

Environmental Monitoring Report

2nd Semestral Report
January 2016

Period: July 2015 - December 2015

BAN: Dhaka Environmentally Sustainable Water Supply Project – ICB-02.7

Prepared by Kunhwa-DDC-FCEA JV in association with VCL for the Government of Bangladesh and the Asian Development Bank.

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Government of the People's Republic of Bangladesh

Ministry of Local Government, Rural Development and Co-operatives

Dhaka Water Supply and Sewerage Authority (DWASA)



Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Funded by

Asian Development Bank and Government of Bangladesh



Semi-Annual Environmental Safeguard Monitoring Report of Package ICB 02.7 (2nd Half of 2015)

Prepared by

Management and Supervision Consultants (MSC)

Kunhwa-DDC-FCEA JV in association with VCL

January, 2016



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Abbreviations

ADB	: Asian Development Bank
DMA	: District Metered Area
IEE	: Initial Environmental Examinations
IECs	: Important Environmental Components

Glossary

Important Environmental Components: Important Environmental Components are features of the biophysical or social or economic environments that are likely to be significantly affected by DESWSP or facilities developments.

Initial Environmental Examination: The first stage in the environmental assessment undertaken for a regional or pre-feasibility level study for identifying and assessing possible environmental impacts.

Monitoring: Monitoring is the continuous assessment of DESWSP implementation in relation to agreed schedules, the use of inputs, infrastructure, and services by project beneficiaries. Monitoring is undertaken to improve environmental understanding of cause –effect relationship, to provide an early warning of undesirable change in the environment, to verify earlier IEE/EIA predictions and to check on the effectiveness of environmental management plan.

1. INTRODUCTION

1. This Semi-Annual (Half Yearly) Environmental Report has been produced as an additional report to the requirement of the contract for the provision of the construction supervision services to the Ministry of Local Government Rural Development and Cooperative (MLGRDC), Dhaka Water Supply and Sewerage Authority (DWASA) of Bangladesh for the Dhaka Environmentally Sustainable Water Supply Project (DESWSP) under Asian Development Bank, Project Number ADB Loan No 3051-BAN. This DESWSP has been screened for expected environmental impacts and assigned to Category B type according to ADB SPS 2009.
2. The report covers all construction contracts involved in the project in Dhaka city and the supervision and management of these contracts is being implemented by Kunhwa Engineering & Consulting Co. Ltd., Korea in joint venture with DDC and FCEA in association with VCL. This report has been prepared in accordance with the environmental monitoring program followed by the **environmental management plan (EMP)** prepared before.
3. The purpose of this Environmental Monitoring Report is to satisfy the environmental safeguard requirements of the Government of Bangladesh and the Asian Development Bank (ADB) as well as to fulfill the requirements written in the loan document of Dhaka Environmentally Sustainable Water Supply Project. The program goal of the project is improved health and quality of life and reduced poverty of the people of the project area by providing and improving access to adequate, sustainable safe water supply facilities.
4. This monitoring report has been made in consideration of the observations during the field visit performed by the Environmental Management Expert, MSC and according to the recommendations stated in the previous monitoring report already submitted before to ADB. This overall monitoring report covers the period up to December 2015. The MSC organogram is provided in Appendix-2. Site inspectors of Contractors have overseen the environmental safeguards in different phases of the sub-project works. Environmental Management Expert (EE) of the MSC is mainly overall responsible for Environmental Monitoring.
5. The contract package of ICB 02.7 was signed on 24th April, 2014. The following Table 1 shows status of the contract.

Table 1: The Status of Contract

Contract Number	Location	Contractor and Effective Date	Status of the Contract	Progress of Works
ICB 02.7	16 DMAs of MODS Zone -6, Geographical Area mostly covered: Rampura, Banasree, Maghbazar, Goran, Malibagh	RPL-FSL-CRFG JV. Effective date: 2 nd July, 2015 Expected date of completion: 5 th August, 2018.	Detailed survey of DMA 602, 603, 604 & 612 and detailed design of DMA 602, 603, & 604 has been finished. Pipe	Overall progress of ICB 02.7 is 4.22% according to progress upto December 2015 which is lower than what was planned (4.79%)

Contract Number	Location	Contractor and Effective Date	Status of the Contract	Progress of Works
	Chowdhurypara, Shahjahanpur, Shantibagh, Bijoyanagar, Dhaka University.		installation of DMA 602 and 603 began on 14 th November 2015 and 10 th January 2016 respectively. Model design of DMA 612 has been submitted to MSC for approval.	due to unavailability of road cutting permission from Dhaka South City Corporation (DSCC).

- The actions of the contractors in relation to Environmental Management and Monitoring have been illustrated within this report and cover the period of 1st July, 2015 until the 31st December, 2015. It is also identified where additional attention must be made by the contractors to improve their performance.

2. BACKGROUND

- The Asian Development Bank is financing to the Government of Bangladesh to assist the implementation of Dhaka Environmentally Sustainable Water Supply Project. The Project involves rehabilitation and upgrading of the existing water supply distribution networks utilizing production tube wells and surface water provision. The project includes significant construction over 3.5 years in over populated urban areas.
- The conditions prevailing in Dhaka in 2006 have been documented in the Feasibility Study carried out under TA 4651-BAN (SF) that prepared the concept for the current project. Since then a number of changes have taken place that are impacting on the project. These are: (i) Additional MODS (zonal areas of DWASA operations) have been created; (ii) Significant cost escalation and inflation have taken place; (iii) National pipe manufacturers are starting to adapt to the need to produce Poly-ethylene pipes and expand capacity accordingly; (iv) Additional wells have been drilled into the lower aquifer; (v) Saidabad Surface Water Treatment Plant – Phase II is being completed to augment the supply with 225 MLD.
- Results available from the Manikdi Pilot scheme demonstrate the viability of 24 hour pressure operations, leading to lower production volumes and larger number of customers. Groundwater mining is a matter for concern with the rate of decline accelerating until 2008.

3. THE PROJECT

10. The Dhaka Water Supply and Sewerage Authority (DWASA) is implementing the Dhaka Environmentally Sustainable Water Supply Project (DESWSP) with the assistance of the Management and Supervision Consultants (MSC). The MSC services for the project have started from April, 2015. The project is funded by the Government of Bangladesh and the Asian Development Bank. The project is to be benefited in the area covering a major part of the Dhaka Metropolitan city. DWASA has to control a balance between the growing demand for water resulting from a steadily increasing population and the declining groundwater availability.

a. Project Objectives

11. The objective of the project is to solve the most urgent problems in relation to water supply by introducing **District Metered Areas (DMA)** that are hydraulically self-contained and maintain water pressure 24 hours per day with minimum water head of **1 bar at any part of the DMA**. Production and consumption will both be metered and water balance calculated and **Physical loss to be reduced to 15% or less**. Upon project completion, DWASA will be responsible for continued operation and maintenance.

4. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

4.1. Consideration of Environmental Safeguards during Project Preparation

12. At the time of project preparation at feasibility stage, the TAPP consultants were deputed for the survey and preparation of IEE for the DESWSP (Ref: IEE, DWASA, 2006). As part of detailed project preparation, environmental screening and assessment reports, IEEs were prepared by environmental consultant engaged by the DWASA supported by ADB. Further, the consultant suggested to ensure in procurement process that all information required for environmental safeguard stated in the environmental assessment report and its Environmental Management Plan (EMP) which have been prepared earlier under the respective pipeline rehabilitation Contract have to be incorporated in the work schedule so that contractors can adopt mitigation measures associated with construction works. Management and Supervision Consultants (MSC) have to monitor the implementation of EMP which is used to work by contractors; and ensure that the EMP is implemented throughout project implementation period. Half yearly Environmental Safeguard Report has to be prepared by the Consultant to be forwarded to PMU and ADB. It could be mentioned that IEE with EMP has been prepared according to ECA'95 (Environmental Conservation Act) & ECR'97 (Environmental Conservation Rules) and it is mandatory to follow the rules ordered by Bangladesh Government and ADB guidelines. To follow the rules, contractors have to collect no objection certificates from local authorities (like DESA, City Corporation and Union Parisad etc.) before starting the works of the sub-projects.

4.2. Development of Environmental Management Plan

13. The IEE report including EMP that already had been prepared provided necessary recommendations on how the potential environmental hazards' impacts could be mitigated. The IEE guided to develop environmental management plan to provide a set of guidance on what, how, when and where the mitigation measures have to be implemented. It includes also who has to implement and monitor the implementation of mitigation measures in different phases of the project.
14. The **Initial Environmental Examination (IEE)** report prepared under the feasibility stage is helpful in the following ways:
 - It provides the basic information about the environmental conditions of the project areas and what will be the potential environmental impacts;
 - It provides the recommendations to mitigate potential environmental impacts and describes on how to implement in the environmental management plan;
 - It provides guidance on how the environmental monitoring has to be carried out; and
 - It indicates what kind of environmental statutory clearance will need to be obtained.

4.3. Preparation of Bid Documents with incorporating the statutory environmental requirements

15. The Environmental Management Plan (Ref: in IEE, DWASA, 2013) covered the information of potential environmental impacts and the required mitigation measure for the Project has been incorporated in the bidding documents. In addition, the EMP was provided to the contractors before work order of the contract. The bidding document includes also some detailed instructions on the subjects that can be highlighted in the IEE & EMP and environmental monitoring plan which is stated some points below.
 - Precaution to be adopted during disposal of debris of solid wastes including disposal of organic debris generated during rehabilitation of water pipes.
 - Precaution to be adopted at sanitation and housekeeping at the labor construction camp like in the area of toilets, water supply, waste disposal, first aid and maintenance etc.
 - To measure and maintain the air quality standard.
 - To measure and maintain the noise quality standard.
 - To check the primary water quality standard including physical and chemical properties of drinking water.
16. The contractors' response on the instruction to include works relating environmental impacts associated with the construction activities is satisfactory. Necessary budget has been allocated for the project placed in particular for Category 'B' projects to handle environmental problems. Also the contractors' budgets covered the items of implementation of environmental management and monitoring plan that has been included in the contract document (Ref: DESWSP, Tender Documents-Rehabilitation of Distribution Network, July, 2013).
17. The contract documents for the contractor (Clauses 2.14; 2.14.1; 2.14.2; 2.14.3; and 2.14.4 of Employer's Requirements) include details terms and conditions regarding

the safeguard issues and implementation of the Environmental Management and Monitoring Plans that has to be adhered to and implemented by the Contractors.

4.4. Environmental Statutory Clearances in consideration of loan covenants

18. Prior to commencing a civil work as stated in the loan document, all the required statutory clearances with regard to the project (DESWSP) have to be obtained by contractors. Removal of trees along the rehabilitation sites is considered subject to planting of native species in the same area after completion of civil work. Therefore, trees might be removed in some places to allow for appropriate workmanship but in that cases the current construction safety standards have to be maintained properly. The required clearances from relevant authorities have been obtained by the Contractors.

5. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

5.1. Monitoring of Environmental Quality

As the work progresses, environmental quality monitoring in terms of Air Quality, Water Quality, Noise Level, and other parameters with ecological aspects is in progress at a qualitatively and quantitatively acceptable scale with a few exceptions. Having site visited, it seems that the air pollution caused by dust and smoke produced by HDD machine and small generators as well as the noise pollution caused by same machine are not so high to exceed the limit of standard range. Nevertheless, Team leader of MSC has requested in written to the Contractors to collect the laboratory reports on environmental quality parameters related to project activities like drinking water quality parameters, air quality parameters and noise level.

1. Overall aspects associated with environmental monitoring described in the Appendix-1 for environmental monitoring have been discussed with stakeholders including contractors. Policies and Regulation of the Government of Bangladesh through Department of Environment and ADB SPS formed the basis of the environmental quality monitoring. Meanwhile, the given Non-compliance notices (NCN) and associated letters issued to the Contractors were appropriate by MSC which might be helpful for the contractors to grow consciousness on the environmental issues involved in the sub-project works.
2. The Environmental Management Plan (EMP) submitted by the Contractors was approved by the MSC. But ADB's Environmental Specialist pointed out some issues during a visit to the installation sites in DMA 602, Banasree on 14th November, 2015 and requested to update the EMP by incorporating the observations. Contractors have updated the EMP and submitted to MSC for approval on 17th December, 2015. But some of the observations made by the ADB's Environmental Specialist were not incorporated in the updated EMP. The contractors have finalized the EMP and submitted to MSC for approval. The monitoring activities are being administered continuously. The qualitative and quantitative monitoring of IECs including qualitative measuring is conducted by the contractors.

5.2. Implementation Status of Environmental Safeguards during Construction

With some exceptions, Contractors of ICB 02.7 have followed contract conditions

stated in the Employer's requirement Section 6.2.14.

Some of the construction areas, there was no enough facility to implement occupational health and safety measures. The contractors were requested to improve their PPEs facilities; but no significant improvement is seen.

During monitoring in some sites, the laborers violated the environmental safety regulations (Appendix-3 photographs) that has been reported to contractors and instructed to adopt mitigation measures to avoid such violations further.

Investigation results coming from field visit which outlines the present status of environmental safeguards for the sub-project implementation are stated below.

ICB 02.7

In the pipe installation area of DMA 602, which is being implemented during this reporting period, pipe installation began on 14th November, 2015, there were basic first aid and PPEs facilities for the labors. Separate drinking water supply and mobile toilet facilities for laborers were installed near laborers shed in the DMA. Laborers, mostly involved in soil excavation for open trench, informed that some of them have little knowledge of PPEs and know how to handle but feel uncomfortable wearing them while working. In some cases, there were open pits with light fencing or no fencing at all in the construction area. This issue is discussed with contractors but only very little improvement is observed and in some cases no sign of improvement at all. So, the contractor should follow the safety security rules governed by DoE and Donors.

5.3. Review Comments on Contractors Reports

5.3.1. Environmental Safety Issues

The information included in the Contractors' EMP reports carries detailed plan regarding occupational safety measures. Contractors have their own independent Environmental and Safety Engineer and Safety Superiors to ensure the environmental, health and safety and social issues for the respective DMA of the ICB 02.7. According to the EMP, all employees, management personnel and visitors undergo induction training carried out by the Health & Safety Officer or a designated deputy before going onto site for the first time. The Environment Health and Safety meeting is scheduled at the third Monday of the month in JV head office of the contractors.

5.3.2. Environmental Monitoring

During the reporting period, compliance to environmental requirements was checked by MSC based on review and validation of Contractor's IEE and EMP as well as field observations and instructions to comply with environmental laws of ECR'97 and ADB environmental guidelines.

Contractor's IEE

Initial Environmental Examination (IEE) was prepared for this ongoing contract (ICB-02.7) according to ADB's Environment Policy (2002) and Environmental Assessment Guidelines (2003). These IEE have been tried to include the assessment of the environmental impacts of water networks being built and steps and mitigation measures

taken to avoid negative impacts at the pre, during and post implementation of the sub-project works.

Meanwhile, the Contractors of the rehabilitation package ICB-02.7 submitted their Environmental Management Plan according to 'Environmental Assessment Requirements and Environmental Review Procedures of the ADB. The revised EMPs incorporates a number of mitigation measures for DMA 602, 603 & 604, mainly related to the disposal of sanitary and other waste, location of fuel, oil and lubricant depots, sheds for equipment, labour and housing facilities, etc. Environmental Site Plans have been developed for these DMAs in relation to environment safeguard like air quality, noise and nuisance as well as waste management and disposal of wastewater.

Overall findings from inspection reports and visual observation on the investigated sub-project are stated in Section 8 (Eight) of this report.

6. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

The methodology is a combination of organizational principles and strategies through which responsibility for performing the monitoring process is shared with different stakeholder groups. Methods like site visits, stakeholders' consultation, qualitative as well as quantitative analysis of quality parameters, analysis of monitoring reports come from site inspectors, subjective judgment etc. are used for environmental monitoring. Normally, Contractors' inspector monitors the works in relation to environmental efforts in the sub-projects and he sends the results of the monitoring to MSC. MSC monitors the construction works and oversees the work of contractors' activities required for environmental requirements. MSC also coordinates with Donor agencies and related Governmental agencies on the issue of environmental requirements and monitoring.

7. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (AMBIENT AIR, WATER QUALITY AND NOISE LEVEL)

Normally the noise produced in the construction area appears insignificant especially in the time of using open cut method for pipe laying but small amount of noise might occur at the time of using HDD method and operation of power generator. Air pollution owing to producing dust occurred by earth cutting and emission of smoke happened by the operation of HDD machine, PB machine and power generator might have occurred of low level at construction period. To comply with the legal requirement, SPM, SO_x and NO_x tests have to be done. Meanwhile, MSC has requested to contractors to submit the environmental quality report of ambient air quality, drinking water quality for laborers and noise level produced from machines used for trenchless pipe installation.

8. OVERALL FINDINGS CONSIDERING INSPECTION REPORTS AND DIRECT FIELD OBSERVATION AND RECOMMENDATION/ REMEDIAL ACTION.

Having site visited, the findings have been identified which are stated below-

Observation:

- In the place of the DMA 602, the only DMA under package ICB 02.7 is being implemented during this reporting period; with some exceptions, it was observed that light fencing of plastic tape and bamboo posts was used for guarding some excavated

areas (Photograph attached). Laborers were provided with basic PPE but some are found to be unwilling to wear them as because of feeling discomfort during work. Attending in the occupational health and safety training conducted by contractors was advised by the MSC.



Fencing (plastic tape & bamboo posts) along the way of Open Trench

Recommendation:

- Every open cut made for Open Trenching, Pipe Bursting (PB) and Horizontal Directional Drilling (HDD) in order for survey and pipe installation work must be guarded with proper fencing as instructed by the consultants.
- The contractors should ensure everyone who will be engaged in the implementation of the package should be trained on occupational health and safety rules and EMP to become aware on environmental issues with full safety security raised by project works. Special attention can be made for laborers to motivate for wearing PPE during physical works.
- Contractors should take all necessary measures to keep the values of environmental quality parameters within the standard range if it happens to be higher than accepted values.
- Drinking water supply and sanitary facilities for laborers should be ensured within the short distance from construction area.

9. OVERALL ACTIVITIES INVOLVED IN THE PROJECT INCLUDING ENVIRONMENTAL SETTINGS MADE DURING THE QUARTER

Environmental Monitoring

During last visit (July-December, 2015) of investigation, it was requested to contractors to improve their PPEs facilities and fencing around open cut, the contractors responded accordingly and they did maximum but need more to do in this issue.

However, the Environmental Expert of MSC requested to contractors to work for meeting the full compliance to ECR'97 if any noncompliance is yet to be addressed.

The required immediate action by the Contractors who have not followed the laws especially ECR'97 properly has to be taken to enforce the Environmental laws and regulations of Government of Bangladesh and follow the ADB guidelines.

Monitoring activities on IEE and safeguards issues

A checklist on the Monitoring Activities on IEE and Safeguards Issues is given in **Appendix-1**.

10. CONCLUSION AND RECOMMENDATIONS

Under the current Phase of DWSSP, it is established during the environmental monitoring that, at the project preparation stage, the environmental assessment study was carried out for the Contract ICB 02.7. The bidding documents have properly covered the environmental aspect by highlighting the IEE, EA, and including in its EMPs.

There were also some environmental problems at the construction works that have been mentioned earlier in this report. However, the overall environmental problems found in different sub-project areas have been investigated stated in Section 8 and the mitigation measures as stated in the EMP have been prescribed to overcome the difficulties. In some cases, TL of MSC has asked the Contractors to ensure the implementation of EMP properly where the noncompliance has appeared.

The next semi-annual environmental monitoring report for the Project will be submitted to DWASA-ADB in July, 2016.

11. Required action to be monitored and reported during the next monitoring report

The important things that will be included in the next Environmental Monitoring report are stated below-

- Collect information/test results from contractors who have not done the tests yet on quality of water, air and noise and analyze these for preparing a recommendations complying with the requirements of Donor agencies and DoE.
- Oversee whether the completed construction works have been done following the environmental safeguard policies.
- Monitor and prepare a report on the pre and post operational activities of the sub-projects examining meticulously all environmental issues.
- Oversee whether observations, recommendations and suggestions provided in the previous environmental monitoring reports have been materialized or not.
- Monitor the under construction works and prepare reports on it.
- Check and provide comments on the Contractors monitoring reports.
- Visit sub-projects and submit report if deemed necessary.

Appendix-1: Checklist on the Monitoring Activities followed on IEE and Environmental Safeguards Issues

ENVIRONMENTAL MONITORING REPORT

PROJECT NAME: **DESWSP, DWASA**

CONTRACT NUMBER: **ICB-02.7**

NAME: **Rehabilitation of Distribution Networks**

TITLE: **District Metering Areas (DMA-602)**

LOCATION: Banasree G to M Block under Rampura Thana in Dhaka city

WEATHER CONDITION: **Good**

INITIAL SITE CONDITION: **Fair**

CONCLUDING SITE CONDITION:

Satisfactory: Moderate to Satisfactory (**Yes**), Unsatisfactory ☒ Incident

☐ No ☒ Resolved ☒ Unresolved ☒

INCIDENT:

Nature of incident: Not happened

Intervention Steps: N/A

Incident Issues: N/A

Inspection

Emissions	Yes	Waste Minimization	Yes
Air Quality	Yes	Reuse and Recycling	Yes
Noise pollution	Yes	Dust and Litter Control	Yes
Hazardous Substances	Yes	Trees and Vegetation	Yes

Site Restored to Original Condition Where the construction works is completed:

Yes ☐

No ☐

ICB-02.7:

ENVIRONMENTAL MONITORING CHECKLIST

1. AREA				
DMA	Site visited	Environmental description of the area		
DMA 602	Several times	Topography and texture of the DMA 602 is plain and the area is a developing planned housing area. The geographical location of the DMA is E- 90 ° 26' 33" and N- 23° 45' 75". The area is locally known as Banasree G to M Block under Rampura Thana in Dhaka city. Electricity, gas and other utility services are there. The area is not located within any forest conservation and natural wet land areas or other protected areas. There are some underground drainage existed in some of the roads. Total population of the DMA is around 17000.		
2. Activity				
Survey	Design	Implementation	Pre-Commissioning	Commissioning
Survey includes ground survey / underground survey for locating different utilities, infrastructures (valves, meters, PTWs), house connections present in the road and underground.	Based on the survey output, the design has been finalized as well as detail design including details of pipe section has been prepared.	Pipe installation in DMA 602 began on 14 th November 2015.Both the open trenching and trenchless technology (HDD & PB) are being used for pipe installation work. As of 13-01-2016, approximately 60% installation work has been finished.	DMA wise pipe network including all valves & other infrastructures installed will be tested at 6 bar for 4 hours and if the test is found satisfactory, completion certificate will be issued.	If the performance criteria: (i) 1 bar pressure at any point in the network and (ii) system loss not more than 15% is found satisfactory, the network will be commissioned.

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major

3. SCOPE OF ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING INDICATOR

A. Physical & Ecological Environment:						
<u>Emissions</u>						
Chemicals used for disinfection are discharged into: Surface water/Ground Water/Sanitary Sewer/ De-chlorinated	Site Visit	Sanitary Sewer		√		
<u>Air Quality</u>						
Vehicles installed devices/maintained/and repaired/ Air quality parameters test near to smoke producing equipments	do	Test result was not submitted by contractors.			√	
Wood used as fuel for execution of work/cooking /heating water	do	No wood use	√			
<u>Noise and Nuisance</u>						
Community is informed 15 days in advance of the upcoming works	do	Advance Information given		√		
Noise level of machinery/vehicles/workers kept to a minimum	do	Impact to the workers but not to the community. Noise level test is not obtained yet.		√		
Noise level maintained at less than 70dBA	do	Test result is not obtained yet.		√		
Options investigated for noise level exceeding exposure limit	do	Taken no option to measure				
Visual impacts of storage facilities and other temporary structures	do	No remarkable environmental degradation was found on the subject		√		

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
		stated.				
Screening of areas where visual environment is important	do	Screening done	√			
To reduce public nuisance technologies used for pipe laying	do	Both open trenching and trenchless technology are being used			√	
Pipe Bursting/HDD/and Open Trench with justification (These 3 techniques have different impacts)	do	PB= Limited space in road, HDD= Reduce surface cut, OT= Narrow road.			√	
Done night time work to reduce traffic disruption in busy roads	do	Done where required		√		
Temporary make-shift access road made for undisturbed traffic movement	do	Done where required			√	
Public property damage avoided/restored to original condition	do	It is done duly.			√	
Involved police department for traffic planning	do	Formal communication with traffic police is being conducted.	√			
Utility service along pipeline were marked/encased as required	do	It was discussed with concern persons.	√			
<u>Hazardous Substances</u>					√	
All materials, equipment, tools and plants kept in a planned yard	do	Most of the cases, discard material kept in a safe distance place from working site.				

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
A team of trained staff handling the store, wastes and spillage	do	Handling as directed.	√			
Refueling done with care, without spillage on the ground or drinking water source	do	Refueling with care by using container at working site.	√			
Storage of chemicals, fuel made in spill proof containers and transported properly	do	Storage as instructed by manufacturer	√			
AC pipe is not used to avoid health risks from asbestos contamination	do	No AC pipe is existed in the DMA 602.	√			
Bentonite effluents are disposed off avoiding ground contamination	do	Bentonite was not used.	√			
Spillage from machineries are properly managed and disposed off	do	No considerable spillage is appeared from machineries.		√		
<u>Waste Management</u>						
All waste are managed in accordance with the industrial management standard	do	Cut pipe pieces are sent for recycling.			√	
Solid and liquid waste are not left behind on site	do	Site cleaning is done regularly.		√		
Standing water is managed properly to avoid ground water contamination and/or interference with construction work	do	Using de-watering pump to manage standing water.		√		
Pits are protected to avoid flooding and all works are stopped during flooding	do	Protected by excavated earth/soil.		√		
<u>Reuse and Recycling</u>						
Excavated soils are reused to the extent possible and the excess are used beneficially	do	Excavated materials were not used as per instruction of DPP.	√			
All chemicals will be reused where possible	do	No chemical is reused.	√			

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
<u>Dust and Litter Control</u>						
Litter is contained and disposed of properly	do	Using hose pipe for disposing to a safe distance place.		√		
Solid and human waste are disposed off as per the health authorities	do	In most cases, these wastes are disposed at safe distance in a safe place.			√	
Water sprinkled in the worksite to avoid excessive dust	do	With a few exceptions, Water sprinkler is used (in most cases using hose pipe).			√	
Tarpaulins used to cover sand and waste soil and during transportation	do	Sand and waste soils are carried by covering with Tarpaulin.		√		
<u>Trees and Vegetation</u>						
No trees or shrubs are cut without prior approval of the PM	do	Pipeline alignment is always kept a distance from tree.	√			
B. Social Environment:						
<u>Community</u>						
NGOs assigned to identify and compensate affected persons	do	Yes, NGO assigned.	√			
Local men and women are engaged to enhance short term economic impact within the locality	do	Sometimes, local person are engaged	√			
<u>Health and Safety</u>						
Health and safety plan prepared, got approval and is being followed	do	Plan prepared & included in the EMP and is partially followed.	√			

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
<u>Water Quality</u>						
Effort is made to ensure no contamination of soil and water on site from chemicals, hazardous substance or vehicle or plant washing runoff	do	Washing runoffs are disposed in sewerage line.		√		
No water other than DWASA supply is used for all project related activities including personal use of the workers	do	No source other than DWASA is available at working site.	√			
All concrete mixing done on an impermeable surface	do	Concrete mixing was on impermeable surface.		√		
No vehicle transporting concrete to the site is washed on site	do	No vehicles are washed at work site.	√			
No vehicle transporting, placing or compacting asphalt or any other bituminous product is washed on site	do	No such vehicle is washed at site.	√			
Hazardous materials/substances are transported in sealed containers	do	No existence of hazardous substances at site.		√		
<u>Sanitation Facility</u>						
Sanitation facilities are provided by the contractor for the workers		Mobile toilets are installed for emergency use.			√	
<u>Equipment Lay-down and Storage Area</u>						
Storage areas are secured of any crime or access by children and animals	do	Day-night security guards are engaged	√			
The contractor submitted method statement for storage of hazardous materials and emergency procedure	do	Method statement of storage of hazardous materials and is included in EMP but no emergency procedure mentioned.		√		

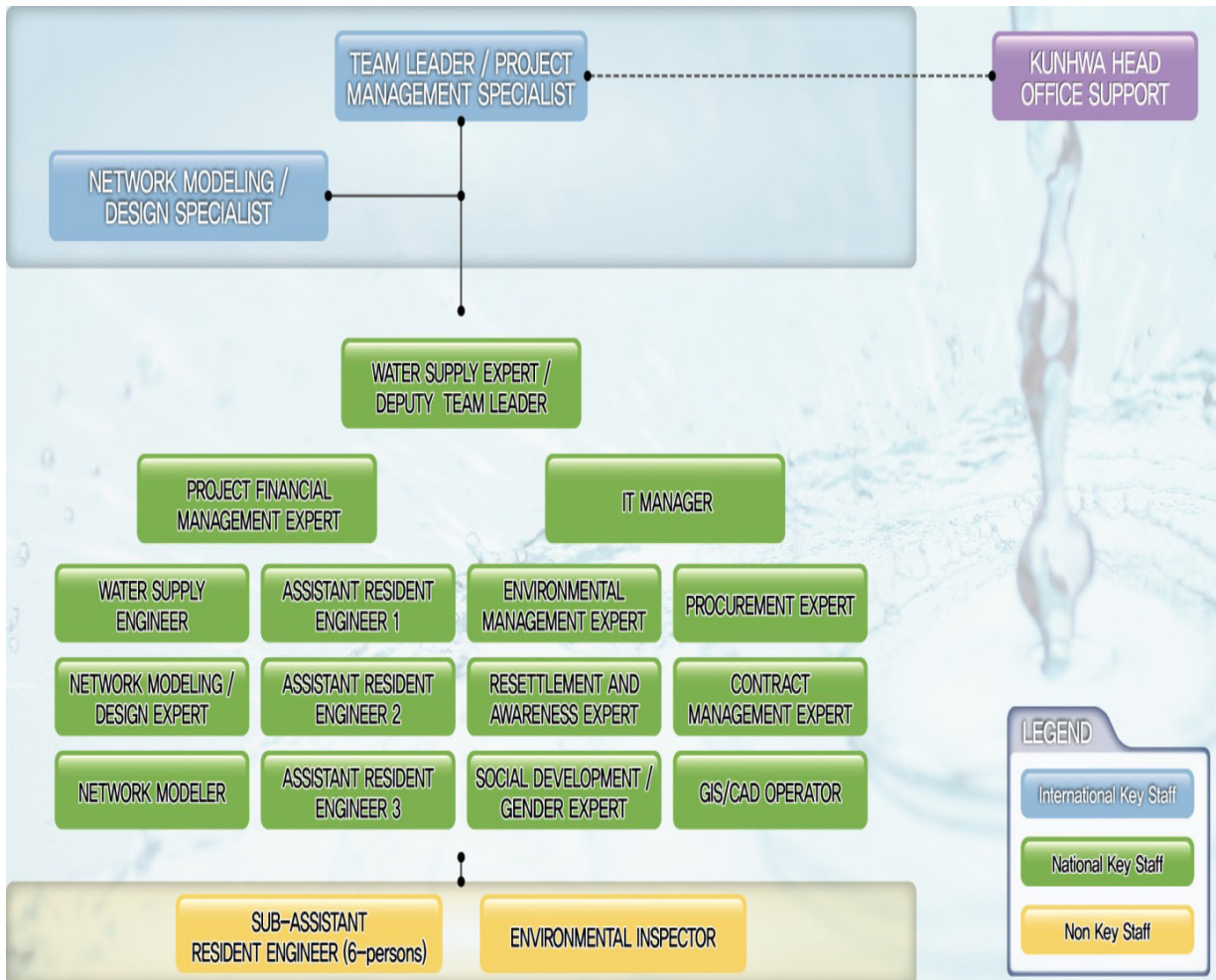
Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
<u>Occupational Health and Safety</u>						
All workers are employed with adequate experience, training and know-how.	do	Laborers among other workers have very little knowledge on OHS.		√		
Workers are led by experienced supervisor or engineer who provides the leadership in daily activities	do	A trained and experience supervisor is available.	√			
<u>Workers are aware of</u>			√			
No alcohol/drugs on site	do	Aware				
Prevention of excessive noise	do	Partial		√		
Make use of the facilities provided	do	Partial		√		
No fire other than construction purpose is allowed	do	Yes	√			
No trespassing on nearby private/commercial properties	do	There was no trespassing.	√			
Other than approved security staff living in construction site is not allowed		No out-side personnel are allowed.	√			
Potentially dangerous works are to be done by trained staff and they do it knowingly	do	Trained staffs are		√		
Contractor monitors the performance of workers in terms of environmental and social behavior	do	Yes		√		
<u>Post Construction</u>						
All excavated roads are reinstated to original or better condition	do	Excavated roads will be reinstated to original condition when the subproject is completed.		√		
All disrupted utilities restored	do	Yes		√		
All affected structures rehabilitated/compensated	do	Yes		√		

Dhaka Environmentally Sustainable Water Supply Project (DESWSP)

Criteria/Activities	Method and Frequency	Observations	Impact IEE			
			No	small	Moderate	Major
Construction sites are cleared when completed and made good to the original	do	Yes		√		
Contractor arrange cancellation of all temporary services	do	Yes		√		
<u>Training</u>						
All existing personnel undergo EMP training	do	Will be conducted once EMP finalized		√		
All new personnel undergo EMP training	do	Will be conducted once EMP finalized		√		
EMP training repeated in every quarter for all	do	Will be conducted once EMP finalized		√		
<u>Others</u>						
Review of the complain management system	do	Yes			√	
Management of activities done beyond working hours	do	Yes			√	

Appendix 2: MSC Proposed Organogram



Appendix-3: Photograph of Physical Works without PPEs

 <p>A photograph showing several workers in a trench next to a building with a metal gate. One worker in a red shirt is digging with a shovel, while others are standing nearby. A yellow caution tape is stretched across the trench. The date 29/11/2015 is visible in the bottom right corner.</p>	 <p>A photograph showing two workers in a trench. One worker in a green shirt is digging with a shovel, and another worker in a red and white checkered shirt is standing nearby. A yellow caution tape is stretched across the trench. The date 29/11/2015 is visible in the bottom right corner.</p>
DMA 602, ICB-02.7	DMA 602, ICB-02.7