to understand the environmental and social risks associated with water logging and material storage as well as housekeeping near about and inside the site in monsoon Season

During monsoon times water logging is noted around number of the OHR area, and the material also handled around the main access area for the construction activity, so it is abacus to mitigate all issue immersed from these factors

During site visit and meeting, mitigation measure, methods, and focus on execution for the site discussed in which safe material handling, preventive measure for water logging and better housekeeping like important points were discussed along with the following details:

| Impacts | Consultation type | Consultation Details |
|------------------------------|--------------------------|---|
| Water logging and management | Focused Group Discussion | <p>Problem identification and its mitigation along with following issues was discussed: -</p> <ul style="list-style-type: none"> • Ensure repair of all leakage from pump utilize in the project activity • Must take care about drainage pattern for outside waterbody • Practice good material handling approach so that no disturbance to the local villager and vehicular movement will rises • Cleaning inside and outside should be done on regular basis to overcome vector borne diseases. • Regular sprinkling of insecticide needed ,specially in stagnant water condition • Keep the OHR place safe from children interface, also measure for slip-trip should maintained • Sleeping area should free from any shuttering or construction materials such as soft wires ,nails and tools • Must manage separate store yard with appropriate barricading |

Photographs:



Report of the Site Visit and Consultation
Conducted by the DSISC Team along with the Contractor's Team.
Date: 12th April, 2023
Bhangar-II zone-11

Persons presents:

| Sl. | Name | Designation | Contact Number |
|-----|-------------------------|---|----------------|
| 1 | Nishikanta Mahato | Labor | 9609344821 |
| 2 | Bapi Mondal | Labour | 9932701582 |
| 3 | Paran Mahato | Labour | 9339147215 |
| 4. | Sushanta Chakraborty | Labour | 7384954158 |
| 6. | Gopal Mondal | Labour | 8101277406 |
| 8. | Nasir SK. | Villager | 9330496345 |
| 9. | Rohan Kumar | Support Staff, Environment Safeguard, DSISC | 7364804746 |
| 10. | Swarnabha Bandyopadhyay | Environment Safeguard Specialist, DSISC | 8017668861 |

Environmental safeguard team conducted a site visit walking through Bhangar-II, zone 11 area near OHR location along with the contractor's team to understand the environmental and social risks associated with heat waves in current heat wave like scenario in India.

April month of 2023 in India recorded a higher temperature rise during hot seasons that result in Heat waves rising in west Bengal as well as other states of India. During site visit and consultation in OHR site some nearby villagers along with the laboures of the project were consulted for rising heat waves in the area, were suggested for taking rest near shade in mid -summer times, taking few meditative drinks like ORS, Lemon drink, Glucon D etc. during the time period of working in the site.

During meeting mitigation measures also discussed in which safe work environment, site management, sanitation and hygiene like important points were also discussed along with the following details: -

| Impacts | Consultation type | Consultation Details |
|---|--------------------------|---|
| Health, Safety and Hygiene- (Heat Wave) | Focused Group Discussion | <p>Some awareness on heat wave, hygiene and its mitigation measures was discussed as below: -</p> <ul style="list-style-type: none"> • Avoid working in direct sun light specially during mid-day (12PM to 2PM) when the temperature is too hot for the day, • Try to schedule the work in morning from 6 AM to 11 AM and in afternoon 3 PM to 6 PM. • Keep water and WHO ORS, Lemon drink, Glucon D recommended solution for keeping free from dehydration • Practice working in a safe environment along with maintain hygiene in the worksite • Storing of water in cool place in covered utensils is advised. • Take proper management for kitchen waste storage and disposal • Keep the OHR place safe from children interface • Washing the hands with soap and water frequently before any type of food consumption • Keeping the work environment clean along with |

| Impacts | Consultation type | Consultation Details |
|---------|-------------------|--|
| | | <p>the sanitation and work</p> <ul style="list-style-type: none"> • Keeping the water free from any pollutants and use of safe water for bathing and sanitation purpose • In case of any medical emergency contact to safety person for doctors' medical consultation and hospitalization. |

Photographs:



SAMPLE PUBLIC CONSULTATION DURING FIELD VISIT

Public Consultation during construction (weekly for different working sites) - WBDWSIP

Package- 02B - Bangan-II
 Area- 200-17 (OHR)

| Sr. No. | Road/Lane No. | Date | PME and utility service Connection Restoration- (in case affected) Remarks | Overburden soil / sludge/ silt removal -Remarks | Road Restoration-Remarks | Dust and noise problem-Remarks | Social safety arrangement- Caution tape/ barricade etc. by contractor -Remarks | Problem of local movements due to project activity -Remarks | Other Problem faced if any | Name of the person with address/ contact No. | Signature |
|---------|---------------|---------|--|---|--------------------------|--------------------------------|--|---|-------------------------------|--|-------------------------------|
| 1. | | 5/21/21 | NIL | NIL | NIL | NIL | NIL | Some access issue | Access road for work movement | NO. ARJAVIL KANTH HALL | <i>A. K. Kant</i> 63575220 |
| 2. | | 11 | NIL | NIL | NIL | NIL | NIL | NIL | Light vibration issue | Fahim Kamekar | <i>Fahim Kamekar</i> |
| 3. | | 11 | NIL | NIL | NIL | NIL | NIL | NIL | Light vibration issue | Ashok Subikavi 7797110242 | <i>Ashok Subikavi</i> |

Note: At least 8 such consultation in a month

Need clear view from locals

Done by DSUC

Rohan Kumar

(Date & Signature of Safety officer/ Engineer of Contractor)

^{before}
Public Consultation during construction (weekly for different working sites) - WBDWSIP

Package- 02(B)
Area- 8(5) OHR (Land visit)

| Sr. No. | Road/Lane No. | Date | PHE and utility service Connection Restoration- (in case affected) Remarks | Overburden soil / sludge/ silt removal -Remarks | Road Restoration- Remarks | Dust and noise problem- Remarks | Social safety arrangement- Caution tape/ barricade etc. by contractor - Remarks | Problem of local movements due to project activity - Remarks | Other Problem faced if any | Name of the person with address/ contact No. | Signature |
|---------|---------------|---------|--|---|---------------------------|---------------------------------|---|--|----------------------------|--|-------------|
| 1. | | 8/10/22 | NIL | NIL | NIL | NIL | NIL | NIL | Narrow Road problem | Ashraf Haq | [Signature] |
| 2. | | 8/10/22 | NIL | NIL | NIL | NIL | NIL | NIL | 12 | Munna Molla | [Signature] |
| 3. | | 8/10/22 | NIL | NIL | NIL | NIL | NIL | NIL | 13 | Sanaul Molla | [Signature] |

Note: At least 8 such consultation in a month

Need clear view from locals

Done By (D/S/O)

Rohan Kumar

(Date & Signature of Safety officer/ Engineer of Contractor)

Public Consultation during construction (weekly for different working sites) - WBDWSIP

Package- 02(B) - Bhangar - II block
Area- Zone - 14 (DHR)

| Sr. No. | Road/Lane No. | Date | PHE and utility service Connection Restoration- (in case affected) Remarks | Overburden soil / sludge/ silt removal -Remarks | Road Restoration-Remarks | Dust and noise problem-Remarks | Social safety arrangement- Caution tape/ barricade etc. by contractor - Remarks | Problem of local movements due to project activity - Remarks | Other Problem faced if any | Name of the person with address/ contact No. | Signature |
|---------|---------------|---------|--|---|--------------------------|--------------------------------|---|--|----------------------------|--|-------------|
| 1. | | 3.02.23 | NIL | Partial problem for storage | NIL | NIL | NIL | Partial | NIL | Bisnu Bala | [Signature] |
| 2. | | 3.02.23 | NIL | " | NIL | NIL | NIL | " | NIL | Rajiv Mandat -9800366154 | [Signature] |
| 3. | | 3.02.23 | NIL | " | NIL | NIL | NIL | " | NIL | Habibur Molla | [Signature] |

Note: At least 8 such consultation in a month

Need clear view from locals

Done By DS/ICE

Rohan Kumar

(Date & Signature of Safety officer/ Engineer of Contractor)

Public Consultation during construction (weekly for different working sites) - WBDWSIP

Package- 02(B) - (8) - Canal crossing
Area- Zone (08) - Canal crossing

| Sr. No. | Road/Lane No. | Date | PHE and utility service Connection Restoration- (in case affected) Remarks | Overburden soil / sludge/ silt removal -Remarks | Road Restoration-Remarks | Dust and noise problem-Remarks | Social safety arrangement- Caution tape/ barricade etc. by contractor - Remarks | Problem of local movements due to project activity - Remarks | Other Problem faced if any | Name of the person with address/ contact No. | Signature |
|---------|---------------|----------|--|---|--------------------------|--------------------------------|---|--|--------------------------------|--|-------------|
| 1. | | 26/09/23 | NIL | NIL | NIL | NIL | Partially seen | NIL | Electric connection from house | Sukhman Handan 773460988 | [Signature] |
| 2. | | 26/09/23 | NIL | NIL | NIL | NIL | " | NIL | NIL | Babai SK | [Signature] |
| 3. | | 26/09/23 | NIL | NIL | NIL | NIL | " | NIL | NIL | Parvati Bera | [Signature] |

Note: At least 8 such consultation in a month

Need clear view from locals

Done by (DS/ICE)

Rohan Kumar

(Date & Signature of Safety officer/ Engineer of Contractor)

Photographs of Public Consultation



APPENDIX 11: SAMPLE GRC FORM

SAMPLE GRIEVANCE REGISTRATION FORM

(To be available in Bengali and English)

Blank form - English

The _____ Project 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 | Project Town | | |
| | | Project: | | |
| Contact information/personal details | | | | |
| Name | | Gender | Male Female | Age |
| Home address | | | | |
| Place | | | | |
| 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) | |
| Mode of communication: Note/letter E-mail Verbal/telephonic | |
| Reviewed by: (Names/positions of officials reviewing grievance) | |
| Action taken: | |
| Whether action taken disclosed: | Yes No |
| Means of disclosure: | |

Blank form - Bengali

অভিযোগ/ পরামর্শ/ মন্তব্য/ প্রশ্নাদি লিপিবদ্ধ করার নমুনা পত্র

এই প্রকল্পটি সৃষ্ট ও সুন্দরভাবে রূপায়নের উদ্দেশ্যে সকলের অভিযোগ, পরামর্শ, প্রশ্ন এবং মন্তব্য প্রত্যাশা করে। আপনার কোনও অভিযোগ থাকলে আপনার নাম ও যোগাযোগের ঠিকানা দিয়ে আমাদের সহযোগিতা করবেন, আপনার অভিযোগ / প্রশ্নের স্বার্থে সদুত্তর ও আপনাকে পরিস্থিতি সম্পর্কে আমরা অবগত করবো।

যদি আপনি আপনার ব্যক্তি পরিচয় গোপন রাখতে চান তাহলে আপনার নামের উপরে 'গোপনীয়' কথাটি লিখবেন।
 ধন্যবাদান্তে

| | | | |
|--|--|-------------------|------|
| তারিখ | পঞ্জীকরণের বা Registration এর স্থানঃ ব্লক- গ্রাম পঞ্চায়েত- গ্রাম সংসদ- | | |
| যোগাযোগের ঠিকানা / ব্যক্তিগত তথ্য | | | |
| নাম | | লিঙ্গ | বয়স |
| বাড়ির ঠিকানাঃ গ্রাম- ফোন নং- | পাড়া- ই-মেইল- | পুরুষ - মহিলা- | |
| অভিযোগ/ পরামর্শ/ মন্তব্য/ প্রশ্নাদি- দয়া করে কে, কি, কোথায় এবং কিভাবে - অভিযোগের এই বিশদ বিবরণ নিচে লিখুন- | | | |
| যদি কোন অতিরিক্ত কাগজ জুড়তে হয় / বা নোট থাকে বা চিঠি থাকে তাহলে এই ঘরে (√) টীক দিন। | | | |
| আপনি কিভাবে আপনার অভিযোগ / মন্তব্য বিষয়ে অবগত হতে চান ? | | | |

শুধুমাত্র অফিসের ব্যবহারের জন্যঃ

| |
|---|
| যে আধিকারিক অভিযোগ জমা নিলেন তার নাম : |
| কিভাবে জানানো হল (√) টীক দিনঃ নোট বা চিঠির মাধ্যমে - ই-মেইল- মুখে মুখে বা টেলিফোনে- |
| যিনি অভিযোগ পাবার পর খতিয়ে দেখেছেনঃ (নাম / পদ) |
| কি ব্যবস্থা গ্রহণ করা হয়েছেঃ |
| ব্যবস্থা যা গৃহীত হয়েছে তা জানানো হয়েছে কি না - হ্যা / না |
| কিভাবে জানানো হলঃ |

মন্তব্য-

প্রস্তুতকারক -

আনুমদনকারী -

তারিখ-

B-D-50

অভিযোগ/ পরামর্শ/ মন্তব্য/ প্রমাদি লিপিবদ্ধ করার নমুনা পত্র

এই _____ প্রকল্পটি সুষ্ঠু ও সুন্দরভাবে রূপায়নের উদ্দেশ্যে সকলের অভিযোগ, পরামর্শ গ্রহণ এবং মন্তব্য প্রত্যাশা করে। আপনার কোনও অভিযোগ থাকলে আপনার নাম ও যোগাযোগের ঠিকানা দিয়ে আমাদের সহযোগিতা করবেন, আপনার অভিযোগ / প্রশ্নের যথার্থ সমুত্তর ও আপনাকে পরিস্থিতি সম্পর্কে আমরা অবগত করবো।

যদি আপনি আপনার ব্যক্তি পরিচয় গোপন রাখতে চান তাহলে আপনার নামের উপরে 'গোপনীয়' কথাটি লিখবেন।

ধন্যবাদান্তে

| | | |
|--|---|--------------------|
| তারিখ ০৭/১২/২০২৩ | পঞ্জীকরণের বা Registration এর স্থান: গ্রাম পঞ্চায়েত- <u>বামনঘাটী</u> গ্রাম সংসদ- <u>হোতলীম</u> | ব্লক- <u>১৫৩-২</u> |
| যোগাযোগের ঠিকানা / ব্যক্তিগত তথ্য | | |
| নাম | <u>শেখা মন্ডল</u> | বিল |
| বাসের ঠিকানা: গ্রাম- <u>হোতলীম</u> ফোন নং- | পাড়া- <u>ঢালপুকুর</u> ই-মেইল- | বয়স |
| অভিযোগ/ পরামর্শ/ মন্তব্য/ প্রমাদি. দয়া করে কে, কি, কোথায় এবং কিভাবে - অভিযোগের এই বিশদ বিবরণ নিচে লিখুন- <u>বামনঘাটী পঞ্চায়েতের অধীনে হোতলীম গ্রামের পঞ্চায়েত সদস্য</u> <u>শেখা মন্ডল নিম্নোক্ত সাবে Superintendent Engineer, PHED</u> <u>কে বালানন, হোতলীম গ্রামের ঢালপুকুর পাড়া ডেপুটি জ্যেষ্ঠ ইঞ্জিনিয়ার</u> <u>হাতী থেকে প্রায় ২০০ ফুট দূরত্বে হাতী পর্যন্ত অসুস্থতার ৫৫০ ফুট পাইপ ক্যানালিং</u> <u>কর্ম ও একটা মাসের সাফা পাঠ না। এই এককম কেনে পাঠানো</u> <u>কর্তৃপক্ষের কাছে।</u> | | |
| যদি কোন অতিরিক্ত কাগজ জুড়তে হয় / বা নোট থাকে বা চিঠি থাকে তাহলে এই ঘরে (✓) টিক দিন। আপনি কিভাবে আপনার অভিযোগ / মন্তব্য বিষয়ে অবগত হতে চান? | | |

শুধুমাত্র অফিসের ব্যবহারের জন্য:

| | |
|--|--|
| যে আধিকারিক অভিযোগ জমা নিলেন তার নাম: | <u>SE এর কাজে DSISC র কাজে অধীক্ষক এম.সি. DSISC</u> |
| কিভাবে জানানো হল (✓) টিক দিন: নোট বা চিঠির মাধ্যমে - | <u>ই-মেইল</u> <u>মুখে মুখে বা টেলিফোনে</u> |
| যিনি অভিযোগ পাবার পর খতিয়ে দেখেছেন: | <u>DSISC Mr. Subhasis Saha (Support Eng) কে দায়িত্ব</u> |
| নাম / পদ | <u>ডেপুটি ইঞ্জিনিয়ার (সহকারী)</u> |
| কি ব্যবস্থা গ্রহণ করা হয়েছে: | |
| ব্যবস্থা যা গৃহীত হয়েছে তা জানানো হয়েছে কি না - | <u>হ্যাঁ / না</u> |
| কিভাবে জানানো হল: | |

মন্তব্য-
 প্রস্তুতকারক - _____ অনুমোদনকারী - _____ তারিখ- ০৭/১২/২০২৩

State & District Level Steering committee

1

**Public Health Engineering Department
West Bengal Drinking Water Sector Improvement Project
(WBDWSIP)**

Minutes of the 1st Meeting of State Level Steering Committee on West Bengal Drinking Water Sector Improvement Project (WBDWSIP) under the Chairmanship of Chief Secretary, West Bengal in the Conference Hall, Nabanna, 13th Floor, Howrah, held on 16.04.2019 at 11:00AM.

The list of Members present is attached as Annexure-A

Chief Secretary, Government of West Bengal took the chair and initiated the discussions.

2) Principal Secretary, Public Health Engineering Department apprised the committee that after the approval of Government of West Bengal and the Department of Economic Affairs, Government of India, Loan agreement with Asian Development Bank was signed on 03.10.2018 for an amount of 240 Million US Dollar as Loan and 3 million US Dollar as Grant under Japanese Fund for Poverty Reduction (JFPR) for execution of 3 (three) Water Supply Projects in Arsenic affected areas of North 24 Parganas district, salinity affected areas of Purba Medinipur district and fluoride affected areas of Bankura district under WBDWSIP. The objective of the Project is to deliver safe, sustainable and inclusive drinking water services in the aforesaid project districts with provision of 100% house hold metered connection to provide 24 X 7 water supply. One Project Management Unit (PMU) headed by Chief Engineer & Project Director and 3 (Three) Project Implementation Units (PIU) headed by Superintending Engineer under P.H. Engineering Department have been established for timely implementation of the Project.

3) Chief Engineer & Project Director described the details of the project through a power point presentation and highlighted the following points in respect of three subprojects:

- i) In **Bankura district**, the DPR for Bankura district has been prepared considering 8 (eight) blocks namely Taldangra, Indpur, Gangajalghati, Mejhta, Sonamukhi, Patrasayer, Joypur and Kotolpur. But presently the 4 (four) blocks, namely Taldangra, Indpur, Gangajalghati and

Mejhia will be covered fully through piped water supply with the financial assistance from ADB. The proposal for remaining 4(four) blocks will be taken up with ADB for additional funding as the ADB officials advised in their *aide memoire* during their last consultation mission on 26-27 March, 2019.

- ii) In **Purba Medinipur** district, DPR for 4(four) Blocks namely Nandakumar, Chandipur, Nandigram-I and Nandigram-II has been prepared. But presently 2(Two) Blocks namely Nandigram -I and Nandigram -II will be covered fully through piped water supply with the financial assistance from ADB. But the Water Treatment Plant will be constructed for catering to all 4(four) blocks as mentioned above. The proposal for remaining 2(Two) blocks will be taken up with ADB for additional funding.
- iii) In **North 24 Parganas and South 24 Parganas** districts, Haras and Bhangar-II blocks will be covered fully through piped water supply but Water Treatment Plant is considered for Barasat-II block also. The cost of distribution network for Barasat-II block is not considered under this Loan assignment. Now one DPR has been prepared for distribution network of Barasat-II Block for proposal initiation with ADB.
- iv) Presently 4 (four) Consultancy firms and 3 (three) NGOs have been engaged to assist PMU and 3(three) PIUs as per ADB approved Project Administration Manual (PAM). Moreover, Technical Assistance (TA) Consultant has also been engaged by the ADB for Smart Water Management.
- v) Purchase of Private land for construction of Intake Structure, Water Treatment Plant and Overhead reservoirs is under process for all the schemes. The land parcels lying with other Government Department are also being processed for Inter Departmental Transfer. All efforts will be taken to get the required parcels of land in possession of PHED well in advance so that project implementation is not affected for want of site at any stage.
- vi) Communication has been made with WBIDC for issuance of confirmation to Damodar Valley Reservoir Regulatory Commission

(DVRRC) regarding drawal of 70MLD water from Durgapur Barrage to get the drawal permission from DVRRC. The same was issued by WBIDC on 29.06.2018 addressed to Member Secretary DVRRC but DVRRC again asked for reconfirmation regarding the present requirement. The matter will be taken up again with WBIDC and also referred to me&W Department for taking up with DVRRC for expeditious action.

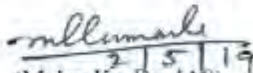
- vii) Postings of Sr. Accounts Officer at PMU and Accounts Officer at PIU-
Purba Medinipur is required to be made on urgent basis as the loan disbursement and expenditures have already been started. The ADB officials highlighted the issue during their last mission. AGWB has already replied that there is no sanctioned post of Sr Accounts Officer/Accounts Officer under the Administrative Control of Works Miscellaneous Section and no scope to provide any regular Sr A.O./A.O. for the post. Proposal for re-designation of Sr Accounts Officer/Accounts Officer Post as Divisional Accounts Officer have been submitted to Finance Department for approval in consultation with the Financial Advisor, PHE Department. The Additional Secretary, Finance Department informed that he will look into the proposal of PHED.
- 4) Additional Chief Secretary, Irrigation and Waterways Department assured that the issues related to I & W Department will be taken care of on priority basis for smooth implementation of the project.
- 5) Additional Chief Secretary, Panchayets & Rural Development Department informed that necessity of piped water supply in other water quality affected blocks of North 24 Parganas, South 24 Pargana, Purba Medinipur and Bankura districts also needs to be looked into on urgent basis. The Principal Secretary, PHE Department informed that at present PHE Department has taken up a few surface water based water supply schemes which include ADB and JICA assisted schemes to provide safe and sustainable drinking water in the quality affected blocks of West Bengal under different Programmes which will be commissioned within the next 2 to 3 Years. The present population

covered through piped water supply scheme in west Bengal is about 58% and once the ongoing schemes are commissioned the coverage would reach 72%.

- 6) Principal Secretary, PHE Department proposed that the Principal Secretaries of P.W. Department, Land and Land Reforms Department and Urban Development & Municipal Affairs Departments may also be incorporated as members of the committee for more effective coordination and collaboration for timely commissioning of projects. In addition, Superintending Engineer/Executive Engineer, PWD, PW (Roads) and ADM (LR)/ DLLRO of the Project districts may also be included as invitee members of the District Level Steering Committee. The Chief Secretary agreed with the proposal. The revised list of members of State Level and District Level Steering Committee is attached as Annexure-B.

Chief Secretary advised that PHED must prepare an action plan and shelf of projects so that the entire state is covered with piped water supply schemes within the next 6 to 7 years by fixing priority in the quality affected blocks. He further advised that proposals for the remaining blocks to be covered under this project may be initiated by the PHE Department as early as possible.

There being no other issues for discussion, the meeting ended with vote of thanks to and from the Chair


215119

Chief Secretary
Government of West Bengal

Memo no. PMU/WBDWSIP/PHED/104/ 356(1-9)

Dated Kolkata the 07.05.2019

Copy forwarded for information to:

1. P.A. to the Chief Secretary, Govt. of West Bengal. For kind information of the Chief Secretary.
2. P.A. to the Additional Chief Secretary, I & W Department. For kind information of the Additional Chief Secretary.
3. P.A. to the Additional Chief Secretary, P & R Department. For kind information of the Additional Chief Secretary.
4. P.A. to the Additional Chief Secretary, Finance Department. For kind information of the Additional Chief Secretary.
5. P.A. to the Principal Secretary, PHE Department. For kind information of the Principal Secretary.
6. P.A. to the Principal Secretary, Public Works Department. For kind information of the Principal Secretary.
7. P.A. to the Principal Secretary, Urban Development & Municipal Affairs Department. For kind information of the Principal Secretary.
8. P.A. to the Principal Secretary, Land and Land Reforms Department. For kind information of the Principal Secretary.
9. P.A. to the Engineer-in-Chief, PHE Department. For kind information of the Engineer-in-Chief.

AK
Chief Engineer & Project Director
PMU, WBDWSIP, PHE Dte
Government of West Bengal
07.05.19

Memo no. PMU/WBDWSIP/PHED/104/ 356(1-30)

Dated Kolkata the 07.05.2019

Copy forwarded for information and necessary action to:

1. The District Magistrate, North 24 Parganas/South 24 Parganas/Purba Medinipur/Bankura.
2. The Additional District Magistrate (LR)/DLLRO, Land and Land Reforms Department, North 24 Parganas/ South 24 Parganas/Purba Medinipur/Bankura.
3. The Additional Executive Officer, North 24 Parganas/South 24 Parganas/ Purba Medinipur/Bankura Zilla Parishad.
4. The Superintending Engineer, PIU, North 24 Parganas/Purba Medinipur/Bankura, WBDWSIP, PHED
5. The Superintending Engineer, Western Highway Circle-II/South Western Highway Circle/Eastern Highway Circle/ Southern Highway Circle, PW (Roads) Dte.
6. The Superintending Engineer, Western Circle II/ South Western Circle, PWD
7. The Superintending Engineer, Metropolitan Drainage Circle-I / Eastern Circle / Kangsabati Circle-I, Bankura / Western Circle-II, Medinipore/ Damodar Irrigation Circle, Irrigation and Waterways Dte.
8. The Executive Engineer, PIU, North 24 Parganas/ Purba Medinipur/ Bankura, PHE Dte
9. The Executive Engineer, Barasat Highway Division -I/ South 24 Parganas Highway Division /Tamluk Highway Division/ Bankura Highway Division, PW (Roads) Dte.
10. The Executive Engineer, Tamluk Division/ Bankura Division, PWD
11. The Executive Engineer, Contai Division/ Kangsabati Canal Division -I/ Damodar Headworks, I & W Dte.

AK
Chief Engineer & Project Director
PMU, WBDWSIP, PHE Dte
Government of West Bengal
07.05.19



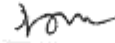
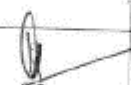
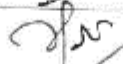

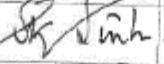


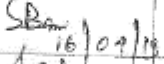
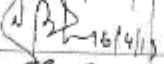
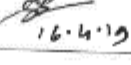
Meeting on 16.04.2019- 1st State Level Steering Committee

Subject:-WBDWSIP

Venue:-CS- Conference hall, Nabsanna

Time:-11:00am

Attendance Sheet:-

| Sl. No | Name | Signature | Email |
|--------|---|---|---------------------------------------|
| 1 | Chief secretary |  | |
| 2 | Additional Chief Secretary, P & RD Department |  | |
| 3 | Additional Chief Secretary, I & WD Department |  | |
| 4 | Additional Chief Secretary, Finance Department | | |
| 5 | Principal Secretary, PHE Department |  | |
| 6 | Engineer- In - Chief, PHED |  | |
| 7 | Chief Engineer & P.D. WBDWSIP, PHE St. |  | pd.pmu.adb@wbphed.gov.in |
| 8 | Dr. Sudip Kr. Sinha Addl. Secretary, Finance |  | sudipkumar.sinha@yahoo.in |
| 9 | Subhasis Ray |  | Se. Pimpurmed. adk @wbphed.gov.in |
| 10 | Robertas Bruni |  | SE PIU N W Pgm |
| 11 | Sujoy Barua |  | SE/PIU, Bankura |
| 12 | Nityananda Khan |  | SE/ME/PMU. sene.pmu.adb@wbphed.gov.in |
| 13 | Samarat San |  | ce2.pmu.adb@wbphed.gov.in |
| 14 | | | |
| 15 | | | |
| 16 | | | |

Annexure-B

A. Restructured State Level Steering Committee for ADB Assisted Project (WBDWSIP) under PHE Department.

Members of the State Level Steering Committee :-

| | | |
|----|--|-------------------------|
| 1 | The Chief Secretary, Govt. of West Bengal- | Chairperson |
| 2 | The Principal Secretary / Additional Chief Secretary, PHE Department- | Member |
| 3 | The Principal Secretary / Additional Chief Secretary, P & RD Department | Member |
| 4 | The Principal Secretary/ Additional Chief Secretary, Finance Department | Member |
| 5 | The Principal Secretary/ Additional Chief Secretary, I & W Department | Member |
| 6 | The Principal Secretary/ Additional Chief Secretary, Public Works Department | Member |
| 7 | The Principal Secretary/Additional Chief Secretary, Urban Development & Municipal Affairs Department | Member |
| 8 | The Principal Secretary/ Additional Chief Secretary, Land and Land Reforms Department | Member |
| 9 | The Engineer-in-Chief, PHE Department | Member |
| 10 | The Project Director, WBDWSIP, PHE Directorate | Member Secretary |
| 11 | The District Magistrate (each District) | Invitee Member |

B. Restructured District Level Steering Committee for ADB Assisted Project (WBDWSIP) under PHE Department

Members of the District Level Steering Committee :-

| | | |
|----|---|-------------------------|
| 1 | The District Magistrate | Chairperson |
| 2 | The Additional District Magistrate/DLLRO, Land and Land Reforms | Member |
| 3 | The Additional Executive Officer, Zilla Parisad | Member |
| 4 | The Superintending Engineer, PIU (each PIU). PHE Dte | Member Secretary |
| 5 | The Superintending Engineer/Executive Engineer, PW (Roads) | Member |
| 6 | The Superintending Engineer/Executive Engineer, PWD | Member |
| 7 | The Superintending Engineer/Executive Engineer, I & WD | Member |
| 8 | The Executive Engineer, (PIU), PHE Dte | Member |
| 9 | The Assistant Engineer, Social Safeguard (PIU) PHE Dte | Member |
| 10 | The Block Development Officer (each Block) | Member |
| 11 | Representative of NGO | Invitee Member |

PMU LEVEL

19.5.19
27/5/19
Open files
R. O. Grievance
Social & Gender
Safeguard
27/5/19

Grievance Redressal new file PI-X10-418/PIU, dt-11.10
Social & Safeguard
10/27
28.05.2019
1
EE(Civil) PIU,
New Pym. PIU.
Superintending Engineer,
PIU, North 24-Parganas
WBDWSIP, P.H.E. Dte.
Govt. of West Bengal

Government of West Bengal
Public Health Engineering Directorate
Project Management Unit, West Bengal Drinking Water Sector Improvement Project
Utility Building, 1st Floor, (Premises No.-09/1-0024)
AA-IA, (Tank No.-3), New Town Kolkata-700 156
Phone No.-(033) 2324-2095, E-mail.: pd.pmu.adb@wbphed.gov.in;
pmu.adb@wbphed.gov.in

Memo No. PMU/WBDWSIP/PHED/28.1.380

Date: 16.05.2019.

NOTIFICATION

In order to address social, environmental and any other project or sub project related grievances in the implementation of Piped water supply schemes in the districts of Bankura, North & South 24 Parganas, Purba Medinipur under West Bengal Drinking Water Sector Improvement Project, PHE Dte with the assistance of Asian Development Bank (ADB), a common grievance redress mechanism has been developed for Project Management Unit.

The following members constitute the Grievance Redressal Committee to resolve the grievances at the PMU level:

1. Chair person- Chief Engineer & Project Director ,PMU
2. Member-Superintending Engineer (Civil), PMU
3. Member-Superintending Engineer (Mech/Elec.), PMU,
4. Safeguards and Gender Officer, Safeguards Gender Cell- Executive Engineer-I PMU,

The functions of GRC at PMU level are as follows:-

1. Accept Grievances of the Aggrieved parties through telephone hot lines at accessible location, email, post at PMU office
2. Address and Facilitate resolution of Grievances not resolved at the field and PIU level within stipulated time.
3. PMU HSGO together with PIU safeguard officers will have the joint responsibility for timely grievance redress on safeguards and gender issues and for registration of grievances, related discloser, and communication with the aggrieved party.
4. Resolve grievances and suggest corrective measures or solutions for their redressal to PIU for implementation within the specified time (within 15 days).
5. If grievances cannot be resolved at the project level they will be referred to the District Steering Committee (DSC), which will also act as Grievance Redressal Committee particularly in matters related to land purchase and or acquisition, payment of compensation, and environmental pollution among others.

6. Any matter deemed higher than the district level or that may require inter departmental coordination, the required grievances redress will be referred to the state level steering committee.
7. Careful documentation of the name of the complainant and date of receipt of complaint, address and contact details of complainant, location of the problem area and how the problem was resolved and report the same in the Quarterly Progress Report and Semi Annual Safeguard Monitoring report to be submitted to ADB.
8. Periodically Review the functioning of the GRM at the field and PIU level.

The GRC will continue to function throughout the project duration.

Atz. 16.05.19 ✓
Chief Engineer & Project Director,
PMU, WBDWSIP, P.H.E. Dte.,
Govt. of West Bengal.

Memo No. PMU/WBDWSIP/PHED/...../.....

Date: 16.05.2019.

Copy forwarded for information to:-

1. The Superintending Engineer, Civil / (M/E), PMU, WBDWSIP, PHE Dte.
2. The Superintending Engineer, PIU, North 24 Parganas/ Purba Medinipur / Bankura, WBDWSIP, PHE Dte. with a directive to constitute the GRC at the PIU level and Field level as suggested in PAM approved by ADB.
3. The Executive Engineer-I, PMU, WBDWSIP, PHE Dte.
4. The Executive Engineer, PIU, North 24 Parganas/ Purba Medinipur / Bankura, WBDWSIP, PHE Dte.

Atz. 16.05.19 ✓
Chief Engineer & Project Director,
PMU, WBDWSIP, P.H.E. Dte.,
Govt. of West Bengal.



GOVERNMENT OF WEST BENGAL
OFFICE OF THE SUPERINTENDING ENGINEER
P.I.U., NORTH 24 PARGANAS WEST BENGAL DRINKING
WATER SECTOR IMPROVEMENT PROJECT
PUBLIC HEALTH ENGINEERING DIRECTORATE
UTILITY BUILDING, 3RD FLOOR, (PRIMISES NO.-09/1-0024)
AA-1A (TANK NO. 3), NEW TOWN, KOLKATA-700156
Email : se_piun24p.adb@wbphed.gov.in

Memo No.

/PIUN24PGS

Dated :

NOTIFICATION

In order to address social, environmental and any other project or sub project related grievances in the implementation of Asian Development Bank (ADB) assisted Piped water supply schemes in the district of North 24 Parganas under West Bengal Drinking Water Sector Improvement Project (WBDWSIP), a project level Grievance Redress Mechanism (GRM) has been developed for the Project Implementation Unit (PIU), North 24 Parganas, WBDWSIP, PHE Dte. and the Grievance Redress Committee (GRC) has been constituted with the following members to resolve the grievances at the PIU level:


| Status in the GRC | Designation | Contact No. |
|-------------------|--|---------------------------|
| Member | Assistant Engineer and Officer, Safeguard & Gender (Responsible for Haroa), PIU, North 24 Parganas, WBDWSIP, PHE Dte | 033 2324 2051 (Extn. 204) |
| Member | Assistant Engineer (Responsible for WTP), PIU, North 24 Parganas, WBDWSIP, PHE Dte. | 033 2324 2051 (Extn. 202) |
| Member | Assistant Engineer (Responsible for Bhangar-II), PIU, North 24 Parganas, WBDWSIP, PHE Dte. | 033 2324 2051 (Extn. 203) |
| Member | Junior Engineer and Asst. Officer, Safeguards (Responsible for Haroa), PIU, North 24 Parganas, WBDWSIP, PHE Dte. | 033 2324 2051 (Extn. 205) |
| Member | Junior Engineer and Asst. Officer, Gender (Responsible for WTP), PIU, North 24 Parganas, WBDWSIP, PHE Dte. | 033 2324 2051 (Extn. 210) |
| Member | Junior Engineer (Responsible for Bhangar-II), PIU, North 24 Parganas, WBDWSIP, PHE Dte. | 033 2324 2051 (Extn. 211) |

Note : This is in accordance to the structure enumerate in PAM.

The function of GRC at PIU level are as follows-

1. Being assisted by the Design Supervision & Institutional Support Consultants (DSISC) the PIU will disseminate information and awareness campaigns on grievance redress procedures.
2. Brief the contractors on GRM with support from DSISC.
3. Accept grievances of the aggrieved person(s) in the grievance redress form (as specified in Appendix 6 of PAM).
4. Careful documentation of the name of the aggrieved person(s), date of receipt of the grievance, address/ contact details of the aggrieved person, location of the problem area etc.

5. Address and facilitate resolution of grievances not resolved at the field level within stipulated time (7 days).
 6. The Officer, Safeguard & Gender, PIU, North 24 Parganas supported by the Social Gender & Resettlement Specialist of DSISC, North 24 Parganas will be responsible for conducting meeting with the affected/ aggrieved person(s) to understand their concerns and help them through the process of grievance redressal including translating the complaints into Bengali or English, recording and registering grievances of non-literate affected persons and explaining the process of grievance redress mechanism.
 7. If the PIU level GRC fails to resolve the grievance, the matter may be conveyed to the GRC established within PMU and the actions suggested by them to be taken up/ followed by this GRC.
 8. Ensure redress of grievances on safeguards and gender issues and for registration of grievances, related disclosure and communication with the aggrieved party.
 9. If grievances cannot be resolved at the PIU level, they will be referred to the District Steering Committee (DSC), acting as the GRC.
 10. Any matter deemed higher than the district level or that may require inter-departmental coordination, the required grievance redress will be referred to the State Level Steering Committee (SLSC).
 11. The GRC at PIU, North 24 Parganas will also be responsible for follow-through for each grievance, periodic information dissemination to the aggrieved person(s) on the status of their grievances and recording their feedback (satisfaction/ dissatisfaction and suggestions).
 12. Periodically Review the functioning of the GRM at this end as well as field level.
- The GRC will continue to function throughout the project duration.



 Superintending Engineer
 P.I.U., North 24 Parganas, WBDWSIP
 Public Health Engineering Directorate
 Govt. of West Bengal

Memo No. 409/(1-12) /PIUN24PGS

Dated: 20.05.19

Copy forwarded for information to :-

1. The Chief Engineer & Project Director, PMU, WBDWSIP, PHE Dte.
2. The Dy. Superintending Engineer, PIU, North-24 Pgs., WBDWSIP, PHE Dte.
3. The Executive Engineer (Civil), PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
4. The Executive Engineer (Elec./Mech.), PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
5. The Executive Engineer-I and Head Safeguard & Gender Officer, PMU, WBDWSIP, P.H.E. Dte.
6. The Assistant Engineer-I / II, PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
7. The Assistant Engineer and Officer Safeguard & Gender, Sub Divn.-I under PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
8. Sri Shyamalendu Debadhikari, Junior Engineer, PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
9. The Junior Engineer and Junior Safeguard & Gender Officer, PIU, North 24 Parganas, WBDWSIP, PHE Dte.
10. The Junior Engineer and Junior Environmental Officer, PIU, North 24 Parganas, WBDWSIP, P.H.E. Dte.
11. The Team Leader, DSISC, North 24 Parganas.
12. The Social / Gender / Resettlement Specialist, DSISC, North 24 Parganas.


 Superintending Engineer
 P.I.U., North 24 Parganas, WBDWSIP
 Public Health Engineering Directorate
 Govt. of West Bengal

Field Level – North 24 pgs

West Bengal Drinking Water Supply Improvement
Project, WBPHE Directorate

DESIGN, CONSTRUCTION SUPERVISION AND
PROJECT IMPLEMENTATION SUPPORT
CONSULTANTS (DSISC), N 24 Parganas
e-mail: n24dsiscstup@gmail.com

b/c

STUP Consultants Pvt. Ltd.
JV with SHAH Technical Consultants Pvt.
Ltd.
Address:
Utility Building, 2nd and 3rd floor,
Premises No. 09/1-0024, AA-1A (Tank No. 3),
New Town, North 24 Parganas, WEST BENGAL.



Letter No: DSISCN24P/TU/2019/ 51A

Date: 12.06.2019

To
Executive Engineer
PIU, North 24 Parganas, WBDWSIP,
2nd Floor, Utility Building, Tank No - 3
Action Area – 1A, New Town, Kolkata
Pin: 700156, West Bengal

Sub: Design and construction of overhead reservoir including water supply distribution network & metering works in Haroa & Bhangar- II Blocks (Contract Package No. WBDWSIP/DV/W/NCB/N24P/02A&32B/2017-2018) – **Field Level GRM**

Dear Sir,

We refer to the organization structure of the proposed Field Level grievance redress mechanism and herewith nominate our following mentioned key experts as DSISC representatives:

- Social, Gender and Resettlement Specialist, and
- Environmental Specialist.

Necessary notification may please be made in this regard.

Thanking you

Yours Sincerely,

12/06/19

Team Leader, DSISC
North 24-Parganas, WBDWSIP

**Team Leader, DSISC
North 24 Parganas
WBDWSI Project**

Copy forwarded for information to:-

1. The Superintending Engineer, PIU, North 24 Parganas, WBDWSIP, PHE Dte
2. The Assistant Engineer, N24P, W/S- Sub Divn-I, Under North 24 Parganas, PHE Dte.
3. The Assistant Engineer – II, North 24 Parganas, W/S- Divn- II, PHE Dte.



STUP Consultants P. Ltd

12.06.19
RECEIVED
(Contents Not Verified)
Receiving Clerk
North 24 Parganas W/S Divn-II
PHE Engrs Dte.

12-06-19
Received
(Contents not verified)
Receiving Clerk
North 24 Pgs. W/S Sub Divn-I
Under North 24 Pgs. W/S Divn-II, PHE, Dte.
Govt of West Bengal





NCC

Ref: NCC/Water/WSS-DIHANGAR/2019-20135

Date: 23.09.19

To,
The Executive Engineer,
P.U., North 24 Parganas, WDDWSIP,
P.O. Deyrauda, Government of West Bengal,
17 Floor, Utility Building, South N.V. Action Area-1A,
New Town, Kolkata-700056, West Bengal.

Sub: Design and Commission of Overland Retention including Water Supply Distribution Network and Metering Works in Harapandi Goad* (Reg. Field Level CRM)

Ref: No.1, Agreement Memorandum No. PACC/WDDWSIP/WHF/2019/51

Sir,

We refer to the organization structure of the proposed Field Level Division/Kudera Mchhanta and request you to nominate one technical engineer/one person as JAO/representative, Safety Officer, responsible for Harapandi Goad under District No. 1971/0720.

Necessary arrangements may please be made in this regard.

Thanking you for rendering the best services at all times.

Yours Faithfully,
For NCC LIMITED
(Formerly, Nagarjuna Construction Company Limited)

Anoop Kumar
Dy. General Manager

*File
23/9/19*

Copy forwarded to:

1. The Superintendent of Engineer, P.O. 17 Floor, North 24 Parganas, WDDWSIP, P.O. Dey,
2. The Asst. Engineer, P.O., 17-11, 1st floor, WDDWSIP, P.O. Dey
3. Team Leader, DEISC, North 24 Parganas, WDDWSIP



NCC Limited
Former Nagarjuna Construction Company Limited
ECG Square Business Park, Block-A4, 5th Floor,
Action Area-3, New Town, Kolkata - 700 030
Phone : 1221 4225 1666, Fax : 1221 4225 4827
CIN No. : L72100AP1500PR0391145

DEISC / WDDWSIP
Inward No. 1012
RECEIVED
23-9-19
Tapan Kumar

Environment & Social Safeguard Unit- North 24 pgs



West Bengal Drinking Water Sector Improvement Project
(Asian Development Bank funded)
PROJECT MANAGEMENT UNIT
Public Health Engineering Department,
Government of West Bengal



Utility Building, 1st Floor, AA-1A (Tank No. 3), New Town, North 24 Parganas, - 700156

No: PMU/WBDWSIP/PHED/94/695A.

Date: 07/08/2023

OFFICE ORDER

Public Health Engineering Department (PHED) has established a dedicated Environment and Social Safeguard Unit (ESSU) at Project Implementation Unit (PIU) level, North 24 pargana to ensure the implementation of Environmental and Social Safeguards as per ADB's Safeguard Policy Statement (SPS), 2009 and requisite requirements under Loan No. 3696-IND.

Environment, Social and GESI – PIU, North 24 Parganas.

| Sl. No. | Designation | Name | Contact details | Status |
|---------|--|-----------------------------|-----------------|---------------------------------|
| 1 | Executive Engineer, PIU, N 24 Pgs. | Mr. Subhabrata Kundu | +91-9163236033 | Available since – November 2021 |
| 2 | Assistant Engineer - I, PIU, N 24 Pgs. | Mr. Sk. Mozammel Haque | +91-6291880569 | Available since – August 2021 |
| 3 | Assistant Engineer - II, PIU, N 24 Pgs. | Mr. Prabir Kr. Naskar | +91-9433778332 | Available since – April 2022 |
| 4 | Dy. Team Leader, DSISC, North 24 Pgs. | Mr. Anujit Dutta | +91-9925070335 | Available since – August 2022 |
| 5 | Social, Gender and Resettlement Specialist, DSISC, N 24 Pgs. | Dr. Shrabani Sengupta | +91-9836022781 | Available since – November 2019 |
| 6 | Environmental Specialist, DSISC, N 24 Pgs. | Mr. Swarnabha Bandyopadhyay | + 91-8017668861 | Available since – December 2018 |

AYESHA RANI A, IAS
Sr. Special Secretary, PHED and
Project Director, PMU, WBDWSIP

No: PMU/WBDWSIP/PHED/94/695A.

Date: 07/08/2023

Copy forwarded for information to:

1. S.E., PIU, North 24 Parganas, WBDWSIP, PHED

AYESHA RANI A, IAS
Sr. Special Secretary, PHED and
Project Director, PMU, WBDWSIP

APPENDIX 13: SAMPLE SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT TEMPLATE

1. Introduction

- Overall project description and objectives
- Environmental category as per ADB Safeguard Policy Statement, 2009
- Environmental category of each subproject as per national laws and regulations
- Project Safeguards Team

| Name | Designation/Office | Email Address | Contact Number |
|----------------|--------------------|---------------|----------------|
| 1. PMU | | | |
| | | | |
| | | | |
| 2. PIUs | | | |
| | | | |
| | | | |
| | | | |
| 3. Consultants | | | |
| | | | |
| | | | |
| | | | |

- Overall project and sub-project progress and status
- Description of subprojects (package-wise) and status of implementation (preliminary, detailed design, on-going construction, completed, and/or O&M stage)

| Package Number | Components/ List of Works | Status of Implementation (Preliminary Design/Detailed Design/On-going Construction/Completed/O&M) ^a | Contract Status (specify if under bidding or contract awarded) | If On-going Construction | |
|----------------|---------------------------|--|--|--------------------------|--------------------------|
| | | | | %Physical Progress | Expected Completion Date |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

^a If on-going construction, include %physical progress and expected date of completion.

2. Compliance Status with National/State/Local Statutory Environmental Requirements

| Package No. | Subproject Name | Statutory Environmental Requirements ^b | Status of Compliance ^c | Validity if obtained | Action Required | Specific Conditions that will require environmental monitoring as per Environment Clearance, Consent/Permit to Establish ^d |
|-------------|-----------------|---|-----------------------------------|----------------------|-----------------|---|
| | | | | | | |

- With reference to approved EMP/site-specific EMP/construction EMP, complete the table below
 - Provide the monitoring results as per the parameters outlined in the approved EMP (or site-specific EMP/construction EMP when applicable).
 - In addition to the table on EMP implementation, the main text of the report should discuss in details the following items:
 - (i) **Grievance Redress Mechanism.** Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-related issues/complaints. Include as appendix Notification of the GRM (town-wise if applicable).
 - (ii) **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).
- Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
 - Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
 - Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain;
 - Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area.
 - Confirm spill kits on site and site procedure for handling emergencies.
 - Identify any chemical stored on site and provide information on storage condition. Attach photograph.
 - Describe management of stockpiles (construction materials, excavated soils, spoils, etc.). Provide photographs.
 - Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
 - Provide information on barricades, signages, and on-site boards. Provide photographs.
 - Provide information on Checking if there are any activities being under taken out of working hours and how that is being managed.

Summary of Environmental Monitoring Activities (for the Reporting Period)

| Impacts (List from IEE) | Mitigation Measures (List from IEE) | Parameters Monitored (As a minimum those identified in the IEE should be monitored) | Method of Monitoring | Location of Monitoring | Date of Monitoring Conducted | Name of Person Who Conducted the Monitoring |
|-------------------------------|-------------------------------------|---|----------------------|------------------------|------------------------------|---|
| Design Phase | | | | | | |
| | | | | | | |
| | | | | | | |
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| Pre-Construction Phase | | | | | | |
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| Construction Phase | | | | | | |
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| Operational Phase | | | | | | |
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| | | | | | | |

^a Attach Laboratory Results and Sampling Map/Locations

Overall Compliance with CEMP/ EMP

| No. | Sub-Project Name | EMP/ CEMP Part of Contract Documents (Y/N) | CEMP/ EMP Being Implemented (Y/N) | Status of Implementation (Excellent/Satisfactory/ Partially Satisfactory/ Below Satisfactory) | Action Proposed and Additional Measures Required |
|-----|------------------|--|-----------------------------------|---|--|
| | | | | | |
| | | | | | |
| | | | | | |

5. Approach and Methodology for Environmental Monitoring of the Project

- Brief description on the approach and methodology used for environmental monitoring of each sub-project

6. Monitoring of Environmental Impacts on Project Surroundings (Ambient Air, Water Quality and Noise Levels)

- Brief discussion on the basis for monitoring
- Indicate type and location of environmental parameters to be monitored
- Indicate the method of monitoring and equipment to be used
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

As a minimum the results should be presented as per the tables below.

Air Quality Results

| Site No. | Date of Testing | Site Location | Parameters (Government Standards) | | |
|----------|-----------------|---------------|-----------------------------------|--------------------------------------|--------------------------------------|
| | | | PM10 µg/m ³ | SO ₂ µg/m ³ | NO ₂ µg/m ³ |
| | | | | | |
| | | | | | |
| | | | | | |

| Site No. | Date of Testing | Site Location | Parameters (Monitoring Results) | | |
|----------|-----------------|---------------|---------------------------------|--------------------------------------|--------------------------------------|
| | | | PM10 µg/m ³ | SO ₂ µg/m ³ | NO ₂ µg/m ³ |
| | | | | | |
| | | | | | |
| | | | | | |

Water Quality Results

| Site No. | Date of Sampling | Site Location | Parameters (Government Standards) | | | | | |
|----------|------------------|---------------|-----------------------------------|-----------------------|-------------|-------------|------------|------------|
| | | | pH | Conductivity µS/cm | BOD mg/L | TSS mg/L | TN mg/L | TP mg/L |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Site No. | Date of Sampling | Site Location | Parameters (Monitoring Results) | | | | | |
|----------|------------------|---------------|---------------------------------|-----------------------|-------------|-------------|------------|------------|
| | | | pH | Conductivity μS/cm | BOD mg/L | TSS mg/L | TN mg/L | TP mg/L |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Noise Quality Results

| Site No. | Date of Testing | Site Location | LA _{eq} (dBA) (Government Standard) | |
|----------|-----------------|---------------|--|------------|
| | | | Day Time | Night Time |
| | | | | |
| | | | | |
| | | | | |

| Site No. | Date of Testing | Site Location | LA _{eq} (dBA) (Monitoring Results) | |
|----------|-----------------|---------------|---|------------|
| | | | Day Time | Night Time |
| | | | | |
| | | | | |
| | | | | |

7. Summary of Key Issues and Remedial Actions

- Summary of follow up time-bound actions to be taken within a set timeframe.

8. Appendixes

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- Other

APPENDIX 14: SAMPLE CHANCE FIND PROTOCOL

Introduction

Project town being a heritage town, there are possibility of any chance finds (artefacts) recovery during excavations. Contractors working at heritage towns must take additional care not to destroy or damage historic features during excavations. There may be many buried historic features in heritage towns such as – idols, toys, wells, ancient drains, remains of buildings, other walls, grain pits, etc. Every care must be made not to destroy these during excavations.

Excavator drivers need to be instructed to be aware of hitting buried features and that they must be investigated before continuing work. When features are encountered during mechanical excavation, work should stop and the PIU/Consultants engineers must be informed immediately so that they can be inspected at the first opportunity.

When historic features such as walls, brick constructions and other features are encountered during excavation the excavation must be stopped immediately and the PIU/Consultants must be informed immediately.

- 1.1 **Contractors' instruction:** As soon as contractor recovers any chance find during any excavation works for pipe laying, they should immediately inform PIU/Consultant present in town about the chance find recovery. Immediately stop the excavation activity near point of recovery. After PIU/consultants engineers come at site, contractor should follow cleaning and photography in supervision of PIU/Consultant engineers.
- 1.2 **Cleaning** - When a feature/chance find is discovered it must be defined by careful cleaning. Roots must be removed and dirt must be carefully cleaned away. The section or trench base should also be cleaned back for a little distance around the feature.
- 1.3 **Record photography** – When the feature is clean good photography should be taken – vertical and face-on shots and a few general shots of the feature, also showing its position in relation to surrounding features, buildings, etc. The photographed should be catalogued (date, location, direction of shot)
- 1.4 **Drawn record** - When features/chance finds are revealed a drawn record should also be made.
 - a. General location record – measuring its position and orientation within the protected site / in relation to surrounding structures
 - b. Record drawings – detail drawings made in plan and section/profile. The extent (edges) of the feature should be drawn and the level of the existing ground surface and the top and base of the feature should be recorded. These levels should be marked on the drawings. The drawings should include detail of the construction of the feature. Perspective sketches could also be made if necessary. Explanatory notes can also be put on the drawings.
- 1.5 **Reporting finds** - When finds are made these should be reported to PIU/Consultants. Photographs and record drawings should be sent.
- 1.6 **Discovery of historic objects** - When clearance and excavation takes place artifacts and historic objects are sometimes found. These should be recovered and kept in a safe place. The place of discovery should be recorded and each find given a number and tag tied to the find with the same number on it. A list of the finds should be kept (with the find No. And place of discovery and date of discovery recorded).
- 1.7 **PIU/ Consultants responsibility-** PIU/Consultants should inform in written to the State Archaeological Department at the earliest with photographs and request to Archaeology Department to visit the site and hand over the chance finds to them.

**APPENDIX 15: STANDARD OPERATING PROCEDURE FOR PREVENTION AND RISK
MINIMIZATION OF CORONA VIRUS DISEASE (COVID-19)**



Standard Operating Procedure for Prevention and Risk Minimization of
Corona Virus Disease (COVID-19) at the Facilities and Work Sites of
WEST BENGAL DRINKING WATER SECTOR IMPROVEMENT PROJECT (WBDWSIP)

Version 2 - 1 June 2020

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- VI. PRECAUTION DURING AND AFTER TRAVEL TO/FROM WORKSITE
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- IX. RESOURCE REQUIREMENT
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Annex 1: Pandemic Plan Site Acknowledgement Form

Annex 2: Regular Health Monitoring Template

Annex 3: Roles & Responsibilities Matrix for Managing COVID 19 risks

I. SCOPE AND OBJECTIVE

1. The purpose of this Standard Operating Procedure (SOP) is to guide all staff, consultants/ service providers, and contractors engaged under the West Bengal Drinking Water Sector Improvement Project (WBDWSIP or the project) to prevent, minimize, and manage risks to workers and public at large at all project facilities and work sites, which could arise from exposure to Corona virus disease (COVID-19) when restarting/resuming projects and site activities post COVID-19 lockdown.

2. The requirements, restrictions, and guidance contained in this SOP are provided to enable all associated, including staff, consultants and contractors on effective planning and execution of pandemic-specific action and responses and minimize risks, and to comply with the National Directives & Local Authority guidelines on COVID-19.

3. Based on these SOPs, government requirements, and best practice references available, each contractor and service provider will prepare their own site-specific risk assessment and based on that, a site-specific health and safety management plan (H&S plan), for COVID-19 affected period and submit to the Project Director for approval at the Project Management Unit (PMU) of the WBDWSIP prior to re-commencement of works and services under the project post COVID-19. The PMU approved H&S Plan will be accepted by the contractor/ service provider and the PMU for implementation throughout the COVID-19 affected period as part of the earlier approved environmental management plan (EMP) or contract of each service and works provider.

4. All contractors, service providers, and consultants must conduct detailed site-specific risk assessment for identification of risks and their evaluation/categorization as acceptable/ unacceptable risks based on which suitable mitigation measures need to be planned. While the overall risk categorization will be guided by the government issued present zone-wise model adopted by the Government (red zone, orange zone, green zone) during the lock-down period, stakeholders should carry out risk assessment based on the approach of scale/severity/probability/duration of potential impacts, which will be commensurate to the potential hazards associated with the activities at sites, and suitable mitigation measures shall be developed and planned around the different levels of risks anticipated during construction / operation phases. The contractors and service providers should keep in mind that once lockdown restrictions are lifted, the “green” zones in rural areas with weak healthcare systems could also change quickly. Migrant workers could offer potential pathways for the spread of the disease from high-risk zones to low risk zones and PMUs need to ensure that their workplaces do not become hotspots for the spread. The contractors/ service providers, with approval from PMU, shall update:

- The H&S plan as needed adopting a risk-based approach. For the work packages where maintenance of international good practices in COVID 19 aren't feasible, the outcome of the risk assessment shall determine re-organization, postponement, or cancellation.
- Assignment roles in Annex 3, as informed by the outcome of the risk assessment process for each specific work package.

5. The contractors, service providers, and staff, should also expand on risks in their site-specific H&S plan of any actions taken to address the risks “outside” their worksite, and include their protocols for (i) reporting to the government/health department if there are suspected cases, (ii) ambulance/transport service protocols if a worker needs to be brought to a health/quarantine facility, and (iii) communications with surrounding communities. Contractors and service providers with support from PMU and project implementation units (PIUs) should liaise with local health centers including primary healthcare facilities as part of the site wide health and safety management plans including emergency situation management plan. These should also be identified and detailed in the site-specific H&S Plan.

6. Staff, contractors and consultants working under the project and using this SOP should in addition consult the Occupational Safety and Health Act (OSHA) guidelines relating to COVID-19 and guidelines as specified by credible international organizations such as the World Health Organization (WHO), to draw best practices and applicable lessons from other reference documents listed below:

- a. WHO Guidelines (https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf?sfvrsn=359a81e7_6);
- b. World Health Organization. 2020. Considerations for public health and social measures in the workplace in the context of COVID-19. Geneva. Available here: <https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19>¹²;
- c. HM Government. 2020. Working safely during COVID-19 in construction and other outdoor work. Guidance for employers, employees and the self-employed. Available here: <https://assets.publishing.service.gov.uk/media/5eb961bfe90e070834b6675f/working-safely-during-covid-19-construction-outdoors-110520.pdf>;
- d. The Canadian Construction Association – COVID 19 Standard Protocols. Available here: <https://www.cca-acc.com/wp-content/uploads/2020/04/CCA-COVID-19-Standardized-Protocols-for-All-Canadian-Construction-Sites-04-16-20.pdf>;
- e. Indian Council of Medical Research (ICMR), Government of India;
- f. The Ministry of Home Affairs (MHA), Government of India;;
- g. OSHA guidance on preparing workplaces for COVID 19;
- h. Guideline Department of Health & Family Welfare and Labour Department, Government of India;
- i. Guideline for prevention of COVID 19 Pandemic by Government of West Bengal;
- j. U.S. Department of Labor Occupational Safety and Health Administration; and
- k. The Epidemic Diseases (Amendment) Ordinance,2020 (amends the Epidemic Disease Act, 1897)

7. All parties should note that these SOPs will be updated based on the changing government requirements and information/knowledge on COVID-19. For the latest updated copy of the SOP, the Contractors, service providers, consultants, staff and all stakeholders should refer to the project website, <https://wbdwsip.org/>, under Manuals and Guidelines, for the latest updated SOP, or email the Project Director at pd.pmu.adb@wbphed.gov.in, or visit the PMU's office at WBDWSIP Project, Utility Building, 1st Floor, (Premises No. 09/1-0024), AA-IA (Tank No. 3), New Town, North 24 Parganas, West Bengal, Pin – 700156.

II. INTRODUCTION

Project Background

8. Public Health Engineering Department (PHED), Government of West Bengal through its Project Management Unit and Project Implementing Unit is implementing the “West Bengal Drinking Water Improvement Project”. The Loan for WBDWSIP (ADB Loan 3696-IND) was signed between Government of India and the Asian Development Bank (ADB).

9. The project will provide safe, sustainable and inclusive drinking water as per the standards set by the Government of India in the arsenic, fluoride, and salinity affected selected areas of Bankura, North & South 24 Parganas, and Purba Medinipur districts of West Bengal (project districts). Project Director (PD) is the main authority of the project and PMU operates centrally from New Town, office under the guidance of PD and project management consultant (PMC) is there to support PMU.

10. All the three districts have individual PIU office headed by SE, PIU located at each district, which reports to PMU. Under each PIU, separate Design Construction Supervision and project Implementation Support Consultants (DSISC) team is available to support PIU in project implementation. Apart from there are NGOs in each district to take care different activities allotted to them.

11. It is pertinent to mention that all the districts under this project has basic components like water intake system, raw water rising main, Water Treatment plant, clear water rising main, pumping stations,

¹² This guidance contains some risk factors and an approach to undertaking the risk assessment at workplaces.

overhead reservoirs (OHR), ground level storage reservoir (GLSR), distribution system, house metering connection and related electro-mechanical and SCADA system.

12. The project locations, package name and brief project's components is mentioned below:

| District name | Inputs (Package No.) | Brief Project Components |
|-------------------|-------------------------|--|
| North 24 Parganas | DWW/N24P/01 | Design, Construction and Operation of Water Treatment-Plant, Transmission Main, Boosting Pumping Stations & Ground level reservoirs work in Haroa, Rajarhat, and Bhangar II. |
| | DWW/N24P/02A | Design and Construction of Overhead Reservoir including design, supply and laying of Water Supply Distribution Network in Haroa Block. |
| | DWW/N24P/02B | Design and Construction of Overhead Reservoir including design, supply and laying of Water Supply Distribution Network in Bhangar II Block. |
| Bankura | DWW/BK/01 | Design, Construction and Operation-Maintenance of Raw Water Intake Well, Water Treatment Plant, Reservoir, Transmission Main for Indpur and Taldangra block in Bankura. |
| | DWW/BK/02A | Design and Construction of Intermediate Pumping Station, ground level reservoirs, overhead reservoirs, water distribution network and metering works in Indpur block including secondary transmission mains to Indpur block. transmission mains to Indpur block. |
| | DWW/BK/02B | Design and Construction of Intermediate Pumping Station, Secondary transmission mains, overhead reservoirs including water distribution network and metering works in Taldangra Block. |
| | DWW/BK/03 | Design, Construction and Operation-Maintenance of Raw Water Intake Well, Water Treatment Plant, Raw and Clear Water Transmission Main for Mejhia and Gangajalghati Block in Bankura. |
| | DWW/BK/04 | Design and Construction of Overhead Reservoir including Water Supply Distribution Network and Metering Works in Mejhia and Gangajalghati Blocks including Rehabilitation of Existing Scheme. |
| East Midnapore | DWW/EM/01 | Design, Construction and Operation-Maintenance of Raw Water Intake Well, Water Treatment Plant, Raw and Clear Water Transmission Main for Nandakumar, Chandpur, Nandigram-I and II blocks in East Medinipur. |
| | DWW/EM/02 | Construction of Intermediate Pumping Station, Secondary transmission mains, overhead tanks including water distribution network and metering works in Nandigram-I and Nandigram-II block in East Medinipur |

13. There are following major offices and project sites are available where suitable remedial measures to be taken as per protocol indicated in this guideline.

Under Office category:

- a. PMU and PMC

- b. Three number PIU and DSISC offices
- c. NGO offices
- d. All site offices and camps of Contractors

Under work components:

- a. Intake locations included pump house and substations
- b. WTP locations
- c. Ground Level Storage Reservoirs (GSLRs) cum pump house
- d. Overhead reservoirs (OHRs)
- e. Pipelines: Raw water rising main, clear water rising main and distribution network system

Coronavirus Disease 2019 (COVID-19)

14. Coronavirus Disease 2019 (COVID-19) is a respiratory disease caused by the SARS-CoV-2 virus. It was reported in many countries around the world, including the United States. Depending on the severity of COVID-19's international impacts, outbreak conditions—including those rising to the level of a pandemic—can affect all aspects of daily life, including travel, trade, tourism, food supplies, and financial markets.

15. To reduce the impact of COVID-19 outbreak conditions on businesses, workers, customers, and the public, it is important for all employers to plan now for COVID-19. The virus is thought to spread mainly from person to-person, including:

- Between people who are in close contact with one another (within about 6 feet).
- Through respiratory droplets produced when an infected person coughs or sneezes. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.

16. It may be possible that a person can get COVID-19 by touching a surface or object that has SARS-CoV-2 on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the primary way the virus spreads.

17. The people most at risk of COVID-19 infection are those who are in close contact with a suspect/confirmed COVID-19 patient and those who care for such patients.

18. This document gives advice on:

- general instruction to follow to prevent the spread or slow transmission of COVID-19 in workplace;
- detail procedure to getting the workplace and office ready under COVID-19 situation;
- worksite prevention practice;
- precaution taken at workmen habitat/camp;
- control measures taken for deploying new workmen at site;
- resources requirement;
- relevant induction and training;
- communication and advancement – COVID Update; and
- declaration – Medical fitness and Filling up work starting Checklist

III. COVID 19 INFECTION SYMPTOMS

a. Most common symptoms:

- fever
- dry cough
- tiredness

b. Less common symptoms:

- aches and pains
- sore throat

- diarrhoea
 - conjunctivitis
 - headache
 - loss of taste or smell
 - a rash on skin, or discolouration of fingers or toes
- c.** Serious symptoms:
- difficulty breathing or shortness of breath
 - chest pain or pressure
 - loss of speech or movement
- d.** All concerned should be well briefed to seek immediate medical attention, and where they could go as per the H&S Plan, if they have serious symptoms. They could also call before visiting their doctor or health facility for information at Central help lines at 011 23978046, or West Bengal state helpline number at 1800313444222, 033 23412600, 1070.
- e.** People with mild symptoms like fever, dry cough, sore throat who are otherwise healthy should manage their symptoms at home. They should isolate themselves from other members at home and stay at separate room.
- f.** On average it takes 5–6 days from when someone is infected with the virus for symptoms to show, however it can take up to 14 days.

IV. GENERAL PREVENTION OF INFECTION AND TRANSMISSION OF COVID-19

- Preliminary medical checking of body temperature, symptoms of cold, cough, difficulty in breathing will be done before worker's entry in the project. Format for daily checking template is attached as **Annexure 2**. Pandemic plan Site acknowledgement form is attached as **Annexure 1**.
- Workers with underlying health conditions such as diabetes, respiratory illness, etc. will be screened before start of work, as part of pre-employment screening tests as specified under Section 10 of this SOP. Contractors and service providers should clearly outline if such health screenings will be undertaken on site through questioning. As needed for cases deemed to be found necessary for further testing, contractors and service providers should seek PMU's support to liaise with local health centers to facilitate these screening and even testing for COVID-19.
- Non-essential physical work that requires close contact between workers should not be carried out
- Work requiring skin to skin contact should not be carried out
- Plan all other work to minimize contact between workers
- Wash hands often with soap for at least 20 seconds¹³
- Brief and remind staff regularly to cover mouth and nose when coughing or sneezing¹⁴
- Use hand sanitizer (alcohol based as per norms) at office, workplace. Preferably use of contactless, sensor-based/ pedal operated sanitizer to avoid minimum touching
- Regular filling of sanitizers container should be carefully monitored
- Avoid biometric system and head count practice to be followed - Contact less attendance system shall be used.
- Regular thermal screening to be carried out without contact through thermal scanner. Logbook to be maintained mentioning temperature of the staff. In case temperature is found above 100°F, staff should be advised to go home and consult doctor and take suitable measures accordingly.¹⁵
- No person should enter the work site other than the authorized persons mentioned by supervisor during start of work

¹³ Please refer to effective handwashing techniques should be demonstrated to workers and visual postings on site.

¹⁴ Use of mask should be mandatory in line with local government guidance and international good practice

¹⁵ Please refer to international best practice on use of thermal scanners in the shared referenced WHO Guidance.

- All must implement social/physical distancing by maintaining a minimum distance of 6-feet from others¹⁶ at all times to eliminate the potential of cross contamination.
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing
- Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 7 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- All individual work group meetings/ talks should follow social distancing.
- At each job briefing/toolbox talk, employees are asked if they are experiencing any symptoms, and are sent home.
- Each worksite should have laminated COVID-19 safety guidelines, responsibility and contact list, and hand washing instructions displayed at multiple locations and clearly visible for all, in line with international good practice.¹⁷
- All restroom/toilet facilities should be cleaned¹⁸, and hand washing facility must be provided with soap, hand sanitizer and paper towels
- All surfaces should be regularly cleaned, including tabletops /surfaces, door handles, laptops, printers, records, etc.
- All common areas and meeting areas are to be regularly cleaned and disinfected at least once a day but preferably twice a day
- Provide for or ask workers to bring their own water bottle, and not share.
- Adequate toilets with required facilities should be provided at offices and work sites
- To avoid external contamination, recommend everyone to bring food from home or provide safe food options at site following protocols.
- Maintain Social Distancing separation during breaks and lunch.
- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands, if no tissue is available then cough /sneeze into your upper sleeves or elbow. Do not cough or sneeze into your hands.
- Brief and remind adequately and regularly on cleaning hands after coughing or sneezing thoroughly by using soap and water (minimum for 20 seconds), and use adequate soap and good quality water or hand sanitizer. The Contractor shall ensure adequate quantities of sanitizer and soap are made available at all locations including site offices, meeting rooms, corridors, washrooms /toilets, etc. as appropriate.
- Brief and regularly remind to avoid touching eyes, nose, and mouth with hands.
- To avoid sharing germs, brief and remind staff to clean up after themselves, and DO NOT make others responsible for moving, unpacking and packing up their personal belongings
- If worker or family member is feeling ill, advise to stay home¹⁹
- Brief workers to refrain from smoking and other activities that weaken the lungs.
- In worst case scenario if any workers found to be COVID 19 positive, project manager/ employer need to report authority and take appropriate measures as per Government procedure. Tentative format for Roles & Responsibilities Matrix for Managing COVID 19 risks and contact number etc. will be filled up by contractors is appended in **Annexure 3**.

V. DISINFECTION AND MANAGING RISKS AT OFFICE AND WORK SITE²⁰

a. General

19. All areas in the premises shall be disinfected, or fumigated completely using user friendly

¹⁶ Social distancing may not be practical for undertaking certain specific activities within the workplace. It is therefore important to review the work method statements for these types of activities to assess impact and how to find safe ways of doing in line with best available guidance.

¹⁷ Please check free downloadable copies at the WHO webpages.

¹⁸ Check the international good practice methods for disinfecting such frequently used places at the workplace.

¹⁹ The workers with no sick-leave would be supported with additional leave while affected by COVID-19 by the Contractor.

²⁰ Refer to International good practice within the referenced guidance documents.

disinfectant mediums for all locations viz. Entrance, Meeting room, Conference halls, Cubicles, Cabins, Seating Area, Reception, Entrance Gate of Site, Pota Cabins, Building, Equipment, Washroom, Toilet, Sink, Walls, Open areas available, all other surfaces. Please note that fumigation of humans should not be carried out at any point in any premises.

20. For Disinfection 1% sodium hypochlorite or phenolic disinfectants is generally used. For metallic surfaces like doorknobs, handles, security locks, keys etc. 70% alcohol can be used to wipe down surfaces where the use of bleach is not suitable.

21. Disinfection should be done one to two times in a day and for meeting room it should be done before and after the meetings.

b. Preparedness prior to work resumption

- Reconfiguration of offices to ensure physical/social distancing. Workstations or tables should be segregated at least 6 ft. apart;
- Contractors to ensure provision of safe and potable drinking water;
- Cleaning of all water coolers and testing the water quality (at outlet) for at least bacteriological contaminant should be ensured and reports should be recorded for reference;
- Heating, ventilation, and air conditioning (HVAC) system cleaning or changing of AC filters, Chillers / cooling water plants to be addressed;
- Entire office premises should have at least one round of pesticide control activity before resuming the office;
- Availability of hand sanitizers in strategic locations and stock of hand sanitizer liquids for refilling them. Preferably contactless, sensor-based/ pedal operated sanitizers to avoid minimum touching;
- The chemical having quaternary ammonium, sodium hypochlorite or hydrogen peroxide as active ingredient should be used for area disinfection;
- Disinfection of the whole work sites and offices before opening.
- Clean visibility dirty surfaces with soap and water prior to disinfection. Areas unoccupied for 7 or more days need only routine cleaning. Maintain existing cleaning practices for outdoor areas;
- Details of disinfection discussed below in section 5.3 and 8
Guidance provided by CDC in disinfecting areas based on how long these were unoccupied to be followed (https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/ReOpening_America_Cleaning_Disinfection_Decision_Tool.pdf)
- Disinfection should be continued throughout the implementation of the project;
- Appropriate PPE like Face covers, Masks, Goggles, Gloves, Coats / Aprons, Shoes and appropriate disinfecting gadgets like sprayer, brush, etc. shall be made available at work site;
- Face Mask - Face Mask 3 layered IS16289 standard or equivalent;
- Gloves - Glove length should be 240 mm, Cuff should be beaded, Finger Thickness should be at least 5.7mil. AQL (Acceptable Quality Level) should be 1.5 ASTM D6319- 10 / EN 455, EN 374 & EN 388;
- Shoe Cover- Premium quality Disposable Shoe Covers. These shoe covers are used in Protected Areas (EPA) to prevent the dust on the shoes from contamination
- PPEs need to be washed and disinfected on regular basis.
- In case any COVID 19 symptoms arise for workers, used PPEs will be disposed as per biomedical waste disposal rule of Government of India and relevant international good practice guidance. PPEs disposed off in a bio-hazard bag (yellow bag). Inside would be sprayed with Sodium Hypochlorite (1%) and after tying the exterior will also be sprayed with the same. It would be disposed off at destination hospital. This shall again be followed by hand washing.

- Display board regarding the procedure of disinfection shall be displayed in local language with pictorial demonstration at entrances / prominent places.

c. Disinfection at workplaces and site offices

- Maintain regular housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment.
- Disinfection of entire office – Before start of office and after end of office walls – weekly once
- Disinfection of toilet – At least 3 times within work period with regular interval
- Disinfecting of surfaces (e.g desktop, laptop, desk, printer, chair, table, door, window, file rack) – Twice in a day - before and after use
- Disinfecting of door knobs, handles, locks – 2 times in a day
- Disinfection of hand tools – 2 times in a day
- When choosing cleaning chemicals for disinfection, projects shall consult with local authorities or *subject matter expert* for appropriate disinfectant against emerging viral pathogens of COVID19. The chemical having quaternary ammonium, sodium hypochlorite or hydrogen peroxide as active ingredient should be used for area disinfection.
- Follow the manufacturer's instructions for use of all cleaning and disinfection products (e.g., concentration, application method and contact time, PPE).
- Focusing disinfection efforts on frequently touched surfaces such as handrails, door handles, etc.
- Conference rooms shall be disinfected before and after the meeting.
- Site offices shall be disinfected on daily basis and social distancing shall be followed at the projects
- Dining area shall be disinfected before and after the dining hours.

d. Managing risks During Meetings

i. Before Meeting

- Consider whether a face-to-face meeting or event is needed, plan for an online meeting using MS teams, skype, or other mediums, or simply conference call.
- If the above step is not feasible, restrict the number participants with important and relevant people.
- Ensure sufficient supplies and materials, including tissues and hand sanitizer for all participants. Have surgical masks available to offer anyone who develops respiratory symptoms.
- Maintaining social distancing of 6 ft to be mandatorily followed.
- Meeting room should be spacious (not cramped at all) and number of persons should be restricted accordingly so that social distancing can be maintained
- Advise participants in advance that if they have any COVID 19 symptoms like coughing, sneezing, breathening or feel unwell, they should not attend.

ii. During and after the meeting

- Briefly explain the participants on the actions being taken to prevent COVID- 19
- Avoid handshake and practice ways to say hello without touching
- Sanitizer should be placed strategically so that it easily accessible to all participants. Preferably contactless, sensor-based/ pedal operated sanitizer to be placed to avoid minimum touching
- Mandatory use of masks by all meeting participants at all times for the entire duration of meetings, except when eating or drinking. During breaktimes like snack or meal times, maintain strict social distancing as well.
- Meeting should be specific and short duration time
- Encourage regular handwashing or use of an alcohol rub by all participants at

the meeting

- Encourage participants to cover their face with the bend of their elbow or a tissue if they cough or sneeze. Supply tissues and closed bins to dispose of them.
- Display dispensers of alcohol-based hand rub prominently around the venue.
- If there is space, arrange seats so that participants are at least one meter apart.
- Open windows and doors whenever possible to make sure the venue is well ventilated.
- Soon after the meeting, the area shall be disinfected and dust bins shall be cleared.

VI. PRECAUTION DURING AND AFTER TRAVEL TO/FROM WORKSITE

a. Before traveling

- Make sure your organization and its employees have the latest information on areas where COVID-19 is spreading. Government mobile App – 'Aarogya Setu' or any other form of mobile tracking to be used by all for securing such information
- Based on the latest information, your organization should assess the benefits and risks related to upcoming travel plans at project site
- Avoid sending employees who may be at higher risk of serious illness (e.g. aged employees and those with medical conditions such as diabetes, heart and lung disease) to areas where COVID-19 is spreading.
- Make sure all persons travelling to locations reporting COVID-19 are briefed by a qualified professional (e.g. staff health services, health care provider or local health partner)
- Consider issuing employees who are about to travel with small bottles (under 100 ml) of alcohol-based hand rub. This can facilitate regular handwashing.

b. While traveling

- Encourage employees to wash their hands regularly and stay at least one meter away from people who are coughing or sneezing
- Ensure employees know what to do and who to contact if they feel ill while traveling.
- Ensure that your employees comply with instructions from local authorities where they are traveling. If, for example, they are told by local authorities not to go somewhere they should comply with this. Employees should comply with any local restrictions on travel, movement or large gatherings.

c. Return from traveling

- Travel may be prioritized based on risk categories e.g. No travel in containment zone; Restricted travel to Red Zone etc.
- Employees who have returned from an area where COVID-19 is spreading should monitor themselves for symptoms for 14 days and take their temperature twice a day.
- If they develop even a mild cough or low-grade fever (i.e. a temperature of 37.3°C or more) they should stay at home and self-isolate. This means avoiding close contact (one meter or nearer) with other people, including family members. They should also telephone their healthcare provider or the local health department/ local hospital, giving them details of their recent travel and symptoms.

VII. WORK SITE PREVENTION²¹

a. Controlled access inside the project

i. Offices, camps

- Prior to entry, a mandatory orientation be provided to the worker/ staff or personnel on the proper use, handling and disposal of disposable PPEs, particularly face masks.

²¹ Job specific Analysis (JSA) is critical for all the works under this section in line with the recommendations in footnote 1 of this SOP (see page 6) to inform the level of scope changes/sequencing to work schedules and re-engineering.

- Mandatory requirement of wearing masks upon entry and maintained at all times
- Unauthorized entry is strictly prohibited. All the persons should report office/ camp follow the protocol of COVID 19 and if it is found in order then only, he/she will be allowed to join.
- Adopting queue system while entry to buildings, workplaces, passenger hoist, bus, etc.,
- Avoiding entry of new staff/ workmen from known hotspots of COVID 19
- Allocating separate isolation rooms for Staff and workers.
- Ensuring availability of registered medical practitioner as per tied up between contractors/ offices and local hospital/ health facility
- Ensuring doctor from a government approved dispensary / hospital / COVID19 testing centers
- Contactless thermal scanning. Recording of temperature of each staff/ workers
- Contactless attendance system

ii. Intake, WTP, Reservoir, Pumping stations – fixed location

- Prior to entry, at work site a mandatory orientation be provided to the worker or personnel on the proper use, handling and disposal of disposable PPEs, particularly face masks.
- Mandatory requirement of wearing masks upon entry and maintained at all times while at work sites.
- Pre-approval for deployment of new workmen from Project Manager (PM).
- Unauthorized entry is strictly prohibited. All the persons should report office/ PM follow the protocol of COVID 19 and if it is found in order then only, he/she will be allowed to join.
- Adopting queue system while entry to workplaces, bus, etc.,
- Avoiding entry of new workmen from known hotspots of COVID 19
- To obtain “Self-Declaration Form” from all workmen during screening to identify the COVID-19 risk level of workmen.
- Contactless thermal scanning
- Contactless attendance system

iii. Pipe laying locations - Linear project sites

- Prior to start of work, a mandatory orientation be provided to the worker or personnel on the proper use, handling and disposal of disposable PPEs, particularly face masks.
- Mandatory requirement of wearing masks upon entry and maintained at all times while at work sites.
- Pre-approval for deployment of new workmen from Project Manager (PM).
- Unauthorized entry is strictly prohibited. All the persons should report office/ PM follow the protocol of COVID 19 and if it is found in order then only, he/she will be allowed to join.
- Avoiding entry of new workmen from known hotspots of COVID 19
- To obtain “Self-Declaration Form” from all workmen during screening to identify the COVID-19 risk level of workmen.
- Contactless thermal scanning
- Contactless attendance system

b. Managing the social distancing while on deployment and working

a. Offices, camps

- At office, camp wherever feasible to ensure social distancing.
- Marking shall be made available to facilitate social distancing of 6 ft.
- Working in shifts to minimize crowding in one place wherever possible
- Discourage staff/ workers from using other staff's/ workers' phones, clothes, wallets, things or other work tools and equipment, as far as possible. These items should be disinfected before and after use
- All the trips in bus/ car should be planned in such a way that norms of travelling should be maintained
- Social distancing will be maintained while travelling in bus, car. Seating arrangement (at least one seat apart) will be depending on configuration of bus and car.
- Sanitize conveyance vehicle / bus of staff and workmen prior to start of each trip

b. WTP, Intake, Reservoir, Pumping stations – fixed location & pipe laying locations
- Linear project sites

- Developing a strategy by contractor for workmen deployment at sites considering the social distancing requirements and COVID 19 risks which may include:
- Sequence of work - ensure the planning of work as per sequence of work with optimum number of workmen.
- Deploy workmen in different locations, wherever feasible to ensure social distancing.
- Marking shall be made available to facilitate social distancing of 6 ft.
- Staggered deployment of workmen in case of congested work locations
- Working in shifts to minimize crowding of workmen in one place wherever possible
- Plan for working during late shifts / late hours to minimize disruption to traffic / people contact in congested areas
- Discourage workers from using other workers' phones, clothes, wallets, things or other work tools and equipment, as far as possible. These items should be disinfected before and after use
- Clean the phones, clothes and other daily work tools on daily basis. Common property tools at the work sites should be disinfected before and after it is used by a particular worker.
- Identifying multiples access and egress pathways
- Before restarting Identifying multiple rest areas within the site premises considering number of workmen at the project
- All the trips in bus/ car should be planned in such a way that norms of travelling should be maintained
- Restricting the number of users in passenger hoist, bus, etc., Social distancing will be maintained while travelling in bus, car. Seating arrangement (at least one seat apart) will be depending on configuration of bus and car.
- Sanitize conveyance vehicle / bus of staff and workmen prior to start of each trip
- In addition to the regular PPE, nose masks and hand gloves for teams who are screening workmen, conducting medical checkup & disinfection and others those who need to work in proximity to a greater number of people.
- Masks (homemade²² can be thought of) to be provided to all the persons/labourers on the worksite. The procedures to be followed for maximum precaution to protect all persons/labourers at all times.

10. All types of PPE must be:

- Properly fitted and periodically refitted, as applicable (e.g., respirators).
- Consistently and properly worn when required.
- Regularly inspected, maintained, and replaced, as necessary.
- Properly removed, cleaned, and stored or disposed of, as applicable.
- Re-usable PPE should be thoroughly cleaned after use and not shared between workers

c. Prevention at Workspace

- Make sure workplace clean and hygienic; all surface and worksite properly sanitized (*For office and all work sites*)
- Adequate provision of safe water should be made available for all staff and contact less water tap should be preferable (*For office and all work sites*)
- First day, before resuming the work on site post lockdown period, mandatory medical check-up for preliminary symptoms will be arranged for all workers. Only medically fit workers will be deployed at site and medical assistance will be arranged for unfit workers. Medical check-up camp also covering COVID 19 pool test should be arranged every month. (*For all work sites*)

²² Advisory on use of Homemade Protective Cover for Face & Mouth by Govt. of India

- At the start of each shift, confirm with all employees that they are healthy and inform all workers / staffs of reusable and disposable PPE (*For office and all work sites*)
- Use of face masks at all times is mandatory, except when eating or drinking (*For office and all work sites*)
- Outside person should be strictly prohibited at office, camp and worksite (*For office and all work sites*)
- All construction workers will be required to wear cut-resistant gloves or the equivalent.
- Use of eye protection (reusable safety goggles/face shields) is recommended. The supply of eye protection equipment to the workers is considered as a standard part of PPE during construction works. (*For all work sites*)
- In work conditions where required social distancing is impossible to achieve, such employees shall be supplied with standard face mask, gloves, and eye protection. (*For office, camp and all work sites*)
- All employees shall drive to work site in a single occupant vehicle. Staff shall not ride together in the same vehicle (*For office and all work sites*)
- When entering in equipment or vehicle which not sure were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant (with 1% sodium hypochlorite solution daily) prior to entry. Adequate quantity of the disinfectant shall be provided by the Contractor at all such site-specific locations. (*For office and all work sites*)
- Workers should maintain separation of 6 ft from each other. (*For office, camp and all work sites*)
- Multi person activities will be limited where feasible (two persons lifting activities) (*For all work sites*)
- Gathering places on the site such as sheds and/or break areas will be eliminated, and instead small break areas will be used with seating limited to ensure social distancing. (*For all work sites*)
- Contact the cleaning person of the worksite/ office/ camp and ensure proper COVID-19 sanitation processes. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning. The Contractor shall make available adequate supply of PPE and chemicals while the threat of COVID-19 continues. (*For office, camp and all work sites*)
- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to desks, laptops, key board, printer etc. and vehicles (*For office*)
- Maintain your good health by getting adequate sleep; eating a balanced, healthy diet, avoid alcohol; and consume plenty of fluids. (*For office and camp*)
- Continuation of works in construction project with workers available on site and no workers to be brought in from outside (*For all work sites*)
- The site offices shall have adequate ventilation. The air conditioning or ventilation systems installed at the site offices would have high-efficiency air filters to reduce the risk of infection. The frequency of air changes may be increased for areas where close personal proximity cannot be fully prevented such as control rooms, elevators, waiting rooms, etc. (*For office and camp*)
- The Contractor shall carry out contactless temperature checks for the workers prior to site entrance, during working hours and after site works to identify persons showing signs of being unwell with the COVID-19 symptoms. (*For all work sites*).

d. Washing Facility

i. Offices, camps, work sites

- All worksites should have access to toilet and hand washing facility.
- Providing hand cleaning facilities at entrances and exits. This should be soap and water wherever possible or hand sanitizer if water is not available
- Preferably contactless, sensor-based/ pedal operated sanitizer to be placed to avoid minimum touching

- Washing facility with hot water, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees
 - All onsite workers must help to maintain and keep work sites clean
 - If a worker notices soap or towels are running low or out, immediately notify supervisors
 - Garbage bins will be placed next to the hand wash facility for discarding of used tissues/towels with regular removal and disposal facility (end of each day).
- e. Cleaning Procedures**
- Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning.
 - Each worksite should have enhanced cleaning and disinfection procedures that are posted and shared including sheds, gates, equipment, vehicles, etc. and shall be posted at all entry points to the sites, and throughout the project site. These include common areas and high touch points like
 - Taps and washing facilities (*office, camp and fixed work sites*)
 - Toilet flush and seats (*office, camp and fixed work sites*)
 - Door handles and push plates (*office, camp*)
 - Handrails on staircases and corridors (*office*)
 - Lift and hoist controls (*office*)
 - Machinery and equipment controls (*work sites*)
 - Food preparation and eating surfaces(*camp*s)
 - Telephone equipment / mobiles, Keyboards, printer, photocopiers and other office equipment (*office*).

VIII. MANAGING COVID 19 RISKS in WORK-CAMPS

- a. Cooking**
- Daily thermal screening and health check of the cooks and helpers at the guest houses and camps
 - Cooking staff should be prohibited from reporting to work if they experience COVID 19 symptoms
 - Cleaning and disinfection on daily basis once the cooking is over
 - The cooks and helpers shall wear masks and hand gloves while preparation, serving food to the staffs and workmen
 - Adequate provision of safe water should be made available for all staff and contact less water tap should be preferable
 - After cooking food items should be covered
- b. Dining**
- Staggered Timings shall be adopted to limit the no of workmen using the hall to maintain social distance
 - Increase the Space of dining facility where possible
 - Hand cleaning facilities or hand sanitizer should be available at the entrance of any room where people eat and should be used by workers when entering and leaving the area. Preferably contactless, sensor-based/ pedal operated sanitizer to be placed to avoid minimum touching
 - Workers should sit 2 m apart from each other whilst eating and avoid all contact
 - Hygiene conditions shall be ensured during serving of foods in Guest houses / Messes / Workmen Stay Places, so that common serving spoons etc. are not touched by all the staff/workmen taking food
 - Only Persons serving food shall be allowed to handle the serving spoons, common utensils, etc.
 - Tables should be cleaned between each use and sanitized
 - All rubbish should be put straight in the bin and not left for someone else to clear up; only covered pedal operated bins should be used and the bins should be

- cleared and cleaned regularly, with strict adherence to safety protocols for disposal and hygiene maintenance
 - All areas used for eating must be thoroughly cleaned and sanitized at the end of each break and shift, including chairs, door handles, etc.
 - Regular inspection of the kitchen/ dining area to be conducted by the Admin/ EHS Officer personnel.
- c. Usage of common facilities**
 - Areas or places of high risk for transmission of virus such as doorknobs, handles, latches, handrails in common facilities shall be cleaned and disinfected at regular intervals
- d. Disinfection**
 - Disinfection of the workmen habitat in all the places shall be carried out on a periodical basis and closely monitored by camp in-charge and verified by health & safety officers.
- e. Toilet Facility**
 - Restrict the number of people using toilet facility at any one time
 - Sufficient toilets with facility need to be provided, separate for men and women
 - Wash hands before and after using the facilities
 - Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush
 - Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently
 - Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal.
- f. Changing Facilities, Showers and Drying Areas**
 - Introduce staggered start and finish times to reduce congestion and contact at all times
 - Introduce enhanced cleaning of all facilities throughout the day and at the end of each day
 - Consider increasing the number or size of facilities available on camp if possible
 - Provide suitable and sufficient garbage bins in these areas with regular removal and disposal.
- g. Separate Staying arrangement for new workmen/women**
 - New workmen shall not be accommodated in the same rooms as the existing workmen Dwelling units / rooms shall be suitably organized to ensure the avoidance of proximity of the workmen groups
- h. Resources at workmen/women habitat**
 - Limiting the number of workmen/women in dwelling units
 - Contractor to arrange all daily need items and grocery at site itself and no worker is allowed to go to shops for daily need items.
- i. Hand washing facilities**
 - Dedicated hand washing facilities with soap shall be kept at conspicuous locations in the workmen habitat with sign boards for DO's and DON'T's in hand washing
- j. Promoting self-hygiene and cleanliness**
 - Pictorial posters in local language shall be placed across the workmen habitat to create awareness on maintaining self – hygiene and respiratory hygiene
 - Masks (homemade²³ can be thought of) to be provided to all the persons/labourers

²³ Advisory on use of Homemade Protective Cover for Face & Mouth by GOI

for use at the camp site as well as at the worksite. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with disposable gloves, gown and face mask for each cycle of cleaning.

k. Quarantine and isolation rooms

- Adequate number of rooms shall be identified and reserved to accommodate symptomatic workmen
- Facilities required within the Isolation rooms to be ensured in co-ordination with the local health facility.
- The types of PPEs shall be specified for Caregivers, Isolated person etc.

IX. RESOURCE REQUIREMENT

22. Resources required specifically managing the COVID 19 risk shall be identified, planned, procured, and made available at site in adequate quantities. The resources which are required to manage COVID 19 risks may include:

- Thermal scanners. All persons at the worksite should have their temperature screened with Infrared Thermometer (handheld non-contact).
- Contactless attendance system.
- Liquid Soap & Hand washing arrangement at site in workmen habitat
- Contactless, sensor-based/ pedal operated sanitizer
- Team for cleaning & disinfection.
- Nose/ face masks for teams who are screening workmen, conducting medical checkup & disinfection.
- Hand gloves for teams who are screening workmen, conducting medical checkup & disinfection.
- Quarantine Facilities for accommodating symptomatic workmen.
- Additional rest areas at sites and dining spaces in Workmen habitat
- Ensure availability (even tie-up) of Ambulance equipped with all necessary items like nose masks, first aid kits, aprons, disinfect solutions etc.
- First aid kits with hand sanitizers and hand wash liquids shall be mandatory available in all the vehicle without any lapses.
- Regular notification by state government, district authority should be adhered and all the staff should be compulsorily made aware of that
- Job protection of workers during crisis period of COVID 19 pandemic needs to be ensured.

X. INDUCTION AND TRAINING

a. Medical Check-up by Doctor

- All workmen shall be subjected to stringent medical check-up by the medical practitioner before allowing for EHS Induction.
- The doctor shall consider the additional information provided by the workmen in the screening, while checking the workmen.

b. EHS Induction

- Number of workmen participating in EHS Induction shall be restricted so as to maintain the social distance during training. EHS induction shall be reviewed at each project to include COVID 19 controls & Risk as per H&S Plan (Number of programs may be required to be increased in case more workmen and social distancing during induction).
- In addition to the regular EHS induction, workmen will be trained on COVID 19 risks and the precautionary measures, covering the following topics,
 - Symptoms of COVID 19
 - How virus spreads
 - System and management of symptoms for the cases detected
 - Importance of maintaining social distancing
 - Importance and DO's and DON'T's of hand washing
 - Overview of the precautionary measure taken at site for COVID 19

- Roles & Responsibility of workmen specific to the precautions towards COVID 19
- Reporting in case of symptoms similar to Flu
- c. Importance and DO's and DON'T's of hand washing
 - Overview of the precautionary measure taken at site for COVID 19
 - Roles & Responsibility of workmen specific to the precautions towards COVID 19
 - Reporting in case of symptoms similar to Flu
- d. Training & Awareness
 - All the staff members, Emergency Response Team (ERT) Members, Supervisor & all workmen shall be trained specific to COVID 19 risks and controls measures through regular interval CWT (contractor workmen training), Site specific Trainings & daily Tool box talks.
 - PMU and PIU to ensure all workers get training on above requirements before start of any construction activity
 - During construction period frequent visual and verbal reminders to workers can improve compliance with hand hygiene practices and thus reduce rates of infection. Handwashing posters should also be displayed at work site and labour camps
- e. Emergency Contact
 - Provide emergency contact number at work site and labour camp for reporting COVID-19 symptoms.

XI. COMMUNICATION AND ADVANCEMENT: COVID-19 UPDATE

23. The Contractor shall be in touch with the Department of Health & Family Welfare and Labour Department to identify any potential worksite exposures relating to COVID-19, including:

- Strictly follow the guidelines issues by Ministry of health
- Contractor strictly follow the instruction of PMU/ PMC and PIU relating to COVID 19 pandemic
- Other workers, vendors, inspectors, or visitors to the worksite with close contact to the individual
- Labour Camps / Work areas such as designated workstations or rooms /sheds
- Work tools and equipment
- Common areas such as break rooms, tables and sanitary facilities.

a. Screening:

Apart from the regular information collected during the screening process, additional self-declaration form shall be obtained to identify the COVID-19 risk level of workmen. This information shall include:

- Place of his latest stay (to identify whether, it is a hotspot)
- Contact with any confirmed or suspected COVID 19 individual
- Contact with persons who have a travel history to hot spots
- Whether they have any symptoms for COVID 19

b. Daily Safety checks for Resuming of work after Lockdown

- Monitor the workmen body temperature.
- Analyze the COVID symptoms.
- Before starting of work Hand sanitizer to be use by all.
- PEP Talk/Toolbox Talk conduct for all workmen before starting of work & covered the COVID precaution measures & site work safety.
- During Work Social distancing should be minimized.
- Regular interval Health check-up conduct for all workmen.
- Health hygiene should be ensured for all.

XII. DOCUMENTATION BY CONTRACTOR

24. In addition to the approved H&S Plan, the contractor for each package under WBDWSIP must keep the following documents ready before re-starting of work:

- Roles, responsibilities and accountability matrix for each site, developed under the H&S

Plan, clearly published or visibly shown at all sites for managing COVID 19 risks, including contact number of responsible persons. This should be included as part of their approved H & S plan (Template in Annexure 3).

- Filling up format for Medical Fitness on resuming the duty
- On-line Self-Declaration to be filled by employee resuming duties
- Self-attestation by persons/labour prior to work

25. Prior to starting a work, each labour /worker will self-attest to the supervisor:

- No signs of COVID-19 symptoms within the past 24 hours.
- No contact with an individual diagnosed with COVID-19. (contact means living with a positive person, being within 6 ft of positive person or sharing things of positive person)
- Not undergone quarantine or isolation (in case of any labourer /worker who has been quarantined or isolated previously, the engagement shall be only after obtaining the requisite clearance from trained and registered medical practitioner)

26. The engagement of workers falling in the high-risk category such as workers over the age of 55 years, with underlying medical conditions or health issues, etc. should be done only after obtaining the requisite clearance from trained and registered medical practitioners.²⁴

27. The self-attestation would be verified in collaboration with trained and registered medical practitioners deployed at site through discussions with labourers /workers and/or preliminary checks such as temperature checks, etc. prior to their engagement at site.

28. In addition, the contractor shall mandatorily follow all medical test requirements for the workers prior to their engagement and/or mobilization at site as per the guidelines issued by the Central and State government agencies and WHO from time to time.

29. Persons/Labourers showing COVID-19 symptoms or not providing self-attestation shall be directed to leave the work site and report to the fever clinic/quarantine centre immediately. Labourers should be asked to not return to the work site until cleared by fever clinic/ quarantine centre.

30. Contractors must identify personnel for and report every month the following:

- Filling up Checklist for Post lockdown work resumption compliances at Project Site;
- Filling of Daily Safety checks for resuming of work after Lockdown; and
- Initial submission of and conformation of prominent display on a monthly basis of IEC poster and responsibility matrix with contact details for display at each site.

²⁴ Caution is needed to avoid exclusion from workplace on grounds of one's age. Although there could be a direct correlation of age and underlying health conditions, the emphasis should be on those with underlying health conditions and not necessarily on age.

Annexure 1 Pandemic Plan Site XXXXX Acknowledgement Form

| | | | |
|----------------------|---|---------------------|----------------|
| Project Name: | | Location | |
| Date: | | Client Name: | |
| S. No. | Description | Yes (✓) NO | Remarks |
| 1. | Temperature (Fever) | | |
| 2. | Cold | | |
| 3. | Cough | | |
| 4. | Difficulty in Breathing | | |
| 5. | Are you having any medical illness? (BP, Sugar, Cardiovascular, lung, obesity, kidney etc.) | | |
| 6. | Is any of your family members are suffering from above symptoms. | | |
| 7. | Have you met any confirmed COVID -19 person? | | |
| 8. | Is any of your neighbors are confirmed with Covid-19? | | |
| 9. | Is your locality falls in covid-19 containment / Red zone area? | | |
| 10. | Have you done hand sanitization before entering | | |
| 11. | Did you travel beyond your state boundaries earlier (holidays/weekly off) | | |
| 12. | Any history of international travel | | |
| 13. | Have you received - Nose mask & Hand sanitizer | | |
| 14. | Mode of travel used to reach site. | | |
| 15. | Whether social distancing (Min-6feet) maintained in case of public transport, site related activities and | | |
| 16. | Are you aware about Resilience plan, MHA (Ministry of Home Affairs) updates, and National Directives, State Govt order, Local authority order | | |

Declaration by Employee

I _____ declare that the information given by me above is true and correct to the best of my knowledge.

Signature of Staff with Date: _____
Appropriate

Medical Professional at site Signature of
authority or any nearby assigned government
approved dispensary/hospital

Signature of Admin. with Date:

Signature of PM/TL with Date: _____

Signature with Date

Annexure 2: Regular Health Monitoring Template at Site XXX

| | | | |
|---|---|---------------------|--------------------------|
| Project Name: | | Location | |
| Name: | | Client Name: | |
| S. No. | Description | Yes (✓) NO | Remarks |
| 1. | Temperature (Fever) | | Logbook to be maintained |
| 2. | Cold | | |
| 3. | Cough | | |
| 4. | Difficulty in Breathing | | |
| 5. | Have you done hand sanitization before entering site? | | |
| 6. | Has the person wearing mask | | |
| Signature of Staff with Date: _____ | | | |
| Signature of Admin. with Date: _____ | | | |

Annexure 3: Roles & Responsibilities Matrix for Managing COVID 19 risks* at Site XXXXX

| Process | TL/ DTL /PM | Accts & Admin | Office Manager/ Section Inch charge | All staff | EHSO | ERT Team | CM/ Super-visor | Workmen |
|--|--------------------|--------------------------|--|------------------|-------------|-----------------|------------------------|----------------|
| Conducting Meeting regarding this H&S PLAN before restarting the Works | | | | | | | | |
| Preparing a site-specific action plan | | | | | | | | |
| Screening of workmen | | | | | | | | |
| EHS Induction | | | | | | | | |
| Access Control measures | | | | | | | | |
| Training on COVID 19 response | | | | | | | | |
| Disinfection | | | | | | | | |
| Risk Control in Workmen Camp | | | | | | | | |
| Social distancing in site office & facilities | | | | | | | | |
| Pre startup checks location / area wise | | | | | | | | |
| Promoting Self Hygiene & Respiratory Hygiene | | | | | | | | |
| Display of posters for COVID 19 Response | | | | | | | | |
| Organizing resources for COVID 19 response | | | | | | | | |
| Maintaining social distance | | | | | | | | |
| Monitoring of compliance | | | | | | | | |
| Reporting in case of symptoms | | | | | | | | |
| Checks for COVID during safe to start of activities | | | | | | | | |
| Periodical review | | | | | | | | |
| Emergency Response | | | | | | | | |

(* Note- To be submitted by contractor of each package)

A - Accountability

R – Responsibility

EHSO- Environment, Health and Safety Officer, ERT – Emergency Response Team, PM- Project Manager,

CM- Construction Manager

**Individual/s in Charge and Responsible for the Activity at Site XXXXX
(COVID-19 Resource Team Members)**

| SN | Name | Occupation / Designation | Contact no | Company | Roles & Responsibility |
|-----------|-------------|-------------------------------------|-------------------|----------------|---------------------------------------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |