

Assessing Project Implementation Hindrances-A Case Study on Chittagong WASA.

Dissertation Submitted in Partial fulfillment of the
Requirements for the Degree of
Masters in Procurement and Supply Management

Submitted by
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BRAC Institute of Governance & Development,
BRAC University

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BRAC Institute of Governance & Development,

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February 2015

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Subject: Submission of Dissertation Paper for MPSM Degree

Dear Sir,

I am very much delighted to submit my dissertation paper titled to “Assessing Project Implementation Hindrances-A Case Study on Chittagong WASA” as the partial requirement of the degree of Master of Procurement and Supply Management (MPSM).

This study is new in this area but occurs frequently in development partners’ funded projects including donor funded projects. I had the honor to work in this area and to explore project implementation challenges. Your direct guidance, supervision and advice helped me a lot to research on it and prepare the paper. I shall remember this for long time.

I hope that you will be kind enough to accept this work for evaluation and consider the requirement of the degree.

With Best regards,

Muhammad Nurul Amin
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DECLARATION

I, Muhammad Nurul Amin, solemnly declare that the dissertation paper prepared for the partial requirement of the degree for Master of Procurement and Supply Management (MPSM) is my own work and this has not been copied from any reports that are mentioned in various section of the paper. The analysis is completely of my own analysis and recommendation.

This paper has not been used in any other purpose other than the purpose of this degree. This is not a confidential paper but the data used in this paper cannot be used in any commercial transaction/ business other than academic purpose.

I wish and support them who are interested in carrying out the study further for the scholarly research.

Muhammad Nurul Amin
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CERTIFICATE

This is to certify that the Dissertation entitled " Assessing Project Implementation Hindrances-A Case Study on Chittagong WASA” is a bona fide record of research work done by Muhammad Nurul Amin during 2014-2015 submitted to the BRAC Institute of Governance and Development (BIGD), BRAC University in partial fulfillment of the requirements for the award of the Degree of Masters in Procurement and Supply Management and that the dissertation has not previously formed the basis for the award of any other Degree/Diploma/Associate ship/fellowship or other title and the dissertation represents independent and original work on the part of the candidate under my guidance.

Signature of the supervisor

Dedication

To my beloved son REESHAN

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Executive Summary

A handsome share of government expenditure is channeled through the annual development program (ADP) which normally undertakes numerous construction and other types of procurement activities through the implementation of development programs and projects. Government projects are undertaken through the involvement of a number of ministries, divisions and different implementing agencies with a long and vigorous approval process. During project preparation and implementation, procurement has a huge implication. The procurement system adopted by the government has also played a significant role on the efficiency and effectiveness of the project implementation. The reforms initiatives undertaken by the government in order to bring efficiency, economy and effectiveness in the public procurement system started in the year 2003 through the introduction of Public Procurement Regulations (PPR“2003). To reinforce the improvement measures in the public procurement system, the House of the Nation enacted the much desired law, the Public Procurement Act „2006. Under the Act of 2006, the Public Procurement Rules 2008 was framed and issued which is now widely observed in all government purchase.

The main issue of this study is to identify the factors that restricts for successful implementation of the project for the government projects that follow PPR with projects that are funded by international development partners that follow specific guidelines of the donor partners. To that end this study concentrates on a single project namely, “Karnaphuly Water Supply Project, phase-1” project implemented by Chittagong Water Supply & Sewerage Authority.

Project Challenges can be measured by assessing the performance of the project on some key measurable parameters. These parameters are – the cost of the project, the time of project implementation and construction quality. Since there is no way of measuring efficiency and effectiveness of the project directly, these three project parameters have been measured by conducting survey among the implementers of the project and interviewing the key informants.

Those parameters then have been used to evaluate the efficiency and effectiveness of the project implementation and compared with other CWASA projects. Also to have an in depth knowledge of the project characteristics interview with the key informants“ of the project was also conducted who provided valuable information about the project concerned and also the characteristic features of other projects.

To assess the challenges of the project survey questionnaire has been developed focusing on the key performance indicators of the project namely, the cost, time and quality of the project construction. The inconsistency in following some of the provisions of PPR has added complexity in contract approval and management of the project which resulted in delayed project implementation.

The lessons learnt from this project shall be applied in further projects.

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background and context:

The present population of Chittagong Metropolitan City is about 4 (four) million. In addition the population has been increasing (including floating population) due to the establishment of many light, medium and heavy industries. Export processing Zone (EPZ) is situated in the city. In addition to existing dwellers, City's growth has put extra ordinary pressure on CWASA to meet the growing needs of water supply, sewerage and storm water drainage services.

Chittagong Water Supply and Sewerage Authority (CWASA) were established in 1963 with the specific objectives to provide and manage water supply, sewerage and storm water drainage facilities for the City. At present the demand for water supply is about 500 MLD. But Chittagong Water Supply and Sewerage Authority (CWASA) can supply daily about 220 MLD through its transmission and distribution facilities of 620 K.M. Production from surface water treatment plant of Mohara is about 95 MLD and the rest from tube-well. The present shortfall of water supply is about 280 MLD, which is about 56%. In order to meet the growing demand of safe water Chittagong WASA has undertaken 3 (three) surface water treatment projects VIZ (1) Karnaphuli Water Supply Project (143 MLD)(1st phase) (2) Karnaphuli Water Supply Project (143 MLD)(2nd phase) (3) Chittagong Water Supply improvement and sanitation Project (90 MLD).

Chittagong do not have any conventional sewerage system, although under the WASA Ordinance 1963 it has the responsibility to provide it. The domestic waste of the City flows directly into the nearby water body, which eventually flows into the sea via River Karnaphuli through network of open storm water drains. The septic tanks are not properly maintained and the effluent from the septic tank is discharged into open drains. The City drainage system is faulty and often stagnates due to large quantity of solid wastes dumped into it. The road and house drains which acts as open sewers get choked and pose serious health hazard to the surroundings. Persistence drainage congestion and water logging problem in many parts of Chittagong City is also adding to very unhygienic condition like contamination of water bodies, spread of diseases, breeding of mosquitoes.

The Chittagong Water Supply and Sewerage Authority was first established in 1963 under the East Pakistan Water Supply and Sewerage Ordinance 1963 for the purpose of providing water supply, sewerage and storm water services to the city of Chittagong. The Water and Sewerage Authority Act of 1996 repealed the 1963 Ordinance and provided for the establishment of Water and Sewerage Authorities to provide water supply, sewerage and drainage services to the cities and towns in Bangladesh beginning with Dhaka and Chittagong. Chittagong is the second largest

city, the main port city and the commercial capital of Bangladesh. The city, including its suburban areas, covers an area of around 550 km² and has a population of 3.75 million. It is estimated that the population will grow to 5.2 million by the year 2021.

1.2 Problem statement:

Chittagong water supply and sewerage authority was established in 1963 and took over the public water supply utility from the Chittagong municipality. CWASA has taken his effort to reinforce the water supply capacity but there is no major project to increase water supply capacity in the city since second water supply project in 1988 under assistance from IDA. The demand supply gap of water in Chittagong widened rapidly due to population growth and expansion of industrial and commercial activities. The study will investigate into the existing problem for implementing project and give recommendations to overcome.

Research Questions:

1. What are the factors that restricts for successful implementation of the project?
2. To what extent and how are those factors affect for successful implementation of the project?

1.3 Research Objectives:

The specific objectives of the study are

1. To identify and examine factors that hinders implementation of the project.
2. To assess the measures/remedies/actions taken to overcome it.

1.4 Scope of the research

Technical Operations

CWASA currently has two water treatment plants i.e. the Mohara WTP (90 MLD) and the Kalurghat Iron Removal Plant and Booster station (68 MLD). In addition, the Utility operates ninety (90) deep tube wells installed to augment the water supply to the city. There are fourteen (14) service reservoirs with a total capacity of 46 MLD. The water transmission and distribution pipelines, having a total length of 611 km, consist of different pipe materials such as ductile iron, asbestos cement and PVC. A significant part of this network is old and requires rehabilitation. Although CWASA is legally mandated to provide water supply, sewerage and drainage services, it currently only provides water services to the residents of Chittagong. There are no piped sewerage systems in Chittagong and the drainage services are instead being provided by the Chittagong Development Authority.

Financial and Commercial Operations

As of December 2011, CWASA had a total of 52,101 customers connected to its water supply system. Of these 46,883 (i.e.90% of total number of accounts) are active or on supply and being billed. The utility is at the moment only able to cover its operating costs from the revenues generated from water sales. Capital development projects are funded by the GOB or through loans and grants obtained through the government from development partners.

On-going Projects

The current water demand for Chittagong has been estimated to be about 500 MLD as compared to a total installed production capacity of only 210 MLD. The demand is projected to increase to 1241 MLD by 2021. CWASA, with assistance from the GoB and development partners (the World Bank and JICA), is implementing a number of projects to rehabilitate and expand the water supply systems. The projects which are currently under implementation include; the Kanarphuli Water Supply Project (Phase 1), the Rehabilitation of the Mohara and Kalurghat Water Treatment Plants and the Chittagong Water Supply Improvement and Sanitation Project.

Chapter -2

Literature Reviews

2.1 projects and project management

A **project** is a temporary endeavor undertaken to create a unique product, service, or result.⁴Based on this definition, the purpose **of project management** is to plan, organize and manage resources to bring about the successful completion of specific project goals, outcomes and outputs.

High-quality, comprehensive project management practices are indispensable to helping organizations manage focused, effective and efficient projects.

Within the context of project management, the **project manager** is responsible for ensuring the overall success of the project.

And yet, while the project manager is responsible for project success, this does not mean, however, that the project manager is personally responsible for completing the project work. In fact, this is seldom the case in the development sector. Instead, the responsibility of the project manager is to work closely with an array of stakeholders to complete the work of the project. These stakeholders - including members of the project team, implementing organizations, contractors, community groups and others - must work together to design, implement and control all aspects of the project. Like many sectors, project managers in the development sector often are required to manage stakeholders with whom they have no formal hierarchical relationship. It is not unusual for stakeholders within a single project to have different ethnicities, languages, cultures and even nationalities. The challenge of managing groups within this context can be especially difficult.

In practice, the project manager's challenge to successfully deliver project results will always take place within the context of project constraints. Historically, there have been three principle elements that constrain a project, which are collectively referred to as the Triple Constraint.

2.2 Triple constraint of project

To understand the triple constraint, picture a triangle where each side is labeled as follows:

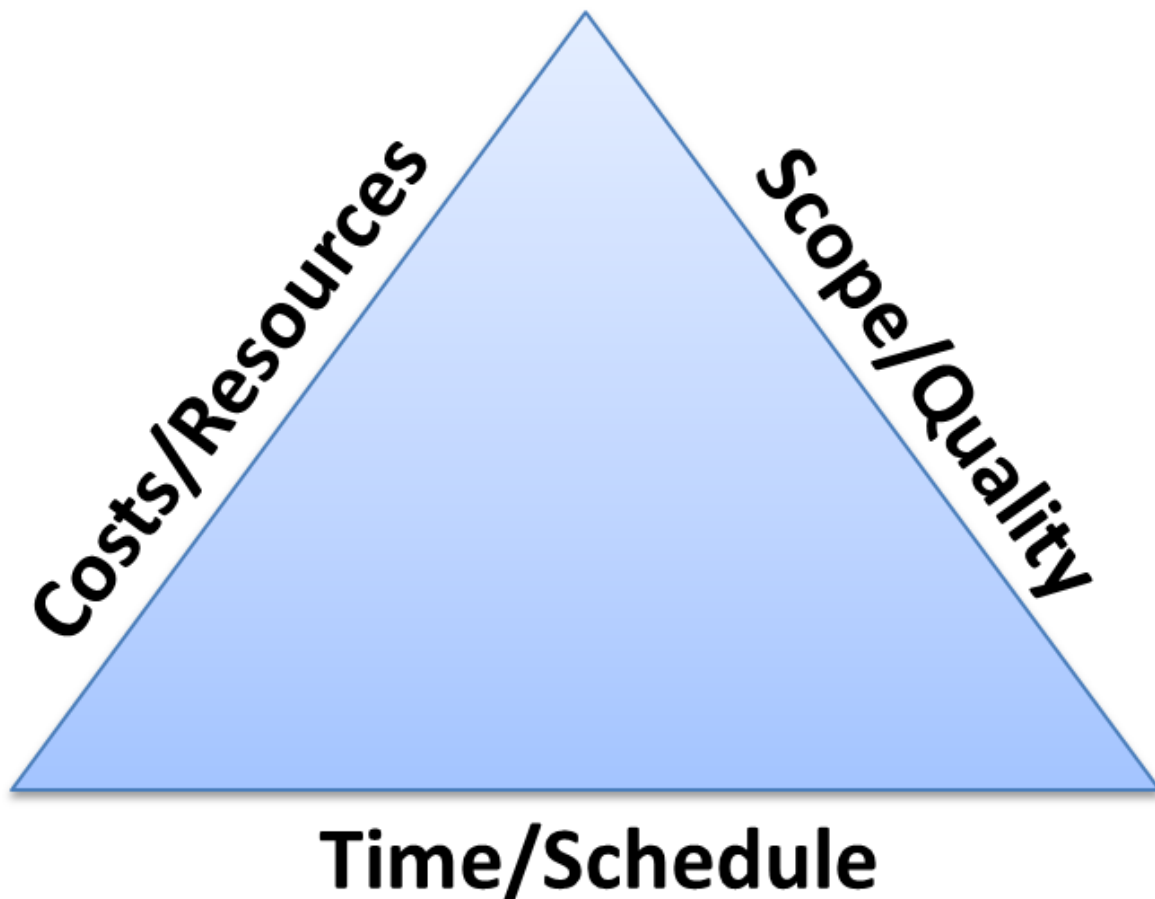


Figure: The Project Constraint Triangle

Scope/Quality – What are the products/services that the project will produce and what is the work required producing these deliverables?

Cost/Resources – What money, materials and effort are available to deliver the project product/services and to complete the comprehensive work of the project?

Time/Schedule – What is the amount of time required to complete the components of the project?

The job of the project manager is to ensure that the triple constraint triangle stays in balance. Each of the constraints is connected to the others. Whenever one of these constraints is restricted or extended, the other constraints will also need to be extended/increased or restricted/reduced.

The project manager needs to understand the relationships and trade-offs that exist between each of the constraints. The three basic classifications for the constraints are:

Inflexible – indicating that the constraint is critical and must be constrained

Adaptable – indicating that the constraint is negotiable, but should be optimized as much as possible

May concede – indicates a constraint where trade-offs can be made in order to manage the inflexible constraint or optimize the adaptable constraint

By clarifying the classification of each of the constraints, the project manager can enter into discussions with project stakeholders to frame a dialog and to drive a discussion on setting priorities. It is important to get this priority trade-off established and agreed to by all stakeholders early in the project. Trying to negotiate this trade-off after the project is launched is often difficult or impossible. Once people solidify their view of the trade-off with scheduled tasks and named resources, the effort to change these trade-offs becomes much more difficult.

2.3 Project Life Cycle

While recognizing that numerous project life cycle diagrams exist among organizations in the development sector, the PMD Pro subscribes to its own six-step project phase model . The PMD Pro's Project Phase Model is not meant to replace any specific project life cycle model, nor is it intended to serve as a standard for the sector. Instead, its purpose is to provide a balanced and comprehensive project phase model that covers the entire life of the project.

The six phases Project Phase Model which includes:

Project Identification and Design - It is during this phase that the project teams define needs, explore opportunities, analyze the project environment, and design alternatives for project design. The decisions made during the Project Identification and Design Phase set the strategic and operational framework within which the project will subsequently operate.

Project Set Up - It is during this phase that the project is officially authorized and its overall parameters are defined and communicated to the main project stakeholders. It is also during this phase that the project team establishes the high-level project governance structure.

Project Planning – Starting from the documents developed in earlier phases of the project, during the planning phase the team develops a comprehensive and detailed implementation plan that provides a model for all the work of the project. This plan is revisited throughout the life of the project and updated (if necessary) to reflect the changing contexts of the project.

Project Implementation – The day-to-day work of project implementation is to lead and manage the application of the project implementation plan: Leading the team, dealing with issues, managing the project team and creatively integrating the different elements of the project plan.

Project Monitoring, Evaluation and Control – This phase extends through the entire life of the project and continually measures the project’s progress and identifies appropriate corrective actions in situations where the project’s performance deviates significantly from the plan.

End of Project Transition – This phase includes implementing all the transition activities that need to occur at the end of a project, including (but not limited to) confirming the deliverables with beneficiaries, collecting lessons learned, and completing the administrative, financial and contractual closure activities.

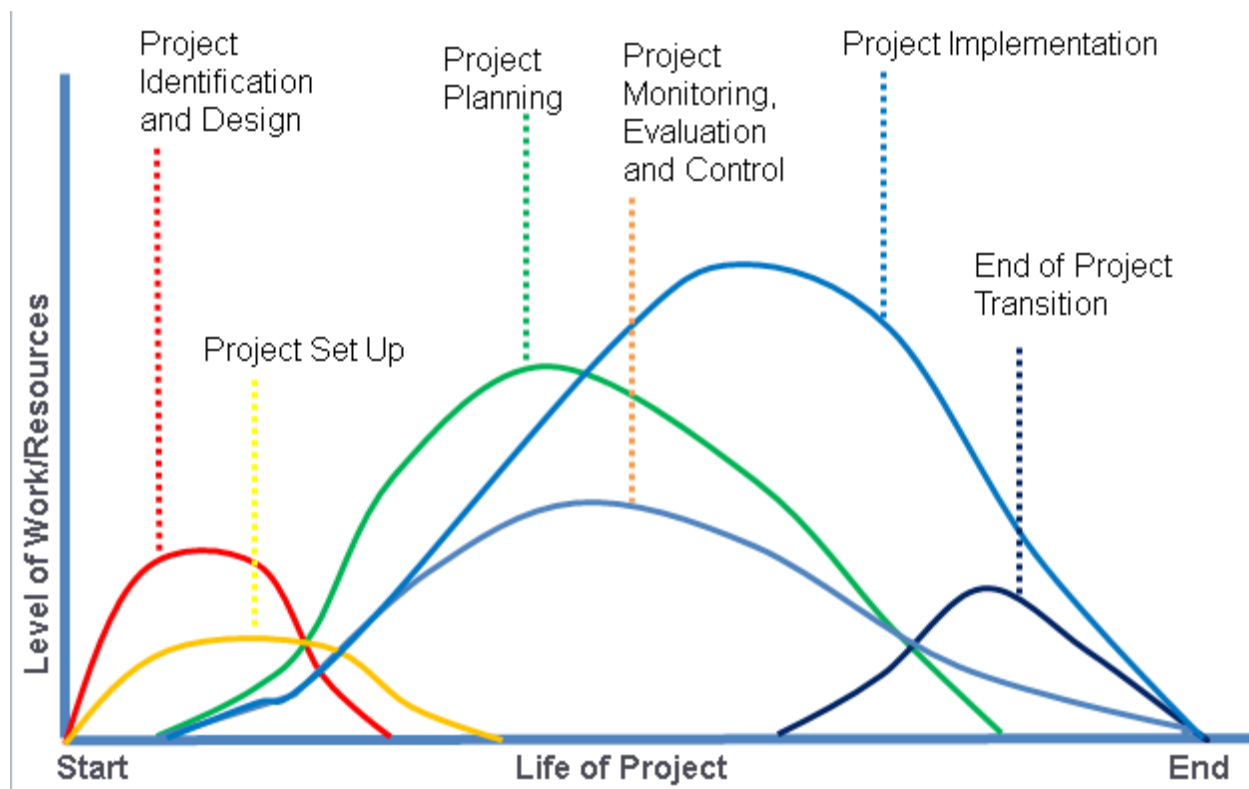


Figure: Project Phase Interactions

Project Identification and Design Phase

During the Project Identification and Design Phase, time/resources/effort are invested to define needs, explore opportunities, analyze the project environment, cultivate relationships, build trust, develop partnerships and design alternatives for project design. The decisions made during the Project Identification and Design Phase connect to existing strategies and determine the overall framework within which the project will subsequently evolve.

One of the reasons the Project Identification and Design Phase is of such great importance is because it provides the most cost-effective opportunity to answer fundamental questions about the project parameters.

The Project Set Up Phase

Every successful project begins with a thoroughly planned and implemented Set Up phase. The objectives of the Project Set up Phase include: Establishing the Project Governance Structure, Officially authorizing the start of the project, communicating the project launch.

Project Planning Phase

Usually by the time a project officially enters the Planning Phase, the project team has already developed a number of documents (i.e. the project logical framework, the project proposal, the project charter etc.) that contain an extensive level of detail related to the project: Goal, outcomes and outputs; Scope and activities, Indicators and means of verification, Budget, Schedule.

Project Implementation Phase

The day-to-day work of project implementation is to lead and manage the application of the project implementation plan. This task can be relatively simple, or can become extremely complex, depending on the nature of the project.

As in all project management, success during implementation is partially an art (managing people, leading teams, communicating with clarity), but it is also a science. In its simplest form,

the responsibility of the project manager is to implement the project plan. However, upon closer inspection, it becomes clear that the project manager must apply a number of technical skills to succeed during implementation. These skills include:

Managing Issues

Managing People

Managing Internal Controls

Managing Issues

In the boxing world, the saying goes that “Everybody has a plan... until you get hit.” The same dynamic exists when managing a project. Just like a boxer in the ring, the life of a project manager is risky, complex, and sometimes just plain messy. Even with a comprehensive and detailed plan, there will be “punches” (issues) that challenge the project during its implementation. Like any good boxer, the project manager must learn how to manage the issues, navigate the complexity, and adapt the plan to reflect the most recent reality.

An issue is an unresolved decision, situation or problem that will significantly impact the project and that the project team cannot immediately resolve. Issues management consists of having a process for identifying these problems and managing them until they are resolved. Resolving issues is frequently beyond the authority of the team. However, even if an issue needs to be escalated to the next level or delegated to another person to resolve, it still needs to be tracked by the project manager. The project manager needs to be ready throughout the Project Implementation Phase to apply resources to address and resolve these issues.

Issues Management is a collaborative endeavor. Consequently, everyone on the project team is responsible for the following:

Identifying project issues;

Contributing to the resolution of project issues (Note: experience has shown that the people closest to the work usually know best how to resolve issues. Therefore, it is the job of the project manager to establish an environment in which each team member is in a position to resolve as many issues as possible at their level);

Escalating important issues to the Project Manager as soon as possible.

Nevertheless, while issue management is a collaborative endeavor, the project manager is ultimately accountable for issue management (remember that in a RACI chart there is only one individual accountable for a given task/activity).

Having a well-documented issue management process is crucial to communicating and enforcing that process across the team. If issues are not resolved, the negative consequences can include the following:

Inability to meet project timelines, cost, and schedule;

Poor or unacceptable project quality;

Poor reputation among communities, donors and others; and

Post implementation disputes.

As an issue manager, the Project Manager needs to manage all issue management processes:

Issue Identification and Tracking – Identifying outstanding questions, decisions and other problems before they adversely affect the project. As such, the issue identification and tracking process is closely related to the topic of risk management (which is explored in the Monitoring, Evaluation and Control chapter of this document). Thus, the Implementation Phase and the Monitoring, Evaluation and Control Phase are tightly linked and normally work in parallel.

Issue Analysis – Understanding the issue sufficiently to consider future consequences of action plans designed to resolve it.

Issue Communication – Communicating issues to the right level of the organization to get them resolved. Furthermore, it is important to communicate when and how issues are resolved.

Issue Control – The project manager is responsible for establishing an environment where the project team and implementing partners can carry out actions to ensure issues are resolved in a timely and effective manner.

The issue control process is closely related to project monitoring, evaluation and control activities and should include establishing and tracking a plan for getting issues resolved. The most important control tool is the issues log, which summarizes the issues, describes their current status and identifies who is responsible for addressing the issue. The issues log can take on a variety of technical forms from paper to a fully integrated database. A sample format can be found in the issue log table below.

Figure: Issue Log

| Issue Reference | Reported By | Description | Date Reported | Assigned To | Date Assigned | Status | Status Date | Resolution |
|-----------------|-------------|-------------|---------------|-------------|---------------|--------|-------------|------------|
| | | | | | | | | |
| | | | | | | | | |

Bear in mind that a perfect issues management system will be expensive, if not impossible to achieve. It is normal to accept a reasonable level of imperfection, based on calculations of the trade-offs between value versus cost, benefit, risk and time.

Managing People

The importance of strong people management cannot be overstated. Project managers work in teams and often are only able to achieve their goals as a result of the commitment, cooperation and contributions of the people on the project team. As a result, managing people can become the project manager's most important, and most difficult, job.

Most often, when we think of project managers who are especially talented at managing people, we tend to focus on their mastery of “soft skills” of people management. These are the project managers who are especially effective at motivating team members, communicating vision, empowering staff, recognizing achievements, listening, leading by example, resolving conflicts and building trust.

All of these “soft skills” are related to the inter-personal competency of the project manager and are extremely important to project success. Therefore, project managers should strive to enhance their capacity to lead, motivate, inspire, mediate, communicate and encourage.

This does not mean, however, that there are no “hard skills: involved in people management. A comprehensive project plan will not rely solely on the inter-personal skills of the project manager to ensure success in managing people. Instead, a comprehensive project plan will identify the concrete activities required to proactively manage all elements of the project team. These concrete activities will be implemented during the Project Implementation Phase and will include:

Acquiring Project Staff – As part of the function of managing the team, the project team leader must be clear on the systems for identifying staff candidates, interviewing candidates, identifying selection criteria and making final selections of project staff.

Creating Staff Job Descriptions – Staff job descriptions include the list of project duties, roles and responsibilities for team members. Job Descriptions are not only used to recruit, orient and manage staff, but are also use to evaluate individual team member performance.

Documenting Project Organization Charts – Project charts represent the reporting relationships among the project team.

Developing Project Staff – What skills are needed? What are the training needs? Are there certification requirements.

Conducting Performance Assessments – Performance assessments are the documented formal or informal assessment of the project team members' performance. After analyzing the information, project managers can identify and resolve problems, reduce conflicts, and improve overall team work.

Establishing Team Communication Norms – As the leader of the project team, the project manager must concretely plan the communications (via meetings, workshops, reports, memos, newsletters, blogs, etc.) that allow the project team to share information, actively work to identify issues and conflicts, and interact creatively to resolve these issues.

Managing Internal Controls

One of the challenges of the project manager is to oversee the valuable assets that have been allocated to conduct the work of the project. To assist with this challenge, internal control systems should be put in place to provide reasonable assurance regarding the responsible use of project assets.

Internal control processes should be designed with the objectives of:

Promoting the effectiveness and efficiency of operations;

Increasing the reliability of project outcomes;

Promoting compliance with applicable laws and regulations;

Protecting organization resources, both physical (e.g., machinery and property) and intangible (e.g., reputation, intellectual property);

Reducing risk of fraud and corruption.

Internal controls include the processes through which an organization's resources are directed, monitored, and measured. It plays an important role in preventing and detecting fraud and protecting the organization's resources, both physical (e.g., machinery and property) and intangible (e.g., reputation or intellectual property such as trademarks). At the organizational

level, internal control objectives relate to the reliability of financial reporting, timely feedback on the achievement of operational or strategic goals, and compliance with laws and regulations.

A key component of the organizational capacity of the project includes establishing internal controls that comprehensively address the entirety of the support, administrative and logistic systems required for successful implementation. Areas that benefit from internal controls include

Human Resources Capacity and Systems

Are Human Resources policies documented and in compliance with local laws and organizational regulations?

Do systems exist for timesheets, performance reviews, and employee separation?

Procurement

Do systems exist to select suppliers?

Do supplier selection criteria exist?

Do systems exist to manage suppliers?

Do similar systems exist for consultants?

Financial

Do systems exist for cash management? Expense management? Financial reporting?

Is there a segregation of duties for financial roles?

Inventory

Do systems exist for the identification and tracking of inventory?

Do systems exist for the use/transfer/disposal of equipment following project closure?

Contracts and Agreements

Do systems exist for grants management?

Do systems exist to manage relationships with implementing organizations?

Infrastructure

What systems exist for communications? Telephones, internet, radio?

What systems exist to manage vehicles and transport?

Security protocols

Is there need for special security arrangements? Travel guidance? Accompaniment programs?
Other?

Fleet Management

Are there mileage logs that control the use of service vehicles?

Information Management

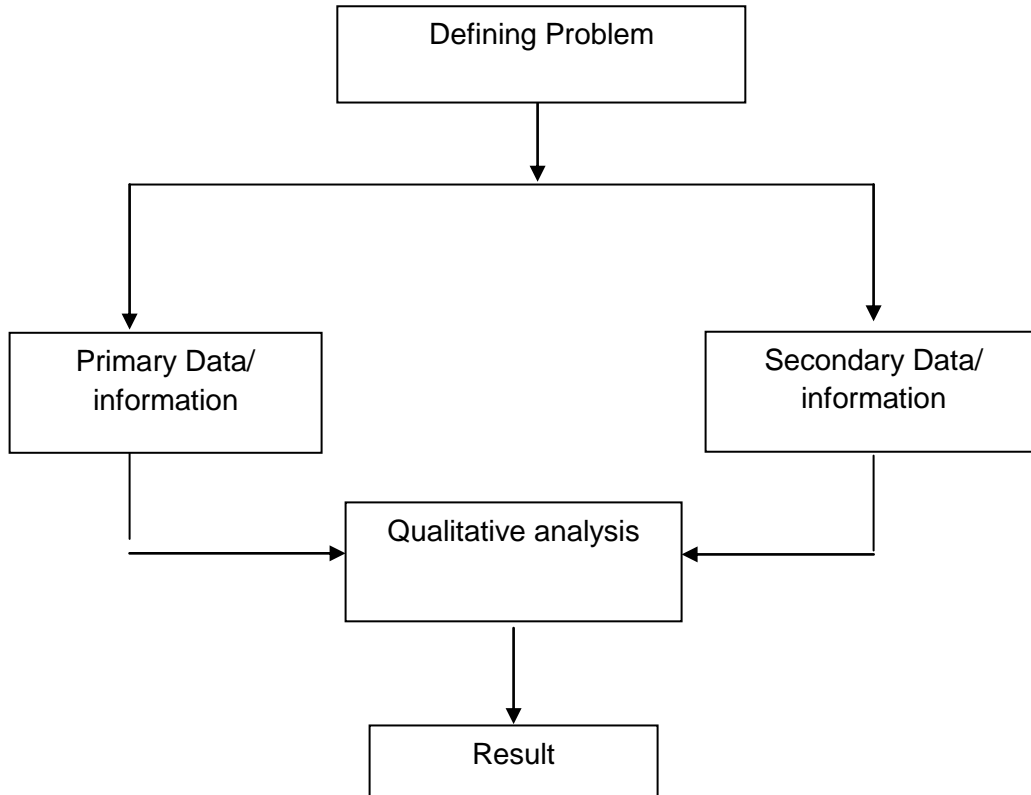
Is there a record keeping system (paper/electronic) in place? Do policies and standards exist for information management?

Are documents, contracts and receipts accessible to meet the audit requirements of the project?

In summary, it is important to recognize that internal controls can provide only reasonable assurance - not absolute assurance - regarding the achievement of an organization's objectives. Furthermore, poor or excessive internal controls reduce productivity, increase the complexity of systems, increase the time required to complete processes and add no value to the activities. However, good internal controls are essential to ensuring the accomplishment of goals and objectives. They help ensure efficient and effective operations that accomplish the goals of the project and still protect employees and assets.

CHAPTER 3

3.0 Methodological Framework



3.1 Defining problem: The objective was identify and examine factors that hinders implementation of the project and to assess the measures/remedies/actions taken to overcome it.

3.2 Primary data/Information: Primary data were taken from the concerns who are directly involve with the project i.e. Deputy managing director(Engg),Deputy project director, Executive engineers of relevant packages of the project and also engineering consultants of the project.

3.3 Secondary data /Information: Monthly progress reports of each packages of contractors and the compiled report from engineering consultants NJS consulting Co. Ltd.

3.4 Qualitative Analysis: Analysis was made by studying the primary and secondary data/information thoroughly and testing consistency, omitting the redundancy and emphasizing the ultimate goal of this study.

3.5 Results: Aspects that were looked into were the time taken for carrying out of each step of packages, issues encountered at each step, how these issues are addressed. Information's extracted from documents were later supplemented by interviews with concerned officials where clarifications, additional details and background information were needed

Chapter 4

4.0 Project Background

4.1 Project Description

Chittagong is the second largest city and commercial capital of Bangladesh and is the country's biggest commercial and port city. The city is currently expanding its industrial area and port boundary. Its population is constantly increasing due to inflows from neighboring rural area and the expansion of city boundaries. This trend is expected to continue in the future and to its advantage as a commercial and industrial city.

The expansion of the city itself and its increasing population demands a large water supply. Chittagong WASA is presently supplying only 42% of the total demand. To increase water supply of city dwellers, industries and other commercial establishment, Chittagong WASA has taken up a large project named the Karnaphuli Water Supply Project (KWSP) to be funded by the Japan Bank for International Cooperation (JICA) and the GOB. After completion of Karnaphuli Water Supply Project, Chittagong WASA will have achieved total water supply capacity of 429 MLD which is 64% of the potential water demand and planned population (demand 560 MLD) with this additional water supply source.

4.2 Project Objective and Scope of works

The main objective of the project is to construct a Water Treatment Plant with a capacity of 143 MLD, installation of conveyance, transmission and distribution pipelines, construction of new reservoir in Nasirabad, modification of Battali Hill Reservoir and improvement of existing Kulshi Booster Pump Station. .

Project Components are the following contracts:

1. C-1: Construction of a Intake structure with a 1st stage capacity of 150 MLD and Water Treatment Plant with a 1st stage capacity of 143 MLD and pumping head =81m.
2. C-2: Installation of Conveyance pipeline of 4.0 km (1200mm Dia) from Intake to WTP, Transmission from WTP to Nasirabad Reservoir of 24.0 km of 1200mm D.I.P.
Transmission Pipeline Nasirabad to Battali Hill= 6.0km (1200mm dia to 1000mm dia)
Distribution Pipeline= 44.0km (200mm dia to 600mm dia).
3. C-3: Construction of the Nashirabad Reservoir 1st stage(26000 M3),Nasirabad overhead pressure tank (2,200M3), modification of the Battali Hill existing reservoir (8,500 M3) and improving the Kulshi Booster Pump Station.

4.3 Contract Information

Chittagong WASA entered into a contract agreement with NJS Consultants Co., Ltd. in association with BETS Consulting Services Ltd. on April 16, 2008 to provide Engineering Consultancy Services for the Karnaphuli Water Supply Project for the preparation of Detailed Engineering Design, Project Tendering and Construction Supervision.

Due to delays in acquiring land and tendering delays, the Consultancy Services require an extension which is presently being processed by CWASA JICA and LGRD.

4.4 Status of Environmental Clearance

Approval IEE/EIA Report and Environmental Clearance

4.4.1 Preparation of EIA reports in official process:

According to the Environmental Conservation Rules 1997, water sector projects are allocated to the “Red category”, which triggers an automatic requirement for an Initial Environmental Examination (IEE) followed by EIA. Thus, IEE reports (December 2005) and EIA reports (June 2007), the descriptions of which cover Phase I and Phase II projects, were prepared for Karnaphuli Water Supply Project and submitted to Department of Environment (DOE) to obtain necessary approvals.

4.4.2 Approval by authorities of the government:

For the Karnaphuli Water Supply Project, CWASA received approvals with conditions from DOE as follows:

(1) Environmental Site Clearance issued on January 9, 2006 (Memo No. DoE/Clearance/2225/2005/75)

(2) Approval of Environmental Impact Assessment (EIA) Report issued on September 13, 2007 (Memo No. DoE/Clearance/2225/2005/2416)

Phase II Project is characterized as the expansion of Phase I Project, though some modifications will be made for distribution facilities (but service area has no changes). The IEE and EIA reports for Karnaphuli Water Supply Project approved by DOE refer to both for Phase I and Phase II projects. However, it is not clear whether CWASA needs to prepare relevant reports for Phase II Project or only renewal/supplementary arrangements. In consideration of urgent needs of water supply for the people in Chittagong city, early decision on the requirements to expedite the implementation of the project is necessary.

4.4.3 Approval of EIA reports under conditions:

As mentioned above, approval of the EIA report was made on September 13, 2007 with conditions of ten items including proper mitigation countermeasures and monitoring for site preparation, construction and operation stages and resettlement plan. It is also pointed out that CWASA shall apply for Environmental Clearance Certificate (ECC) after installation of the plant as well as other pollution control facilities and equipment.

4.4.4 Other required environmental permits from the appropriate regulatory authorities of country's government:

In general, No Objection Certificate (NOC) should be obtained from respective District Commission, i.e. Chittagong District Commission in this project. But according to CWASA officer the project was already authorized by the Minister level. Therefore, an issuance of NOC is not necessary for the project.

4.5 Status of accomplishments

- Land acquisition:** Completed
- Stage 1: Project Evaluation and Preliminary/Basic Design** Completed
- Stage 2: Detailed Engineering Design** Completed
- Stage 3: Tender Preparation and Assistance**
- Tendering, Evaluation and Award**

| Tender | Status |
|--|---|
| Intake and Water Treatment Plant. Contract No. KWSP-C-1 | Awarded to China National Technical Import & Export./Beijing and Sound Environmental Engineering Co., Ltd. Joint Venture, on May 24, 2011. The Contract was signed between CWASA and Contractor on June 15, 2011. |

| | |
|---|--|
| | <p>Commencement date is on 20 November. 2011</p> <p>Contract amount:</p> <p>Taka 1,492,251,079.00</p> <p>Yen 1,972,780,089.00</p> |
| <p>Installation of Conveyance, Transmission and Distribution Pipelines .Contract No. KWSP-C-2</p> | <p>The Bid Price for Kubota- Marubeni (JV) was approved on 12 November 2011. The Contract was signed between CWASA and the contractor on 12 December 2011</p> <p>The Contract price is as follows.</p> <p>Contract amount:</p> <p>JPY 6,636,514,534.00</p> <p>BDT 1,801,842,500</p> |
| <p>Reservoir and Booster Pump Station Contract No. KWSP-C-3</p> | <p>Awarded to Kolon Engineering & Construction Company Ltd. on December 30, 2010 and work has been underway since the 9th of Feb. 2011.</p> <p>Contract amount:</p> <p>Taka 815,848,222.00</p> <p>Yen 855,370,813.00</p> |

Annexure-1

4.5.1 Contract No. KWSP-C-3

1. Construction of Nashirabad Reservoir, Tower and Appurtenant Structures.
2. Modification of the Existing Battali Hill Reservoir.
3. Improvement of the Kulshi Booster Pump Station.

General Information of Contract KWSP-C-3

Contract No. : **KWSP-C-3**

Source of Fund : **Government of Bangladesh (GOB) &
Japan International Cooperation Agency (JICA)**

ODA Loan : **BD-P54**

Agreement No.

Engineer : **NJS Consultants Co., Ltd.
Tokyo, Japan, in association with BETS Consulting Services
Ltd, Bangladesh.**

Contractor : **Kolon Global Corporation
South Korea**

Revised Contract amount: **Taka 838,999,961**

Yen 855,370,813

Letter of Acceptance : **December 29, 2010**

Signing of Contract : **December 30, 2010**
Agreement

Start Date : **February 9, 2011**

Contract Completion : **July 27, 2013**

Time extension No. 1 - **January 31, 2014**
(Revised completion date per approved 6 months)

Time extension No. 2 - **September 30, 2014**
(Revised completion date per approved 8 months)

Performance Security : Gurantee No. : **GUR 923001571-0001**

BDT 81,584,823.00

Gurantee No. : **GUR 923001570-0001**

JPY 85,537,082.00

Expiry Date: August 31, 2014

Woori Bank, Dhaka Branch

Accomplishment of Contract No. KWSP-C-3

Part 1:

Section 1: General contract requirements:

1. The Contractor provided the following Office Equipment as replacement of Inkjet Plotter.

(a) Laptop (DELL 3450 BZ VOSTRO I3-2330M)- 4 no, (b) Printer/ Scanner/Copier HP DeskJet 2050 - 2no, (c) A3 color Printer (HP Office jet 7000) - 1 no, (d) Ink Crtg for HP Office jet7000 - 2Sets, and (e) Internet Security-2012 (Kaspersky) for 4 user- 2 CDs.

2. About the projections of Yen payments, the Engineer requested C-3 to provide their projection to include 70% as advance for the pipe materials in the next projection.

3. Kolon's site engineer requested the TL to accept their overall work schedule. TL commented that the contractor needed to also provide their projected % of financial return at the bottom of the chart, the same as their physical progress, but it would always lag the physical progress with a separate "S" curve.

4. Preparation of Monthly Report with progress photographs were also submitted by the contractor. A generator for power supply during load shedding was installed at the offices for uninterrupted power supply.

5. Daily reports of site conditions and work progress of structures being constructed at the Nasirabad and Battali Hill Reservoir sites are recorded daily and submitted to the Engineer. The daily reports are a record of progress of work for the particular month and can be used for general measurement of work.

Part 2: Construction of Nashirabad Reservoir

Section 2. Civil Work

Status of works has been mentioned below:

2.1 In-Plant Process Pipe Works

Actual Physical Accomplishment is **85% completed**

- **DN1200** Supply Pipe from WTP: **20m remaining. 88.83%** completed.
- **DN1200** from EWT to Distribution System: **12.2m remaining. 92.45%** completed.
- **800mm dia. D. P. Pipe** Supply Pipe from Madunaghat WTP: **4m remaining. 97.95%** completed.

2.2 Yard Work

Actual Physical Accomplishment is **89% completed**

Pressure Test is in progress.

In-Plant Road

Work Started this month.

Drainage Channel

- Construction of Retaining Wall: **100%** completed.
- Construction of Perimeter Fencing Type “A” around reservoir site: **559m** out of **703m** or **79%** completed.
- Construction of Drainage within Reservoir Site: **756m** completed, around **80% done**.

Slope Protection/Landscaping

- Construction of Slope Protection: **2410 sq. m** out **2410 sq. m** or **100%** completed. Additional **1590m²** was included in view of the approval Variation Order from CWASA. So the total area accomplished as to date is **4000m²**.
- Construction Walkway Slab is **100%** completed. Length: **324 m**
- Plantation of Trees on the Hill Slope of Nasirabad Site. **500** trees out **500** trees or **100%** completed.

2.3 Construction of 26,400 cu m Nasirabad Concrete Ground Reservoir

Actual physical accomplishment is **97%** completed.

- Roof Slab concrete casting completed.
- Remaining works is Leakage Testing of Reservoir.

Construction of Nasirabad Pump House

Actual physical accomplishment is **97%** completed.

- Installation of Aluminum Sliding Windows with Window Grills Type W1 completed: **28 Nos.**
- Installation of Aluminum High Window Type HW1 with Fixed Glass and Louver is **100%** completed. **12Nos** completed.
- Installation of Aluminum High Window Type HW2 with Fixed Glass and Louver now in progress.
- Installation of Door Jamb and Doors in Toilet completed. **4 Nos.** Door Installed in Toilet completed.
- Installation Glazed Color Wall Tiles at the Toilet completed.
- 2 collapsible Gates installed.

2.4 Construction of 2,200 cu m Elevated Water Tank

Actual physical accomplishment is **97%** completed.

- Casting of concrete on Elevated Tank Roof Slab completed this month.

- Installation of EWT Piping completed.
- Fabrication of Handrail work in progress.

2.5 Construction of Electrical Building/Generator Room

Actual physical accomplishment is **98%** completed.

- Installation of Aluminum Fixed Glass Window w/ Vents Type HW2 completed: **4 Nos.**
- Installation of Aluminum Sliding Windows with Window Grills Type W1 completed: **4 Nos.**
- Installation of Door Jamb for Aluminum Swing Door Type D completed. **1 No.**
- Installation of Door Jamb for Aluminum Swing Door Type D1 completed. **3 Nos.**
- Installation of 2no.s Rolling Shutter completed.
- Installation of Checker Plate for Trench Cover.

2.6 Construction of Sub-Station

Actual Physical Accomplishment is **97%** completed.

2.7 Construction of Meter Room (additional work under VO 6)

Despite the Approval of **Variation Order No 006** subsequently transmitted to contractor, the work started after some delays. The columns and roof slab was casted, brick works has started this month. Progress is about 85%.

2.8 Construction of Guard House

Column and roof slab casted. Progress is about 75%.

Section 3. Plant Mechanical Work

- Review and preparation of comments on Contractor's submittals related to access platform and stair at Nasirabad Reservoir, Deep Tubewell Installation, Khulshi Booster operation shutdown etc.
- E-mail correspondence for project related works.
- Mechanical Piping work inside Nasirabad pump house is completed, and around 85% pipe support work has been done.
- Ducting work for Ventilation works in Pump House.

Section 4. Plant Electrical Work

- Review and preparation of comments on Contractor's submittals related to street lights, Panel Layout in control room, construction of meter room, power connection, Street Light Layout, Inspection and Functional Test Procedure, Panel/Trench Layout in Pump Starter Room and Control Room of Nasirabad Site.
- Discussion meeting with the Contractor's Representatives and worked for solutions regarding C-2 Contractors Optical Cable work within the boundary of Nasirabad and Battali Hill Sites.
- C-2 Contractor completed installation of HDPE pipe for Optical Cable connection within Nasirabad and Battali Hill Sites (in coordination from C-3 Contractor) this month.
- Correspondence with Power Development Board (PDB) for receiving permanent power connection in Battali Hill and Nasirabad site.
- Inspection and supervision of building electrical installations for Nasirabad Guard House and Meter Room, Elevated Tank, Street Lights for Nasirabad and Battali Hill Sites, Conduit Pipe for incoming power connection Nasirabad Site.
- E-mail correspondence for project related works.

Section 5. Testing/ Investigations

No Plate Bearing tests were conducted during September, 2014.

Part 3. Construction of Battali Hill Reservoir

Section 2. Civil Works

2.1 In-Plant Process Pipe Works

Actual Physical Accomplishment is **100% completed.**

DN1000mm Inlet Pipe

- DN1000mm Inlet Pipe Transmission Pipeline Completed. **Length: 64.414 meters**
- DN900mm Distribution Pipeline Completed. **Length: 34.39 meters**
- DN500mm Distribution Pipeline Completed. **Length: 98.564 meters**

2.2 In-Plant Yard Work

Actual Physical Accomplishment is **45% completed.**

- Construction of Perimeter Fencing Type “A” around reservoir site: **535m** out of **1070m** or **50%** completed.
- No additional works undertaken.

2.3 Slope Protection/Landscaping

- Construction of Drainage: 120m remaining. **80%** completed.
- Plantation of Trees around Reservoir Site Complex is **90%** completed. **2250 Nos.** out **2500 Nos.** has been planted. However, **2250 Nos.** of Trees Planted has been removed by miscreants.

2.4 Construction of 8,500 cu m Concrete Ground Reservoir

Actual physical accomplishment is **100%** completed.

2.5 Electrical Building/Guard House

Construction of Electrical Building/Guard House is **97%** completed.

Section 3. Plant Mechanical Work

Mechanical work: review of intended equipment has been covered under the same Nasirabad item.

Section 4. Plant Electrical Work

Electrical work has been reviewed under the same Nasirabad item.

Section 5. Testing/Investigation

No Plate bearing test was conducted during September, 2014

Part 3. Construction of Kulshi Booster Pump Station

Actual Physical accomplishment on Civil Works is 50% completed.

Section 3. Building and Structures/Sanitary Works

- Construction of U-Drain inside Booster Pump Station is **80%** completed.
- Installation of Plumbing Fixtures such as Pan, Wash Basin and uPVC Door at the Toilet Facility done.

Section 4. Plant Mechanical Works

- Site Inspection, discussions, correspondence with CWASA Personnel and worked for solutions regarding shutdown of Khulshi Booster Pump Station.
- Construction supervision and inspection of Pipe Interconnection work done during Khulshi Booster Shutdown.
- Existing Pumps in Khulshi Site have been relocated to a temporary pipe work for operation while rehabilitation work goes on.

Section 5. Plant Electrical Works

No schedule yet for replacement of Existing Electrical Panels.

Section 6. Testing/ Investigations

Testing/ Investigations have been covered under the same Nasirabad item.

5.3 Actions Undertaken and to be Undertaken

On 13th April 2014, CWASA resolved the problem of ROW at the Entrance Gate of Nasirabad Reservoir.

Typical Daily Reports of September for Nasirabad reservoir, Battali hill and Khulshi Sites are attached for information.

6.0 Project Status

6.1 Construction Schedule

6.2 Major Project Issues and Problems in C-3

CWASA resolved the problem of ROW at the Entrance Gate of Nasirabad Reservoir.

Heavy rainfall this month has caused a significant delay in work.

7.0 Environmental Clearance

7.1 Adverse Environmental Impact Measures during Construction Works

1. Top soil restoration and soil erosion

All slopes are provided by turfing to prevent erosion.

2. Protection habitats and fish breeding sites N/A

3. Solid waste management

Waste from labor quarters are carted away and disposed.

4. Air pollution

Traffic is warned to not exceed 5km/hr & contractor needs to spray water to keep dust down.

5. Noise pollution

Most of the work is carried out during daytime.

6. Sanitation in labor camps

Sanitation is maintained every month by the contractor. Solid waste is collected in the septic tanks.

Labor camps and kitchens are checked every week by the contractor to make sure it is kept clean.

7. Permission from concerned authority (trees, hilly land)

EIA Report on Karnaphulli Water Supply Project has been approved by DOE.

Memo No: DoE/Clearance/2225/2005/2416, dated 13/09/2007.

Sufficient trees will be planted on the hill slope in Battali Hill Site.

ANNEXURE-2

4.5.2 Contract No. KWSP-C-1: Intake Facility and Water Treatment Plant.

Awarded to China National Technical Import & Export./Beijing and Sound Environmental Engineering Co., Ltd. Joint Venture, on May 24, 2011. The Contract was signed between CWASA and Contractor on June 15, 2011.

The Karnaphuli Water Supply Project, Contract No. KWSP-C-1: Intake Facility and Water Treatment Plant. The Contract Amount is the equivalent of Bangladesh Taka 1,492,251,079 (Bangladesh Taka One Billion Four Hundred Ninety Two Million Two Hundred Fifty One Thousand and Seventy-Nine Only) and Japanese Yen 1,972,780,089 (Japanese Yen One Billion Nine Hundred Seventy Two Million Seven Hundred Eighty Thousand and Eighty-Nine Only), being the amounts after the Contractor's discount in the amount of Bangladesh Taka 165,848,561 (Bangladesh Taka One Hundred Sixty Five Million Eight Hundred Forty Eight Thousand Five Hundred and Sixty-One Only) and Japanese Yen 220,109,665 (Japanese Yen Two Hundred Twenty Million One Hundred Nine Thousand Six Hundred and Sixty-Five Only), and also excluding contingency and value added tax and withholding income tax to be imposed under the Bangladesh Tax Laws and Regulations, as corrected and modified in accordance with the Instructions to Bidders.

1.0 General Information of Contract KWSP-C-1

Contract No. : **KWSP-C-1**

Source of Fund : **Government of Bangladesh (GOB) &
Japan International Cooperation Agency (JICA)**

ODA Loan : **BD-P54**

Agreement No.

Engineer : **NJS Consultants Co., Ltd.
Tokyo, Japan, in association with BETS Consulting Services
Ltd, Bangladesh**

Contractor : **China National Technical Import & Export Corporation /
Beijing Sound Environmental Engineering Co., LTD. - JV**

Contract amount: **Taka 1,492,251,079.00**

Yen 1,972,780,089.00

Letter of Acceptance : **May 24, 2011**

Signing of Contract : **June 15, 2011**

Agreement

Start Date : **November 20, 2011**

Contract Period : **30 Months**

Contract Completion : **May 8, 2014**

Date

Performance Security : **Gurantee No. : 07-156-11**

PRIME BANK LIMITED

MOHAKHALI BRANCH, DHAKA

BDT 149,225, 108.00

JPY 197,278,009.00

Expiry Date: March 31, 2015

2.0 Progress Summary :

2.1 Work Schedule

Up to 30th September, 2014, the actual overall physical accomplishment is 30.80% against the 45% programmed (revised August, 2014) with a negative slippage of -14.2 % based on the submitted construction implementation schedule of the contractor.

For detailed reasons for delay in progress work please refer to Section 7: Problems and Incidents (page no. 5), under Part 3.

2.2 Accomplishments at the end of the Month of September, 2014:

Part 1:

Section 1: General contract requirements:

1. The JV provided 4 nos. of Laptops, one no of. Camera, 4 nos of Mobile phones, 4 no of. wireless network receiver.
2. The Engineer questioned when the JV would provide site security guards to the WTP and Intake site since CWASA had said that they were removing their guards from the WTP .The Contractor said that they had secured the Intake site and were now providing their own guards for the WTP site. The Engineer again said that he had recently seen a section of the East fence open and still several sections open.
3. A long discussion ensued in which the JV questioned whether Saturday was considered a non working day for payment of OT to the Engineer's staff, the Engineer said that it was in the contract that the overtime to be considered was, Fridays, Saturdays and GOB declared holidays.
4. Daily reports of site conditions and work progress of structures being constructed at the Intake Facility and Water Treatment Plant sites are recorded daily and submitted to the Engineer. The daily reports are a record of progress of work for the particular month and can be used for general measurement of work.

Part 2: Construction of Water Treatment Plant

Work in- Progress or Completed (Up to September, 2014):

Section 2. Civil Works

Structures and Buildings

1. Chlorine Building

- Total physical progress (excluding Plant Electromechanical): Approx. 65.90% (including pilling work).
- RCC column, beam & slab casting is in progress, completed 245.32cu.m, Approx. 67.6% (9.35cu.m concreting work done in the reporting month)

2. Administration Building

- Total physical progress (excluding Plant Electromechanical): Approx. 42.45% (including pilling work).
- RCC column, beam & slab casting is in progress, completed 436.03cu.m, Approx. 63.65% (80.84cu.m concreting work done in the reporting month)
- 250mm brick work: 23.37cu.m completed (Approx. 8.65%)
(6.37cu.m of brick work done in this reporting month)
- 75mm thick damp proof course work done: 31sq.m (Approx. 100%)
(21 sq.m of DPC work done in the reporting period)

3. Clarifier

- Total physical progress (excluding Plant Electromechanical): Approx. 34.10% (including pilling work).
- Static Pile load test done to date no. 10 (and completed: 100%)
(01 nos. of pile load test done in September)

4. Sub-Station

- Piling work and load test completed-100%

5. Electrical Building

- Overall progress: Approx. 58.00% (including pilling work but excluding plant electromechanical work)
- All column casting completed up to 4.3 m level. At generator room, Generator base rebar fabrication and shuttering works almost completed.
- RCC grade beam casting in progress, completed: 226.62.46cu.m, Approx. 50.00%
(Concreting work done during this month is 58.8 cum.)

6. Chemical Building

- Total physical progress (excluding Plant electromechanical): Approx. 70.00% (including pilling work)
- RCC Slab, Wall & column casting in progress, completed: 616.22cu.m, Approx. 69.50% (Concreting work done in the reporting month is 25.48 cu.m).

7. Ware House

- Total physical progress (excluding Plant electromechanical): Approx. 36.35% (including pilling work)
- Sand filling is in progress, completed: 1000cu.m, Approx. 83.33% (Sand filling done during this month 182.6 cu.m).

Section 3. Plant Mechanical Work

Mechanical work carried out during the month of September, 2014

- Review and preparation of comments on Contractor's submittals related to Filter Drain Tank, Embedded Pipes, STW Pipes, Yard Piping at WTP site, Sludge Lagoon, I-Beam for Overhead Crane Installation, Surge Tank and Inspection Test Plan for key Items etc.
- Discussion meeting with the Contractor's Representatives related to questions raised by the contractor and worked for comments and conclusion.
- E-mail correspondence for project related works.

Section 4. Plant Electrical Work

Electrical work carried out during the month of September, 2014

- Review and preparation of comments on Contractor's submittals related Power Factor Improvement, Building Electrical work drawings in Admin Building, Inspection Test reports for Motors in Hyosung factory, PLC I/O summary, 33kV Panel control room civil drawing, Intake Generator site acceptance etc.
- Discussion meeting with the Contractor's Representatives related to 33kV/3.3kV Substation Equipment, Soft Starter, Power Layout Drawings, Generator Submittals, Building Electrical Works.
- Inspection and construction supervision of installed conduit pipes and fittings for lights, fans, power socket etc. in Admin Building & Chemical Building.
- E-mail correspondence for project related works.

Section 5. Testing/Investigation

01 nos. of pile load test done in September for Clarifier.

Part 3: Construction of Intake Site

Work in- Progress or Completed (Up to September, 2014):

Section 2. Civil Work

No work has been done on site during this month

Section 4. Plant Mechanical Work

Mechanical works: review of intended equipment has been covered under the same WTP item.

Section 5. Plant Electrical Work

Electrical works have been reviewed under the same WTP item.

Section 6. Testing/Investigation

No test was conducted during September, 2014.

Section 7. Problems & Incidents

- Due to slow progress JV decided to terminate their Subcontractor on the 10th April, 2014. However the High Court declared the Prime Contractor's letter unlawful and instructed the Subcontractor to continue. PBL continued work with Intake caisson. But as of 16th June, 14 all work has been suspended (other than some minor works mentioned above) as both JV and PBL agreed for final measurement.
- Contractor is not yet fully organized to handle the job of the size it demands.
- Internal roads are yet not properly developed.
- Concrete Batching Plant yet to be set up which in turn is related to PBL's existing plants dismantled & moved away.
- Storage facility is not set up yet.
- Laboratory is yet to be equipped & manned (No lab. Technician).
- Handling equipment yet not sufficient.
- Contractor is yet to submit a Program to resume activity at the Intake facility site.
- Former Sub-Contractor PBL is yet to vacate the site completely.
- Unusually prolonged /expended rainy weather.

3.0 Environmental Clearance

3.1 Adverse Environmental Impact Measures during Construction Works

1. Top soil restoration and soil erosion:

- Top soil removed is used up mostly in filling up for embankment to construct temporary roads and part stacked in one corner of the WTP for use in backfilling work.
- Soil erosion caused by removed vegetation cover is being checked / minimized through grass turving local vegetation.

2. Protection habitats and fish breeding sites:

No fish habitat, breeding, and fish nursery is affected by this project.

3. Solid waste management:

Construction materials & debris are being disposed off far away properly, not affecting the environment. Major build-up of construction debris is yet to come.

4. Air pollution:

To control dust, project contractors are using dedicated water tanker sprayer to spray water. Stock piles of construction materials are being located away from sensitive receptors and vehicle speed limits are being enforced.

5. Noise pollution:

In order to control noise pollution, vehicles & equipments are maintained regularly. During sensitive hours the operation of the machines are either avoided or located away.

6. Sanitation in labor camps:

Sanitation facilities in the labor camps are monitored regularly and maintained properly and adequately.

7. Permission from concerned authority (trees & hill land cutting):

No tree or hill cutting is required in the WTP area in the current implementation phase of the project. However, it has been noted for appropriate action if & when it arises.

Annexure-3

4.5.3 Contract No. KWSP-C-2; Installation of Conveyance, Transmission and Distribution Pipelines:

1.0 General Information of Contract KWSP-C-2

Contract No. : KWSP-C-2

Source of Fund : Government of Bangladesh (GOB) &
Japan International Cooperation Agency (JICA)

ODA Loan : BD-P54

Agreement No.

Engineer : NJS Consultants Co., Ltd.

Services
Tokyo, Japan, in association with BETS Consulting
Ltd, Bangladesh

Contractor : KUBOTA-Marubeni JV

Contract amount: Taka 1,801,842,500.00
Yen 6,636,514,534.00

Letter of Acceptance : November 16, 2011

Signing of Contract : December 12, 2011

Agreement

Start Date : **April 18, 2012**

Contract Period : **30 Months**

Contract Completion Date : **October 4, 2014**

Performance Security : Guarantee No. : **GTEDAK116566**

JPY 663,651,454.00

Guarantee No. : **GTEDAK116567**

BDT 180,184,250.00

HSBC Bank

Dhaka Main Branch

Expiry Date: **30 May 2015**

2.0 Progress Summary :

2.1 Work Schedule

Upto 30th September 2014, the actual overall physical accomplishment is 83.56 % against the 100% (Revised) programmed with a negative slippage of -16.44% based on the submitted construction implementation schedule of the contractor.

Problems:

1. Contractor has procured Butterfly Valves, Air Valves and Gate Valves contrary to the contract requirements.

2. Contractor started permanent road reinstatement as instructed one year ago but during this rainy season pot holes developed in the Kaptai Road. Reinstatement Works is expected to start by early October.
3. Leakage tests have been delayed for too long.
4. Nasirabad temporary road reinstatement is not acceptable and repair has been delayed.
5. Method statement of pipe laying in High Level Road is yet to be decided.

2.2 Completed & Ongoing Activities

Pipeline Works:

This month major activities has been done on Utility Removing, Pipe Jacking & Pipe Laying by Open Cut Method with Deck Plate Setting at High Level Road; Madunaghat Water Bridge Crossing/Over/Divert/Under Crossing, Air Release Valve & Butter Fly Valve installation; DI Pipe Installation (Conveyance/Transmission) at Kaptai RHD Road/Baizid Bostami-Oxygen/CDA Avenue Road; HDPE Pipe (Optical Cable) Laying at CDA Avenue Road, Pressure Test, Construction of Butter Fly Valve/Gate Valve/Air-Valve Chamber, Distribution Pipe Laying at Mehedibag Road (DC-9) /M. M. Ali Road (DC-6) & Tiger Pass/Agrabad SK. Mujib Road (DS-10); Sheet Pile Driving by Low Hydraulic Vibration Hammer (LHB)/Silent Piler Machine, Re-alignment of different Pipeline routes, Divert Crossing of Bridge/ Culvert; Under Crossing of Bridge/Culvert & Railway Under Crossing through Pipe Jacking (Tiger Pass-Dewanhat Railway Junction), Additional Trial Pits Excavation to identify utility services at Baizid Bostami/CDA Avenue Road, Permanent Reinstatement of the roads specially for Kaptai RHD Roads, Materials Received & Inspected by Joint Team (NJS & CWASA), FDD Field Test at different roads for checking compaction of road and also Approval of different submittals.

Apart from these major activities, the details completed & on-going activities are mentioned below:

- **Installation of Transmission-1(TR-1) Pipe Line of 1200mm dia. up to Sept.-2014**

- (a) Quaish-Oxygen Road : 4765.02 m (99.27 %)
- (b) Kaptai RHD Road : 15,443.37 m (88.76 %)
- (c) Nasirabad-CDA Road : 399.81 m (99.9 %)
- (d) Baizid Bostami-Oxygen Road : 1405.76 m (82.69 %)

Sub-Total (TR-1) : 22,013.76 m (90.22 %)

- **Installation of Conveyance (Conv.) Pipe Line of 1200mm dia. up to Sept.-2014**

- (a) Kaptai RHD Road (Conv.): 3,495.13m (97.09 %)

- **Installation of Pipe Line of 1200mm dia. at Kaptai RHD Road up to Sept.-2014:**

- (a) Total Kaptai RHD Road (TR-1 & Conv.): 18,938.50 m (90.18 %)

- **Installation of Transmission-2 (TR-2) Pipe Line of 1200mm dia. up to Sept.-2014**

- (a) Nasirabad CDA-Baizid Bostami Road: 3780.84 m (78.55 %)

- **Installation of Pipe Line of 1000mm & 500mm dia. at High Level Road up to Sept.-2014:**

- (a) HLR (Installation of 1000mm dia. Pipe (TR-2): 42 m (5.95 %)
- (b) HLR (Installation of 500mm dia. Pipe (DC-6): 55 m (7.79 %)

- **Installation of Total Transmission Pipe Line of 1200mm dia. up to Sept.-2014:**

- (a) TR-1 + TR-2 + Conveyance: 29,331.73m (87.56 %)

- **Distribution Pipe Line up to Sept.-2014:**

- (a) Nasirabad-CDA Road (DN-1)-1200mm dia. : 420.45 m (100 %)
- (b) Baizid Bostami Road (DN-1)-900mm dia. : 1352.58 m (81.83 %)
- (c) Quaish-Chan Mia-Oxygen Road (DN-2)-300mm dia. : 1127.09 m (54.85 %)
- (d) Baizid-Oxygen Road (DN-2)-400mm dia. : 56.12 m (3.63 %)
- (e) Baizid Bostami Road (DN-5)-700mm dia. : 1530.10 m (89.79 %)
- (f) College/K.B.Abdus Satter/Rahamat G. (DC-9)-300mm dia. : 1587.09 m (91.47 %)
- (g) K.B. Fazlul Quader/Mehedibag Road (DC-9)-400mm dia. : 1790.31 m (98.31 %)
- (h) O.R. Nizam Road (DC-9)-500mm dia. : 751.66 m (80.91m)
- (i) D.T Road (DS-11)-400mm dia. : 1423.52 m (97.97 %)

| | |
|--|-----------------------|
| (j) Haliashahar-Noyabazar Road (DS-11)-500mm dia. %) | : 1363.39 m (94.42 %) |
| (k) Haliashahar Road (DS-14)-700mm dia. | : 1231.78 m (97.61 %) |
| (l) Agrabad Access Road (DS-12)-300mm dia. | : 2365.55 m (96.71 %) |
| (m)Haliashahar-Artillary Road (DS-15)-300mm dia. | : 1214.56 m (95.26 %) |
| (n) Port Connecting Road (DS-13)-450mm dia. | : 1620.96 m (97.24 %) |
| (o) Ispahani-Ctg. Club (VIP) Road (DC-8)-700 mm dia. | : 626.90 m (94.56 %) |
| (p) Kazir Dewari-S.S. Khaled Road (DC-8)-500 mm dia. | : 833.87 m (89.95 %) |
| (q) Jamal Khan (VIP) Road (DC-8)-400 mm dia. | : 843.01 m (100 %) |
| (r) Hazi Chan Miah Road (DN-3)-300 mm dia. | : 2934.34 m (86.13 %) |
| (s) Hazi Chan Miah Road (DN-4)-300 mm dia. | : 1260.5 m (87.53 %) |
| (t) Hazi Chan Miah/Abdul K. Road (DN-4)-400 mm dia. | : 1950.28 m (91.95 %) |
| (u) Agrabad-Barik Build. Road (DS-10)-500/450mm dia. | : 817.85 m (92.52 %) |
| (v) Agrabad-SK. Mujib Road (DS-10)-700mm dia. | : 677.36 m (53 %) |
| (w)Tiger Pass Road (DS-10)-900 mm dia. | : 982.16 m (81.17 %) |
| (x) Polton Road near CWASA (DC-7)-500mm dia. | : 281.03m (79.61 %) |
| (y) M. M. Ali & CDA Aven. Road-(DC-6)-500mm dia. | : 767.16m (77.49 %) |
| (z) DI Pipe (200/300/600 mm dia.) for Int. Con./Washout: | : 60.10 m |

Sub-Total (Distribution)

: 29,924.72 m (85.50 %)

This month 1,103.8m DI Pipe laying has been completed including Restrained Joint with Bend/Tee/Collar and, simultaneously with temporary reinstatement of the road, pressure test, over/under/divert crossing of Bridge/Railway, construction of Air-Valve Chamber/Manhole for Optical Cable is going on.

- **Total Pipeline Installation Progress by Sept.-2014:**

Total Completed DI Pipe installation : 59,256.45 m

Length of Total Bend/Tee/Collar Used : 309.36 m

Grand Total of Pipeline Installation: 59,565.81 m (86.96 %)

- Progress of Railway Crossing (Pipe Jacking) up to Sept.-2014:

| Location | Pipe Dia. (mm) | Pipe Jacking Length (m) | Progress in (%) | Remarks |
|---|----------------|-------------------------|-----------------|--------------------------|
| Baizid-Bostami-Oxygen Road (TR-1 & DN-1) | 1200 & 900 | 21 m | 100 % | Work Completed |
| Tiger Pass-Dewanhat Railway Cr. (DS-10) | 900 | 57 m | 80 % | Mortar filling completed |
| Sholashahar Rail Crossing-2 no. Gate (TR-2) | 1200 | 21.5 m | 00 % | Not yet started |
| Hazi Chan Mia Road (DN-3) | 300 | 20.5 m | 00 % | Not yet started |
| Progress of Grand Total in Average | | 119.5 m | 45 % | |

- Progress of Pressure Test up to Sept.-2014:

| Location | Target (m) | Progress (m) | Progress in (%) | Remarks |
|---|------------|--------------|-----------------|----------|
| Transmission (TR-1 & TR-2) & Conv. Line | 33500m | 11077m | 33.07 % | On going |
| Distribution Line | 35000m | 6168m | 17.37 % | On going |
| Only Kaptai RHD Road | (21000m) | (5145m) | (24.5 %) | On going |
| Grand Total with Average | 68500m | 17245m | 25.18 % | On going |

- Materials Received up to Sept.-2014:

| Items Received | Received this month (Sept.) | Previously Total Received in Store | Cumulative Total | Remarks |
|----------------|-----------------------------|------------------------------------|------------------|---------|
| | | | | |

| | | | | |
|-----------------------|-----------------|------------------|------------------|---------------|
| DI/Steel Pipes | 166m | 67.90 Km | 68.10 Km | 99.2 % |
| Fittings (BOQ) | 108 nos. | 1700 nos. | 1808 nos. | 99.1 % |

- Permanent Reinstatement up to Sept.-14: (Kaptai RHD Road): **Total Completed-8174 m (40 %)**

| Location | Target (Km) | Base Type-1(Km) | DBBC (Km) | Wearing Course (Km) with % |
|------------------------|--------------|-----------------|--------------|----------------------------|
| Kaptai RHD Road | 21 Km | 1230 m | 680 m | 8174m (40%) |

This Month Completed: 480m DBBC & 1230m Base Type-1

- Progress of Crossing (Under/Divert/Over) up to Sept.-2014:

| Location | Project Target | Progress this month | Previously Completed | Cumulative Total | Remarks |
|-----------------------------|-----------------|---------------------|----------------------|------------------|---------------|
| Kaptai Road | 52 nos. | 02 nos. | 35 nos. | 37 nos. | 71.1 % |
| Crossing of All Other Roads | 178 nos. | 01 nos. | 133 nos. | 134nos. | 75.5 % |
| Grand Total | 230 nos. | 03 nos. | 168 nos. | 171 no. | 72 % |

- Progress of Water Bridge-Madunaghat Halda River Crossing up to Sept.-2014:

| Location | Progress this month | Cumulative Total | Remarks |
|----------|---------------------|------------------|---------|
| | | | |

| | | | |
|--|-----|------|---|
| Old Bridge-Halda River at Madunaghat, Kaptai RHD Road (TR-1) | 4 % | 66 % | Abutment Foundation with Fabrication of Steel Bar |
|--|-----|------|---|

- Progress of Small Water Bridge Crossing up to Sept.-2014:

| Location | Progress this month | Cumulative Total | Remarks |
|---|---------------------|------------------|----------------------------|
| Halda-2, Madunaghat (CH: 18+144), Kaptai-TR-1 | 20 % | 50 % | Steel Pipe Setting |
| Brahmmanhat Bridge (CH: 12+220), Kaptai-TR-1 | 4 % | 20 % | Pile Cap Reinforcement |
| Noyarhat Bridge (CH: 9+527), Kaptai Road-TR-1 | 4 % | 20 % | Pile Cap Reinforcement |
| Chan Mia-Aturardipu Road (CH: 0+960), DN-4 | 10 % | 55 % | Pile Cap with Base Casting |
| Hazi Chan Mia Road (CH: 1+902), DN-3 | 10 % | 55 % | Pile Cap with Base Casting |
| Agrabad Access Road (CH: 1+834), DS-12 | 20 % | 65 % | Steel Pipe with H-Beam |
| Artillery Road (CH: 0+450), DS-15 | 20 % | 65 % | Steel Pipe with H-Beam |

- Progress of High Level Road (Utilities Diversion/Pipe Jacking/Laying) up to Sept.-2014:

| Item of Works | Target | Progress this month | Previous Progress | Cumulative Total | Remarks |
|-----------------|------------------------|---------------------|-------------------|------------------|-----------|
| Gas Pipe | 1300m (50mm dia.) | 400m | 900 | 1300m | H/C going |
| CWASA PVC Pipes | 1350m (200,150,100 mm) | 200m | 1098 | 1298m | H/C going |

| | | | | | |
|--------------------------------|---------------------------------|---------------|------------|----------------|----------------------|
| | dia.) | | | | |
| BTCL (T & T Cables) | 630m | 00m | 00 | 00m | Not yet start |
| PDB (Electric Poles) | 33 (8 big+25 small) nos. | 05 no. | 18 | 23 nos. | Going on |
| Pipe Jacking | 70m | 07m | 23m | 30m | On going |
| DI Pipe Laying | 700m | 20m | 25m | 45m | On going |

- Trial Hole Excavation: (Additional Trial Hole is going on to identified different problems of Under-Ground Utilities)

| | |
|-------------------------------|------------------|
| Trial Hole this Month (Sept.) | Cumulative Total |
| 04 nos. | 1510 nos. |

- Re-alignment & Re-Fixing of Invert Level of Pipeline routes at different roads with divert/under/over crossing are going on and also coordinate with Total Station.
- Ten (11) Local Contractor Groups with 36 Gangs/day-night have been engaged with 480 Manpower/day-night & 104 nos. Equipment/day-night for Pipeline Installation, Pressure Test, Under Crossing/Divert/Over Crossing of Bridge/Culvert/Drain/Railway Line/Pipe Jacking, Water Bridge Crossing, HDPE Pipe Laying/construction of Air-Valve/Butter Fly Valve Chamber/ Temporary & Permanent Road Reinstatement/Trial Hole Excavation and Utility Diversion at High Level Road etc.
- This month they have been Completed 04 nos. additional trial holes and total completed 1510 nos. till to date to identify utility services of different routes for installation of transmission/distribution pipelines and additional trial holes are going on for re-alignment of the road.
- Constructions of Butter Fly Valve/Air Valve Chamber/Manhole for Optical Cable at Kaptai RHD/Mehedibag / Noyabazar/Agrabad /Baizid Bostami-

Oxygen/Halishahar/Artillery/Jamal Khan/College/Agrabad SK. Mujib/Barek Building/Anderkilla-Momin/Chan Mia Road are going on.

- Shoring of Trench by LHV Hammer & Silent Piler Machine at problematic sites (Sheet Pile Driving with Jack support) with necessary arrangement by High discharge Pumps for dewatering is going on for installation of DI Pipes.
- Pipe Jacking for Under Crossing of Bridge at Quaish-Oxygen Road (TR-1) and Baizid-Bostami Road (TR-2) have been completed and, this month Pipe jacking for Under Crossing of Culvert has been completed at Baizid Bostami road.
- This month 01 no. Under Crossing, 01 no. Over Crossing & 01 no. Divert Crossing of Bridge/Culvert has been completed at Kaptai /Tiger Pass/Noyabazar Road/ Baizid Bostami Road. Total Completed 171 nos. (72%) Under/Divert Crossing of Culvert/Bridge/ Drain both transmission & distribution line. Necessary preparation work like Situ Pile driving is going on for Over Crossing of Bridge/Culvert. This month 02 nos. Crossing has been completed at Kaptai RHD and total completed 37 nos. (71%) out of 52 nos. at Kaptai road.
- Pipe Jacking for Railway Under Crossing (TR-1 & DN-1) of both Transmission & Distribution has been completed at Baizid Bostami-Oxygen Road (Chittagong-Nazirhat Railway Line-Oxygen Point) as per drawing and remaining works like removal of sheet piles/ backfilling/pressure test/mortar filling has been also completed. This month 57m DI Pipe insert into the MS Casing Pipe (Pipe in Pipe) has been completed at Dewanhat Railway Junction (5 nos. Railway Tracks-big one), Mortar Grouting between MS casing pipe & DI Pipe, simultaneously Cement Grouting into the sub-soil is also going on Dewanhat Railway Crossing Point for stabilization of soil.
- Made repair the different roads with adequate thick layer of Macadam to avoid the nuisances to traffic/public, where pot holes / depression have been developed due to rainfall.
- Railway Department (Chittagong & Dhaka) has been approved submitted revised General Method of Statement for Under Crossing through Pipe Jacking including details drawing & design for permission of Railway Under Crossing at four locations in the city.
- This month, pressure testing has been completed at Kaptai (1-Section)/Polton Road and total completed in Transmission & Conv. Line 11077m (33.07 %) at 5-sections and total Distribution Line completed 6168m (17.37%). Grand total completed 17.24 Km (25.2%); 5.2 Km (25%) Pressure Test has been completed at Kaptai Road. Test result was being found okay as per design.

- Permanent Road Reinstatement of Kaptai RHD Road is going on. This month they have been completed 00m Wearing Course, 680m DBBC and 1200m Base Type-1 only. Total 8174m (40%) Wearing Course has been completed up to August-2014 at Kaptai RHD Road. Wearing Course has been hampered due to torrential rainfall.
- Prepared daily field work report with progress/findings/observations/necessary actions & submitted to the Team Leader /CWASA officials for information & necessary actions.
- High Level Road: Utility Diversion works only for Water Line with House Connection is going on and other works like Gas. Electricity has been completed. Total 51 nos. gas connection and 220 nos. House Connection for Water line has been completed till this month. Total 95% works of Utility Diversion works have been completed.
- High Level Road: Pipe Jacking work is going on & this month completed 07m; total completed up to this month 30m simultaneously Chemical grouting is also going on and total completed 597,569 liter.
- High Level Road: This month dual DI Pipe installation by Open Cut Method with Deck Plate Setting is going on and Total completed TR-2 (1000mm dia.)=42m (6%) & DC-6 (500mm dia.)=55m (7.8%) up to this month.

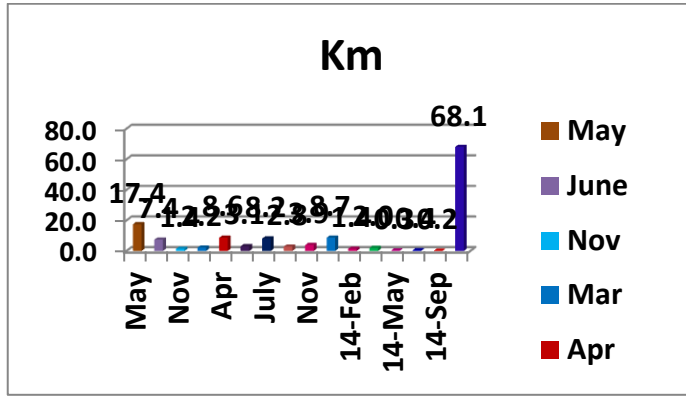
Optical Cable Woks:

- [HDPE Pipe Laying \(Optical Cable\) up to Sept.-2014](#)

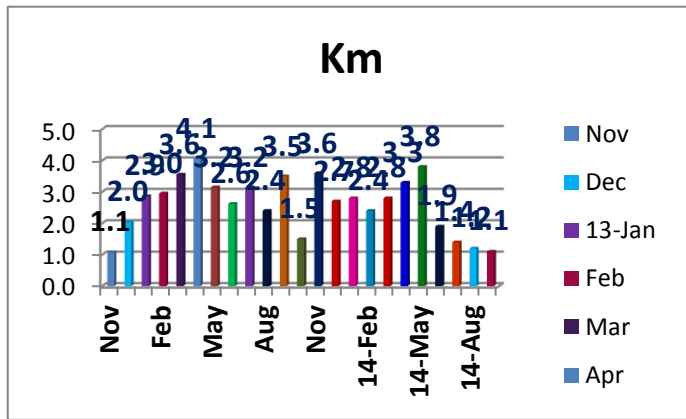
| Location | Target (m) | This Month (m) | Cumulative Total | | Remarks |
|--|------------|----------------|------------------|--------|----------|
| HDPE Pipe Laying at Quaish-Oxygen-Baizid Bostami-CDA Avenue Road (TR-1+TR-2) | 12 Km | 805 m | 10,689 m | 89.07% | On going |
| HDPE Pipe Laying at Kaptai RHD Road (TR-1+Con.) | 21 Km | 40 m | 17,076 m | 81.31% | On going |
| Grand Total: HDPE Pipe Laying (TR-1+TR-2+Con.) | 33 Km | 845 m | 27,749 m | 84.08% | On going |

- Optical Cable Work (HDPE Pipe Laying): Trench Excavation & simultaneously HDPE Pipe Laying including construction of Manhole Chambers are going on at Quaish-Oxygen/Baizid Bostami & Kaptai Road, this month completed 845m & total completed 27,749m (84%) up to Sept.-2014.
- This month Optical Cable Work was completed within Nasirabad and Battali Hill Sites after discussion & meetings with concerned persons of C-3 Contractor and Consultants representatives.

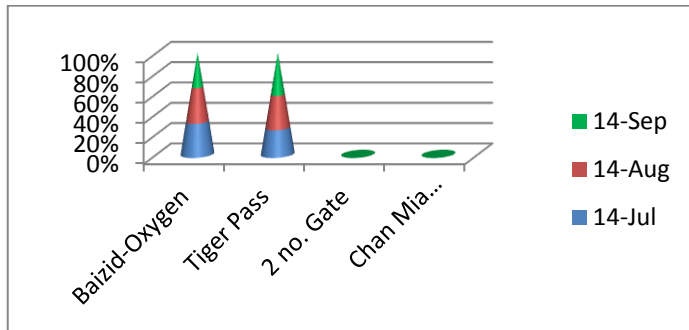
3.0 Graphical Presentation on Progress Review:



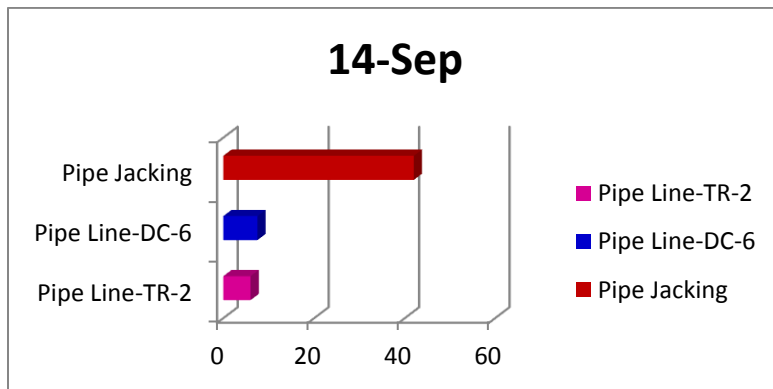
Progress of DI/Steel Pipes Received (99.4 % & Fittings Received: 99.2 %)



Progress of DI Pipes Installation: 59.56 Km (87%) (Project Target: 68.5 Km)



Progress of Railway Crossing through Pipe jacking in percentage



Progress at High Level Road (HLR) in percentage

4.0 Environmental Clearance

4.1 Adverse Environmental Impact Measures during Construction Works

1. Top Soil Restoration & Soil Erosion:

Installation of pipelines with different diameter like 1200mm/500mm/400mm./300mm are going on at Kaptai RHD Road /Quaish-Oxygen Road/Nasirabad Road/College Road/K.B.Fazlul Quader Road/D.T Road/Halishahar Road/Agrabad Access Road/Port Connecting Road having fill up the trench with clean river sand and make compaction properly by adding water layer by layer for road reinstatement and trenches are shored to prevent soil erosion, sloughing and to protect workman in the trench and to safely accommodate surface surcharge loads from the excavated materials, equipments & vehicles. Excess excavated materials are being dumped to the recommended places of CCC/RHD to protect environmental hazards.

Small excavators are being used or work is by hand to loosen the soil in the bottom of beds, then the DI Pipes are laid & filled with sand/soil to provide a continuous sand / tested soil layer for road restoration. It is ensured that unfavorable sub-soils are not used by this process. If the berms

do not provide enough soil to fill the ruts, clear sands are placed in the bottom of the beds before covering with tested soil. Compaction has been done layer by layer to firm the base/sub-base or top soil of the road and restore soil structure.

For anticipated rehabilitation of road, conservation of topsoil and overburden, recontour slopes and compact working surfaces where issues of public safety arise. Necessary counter measures are being taken during pipeline installation to make shoring of Trench to prevent sloughing/ land sliding in trench and also to safely accommodate surface surcharge loads from the excavated materials/equipments at site. ” Compaction of the surrounding and supporting soil material is of most importance however where sand is used, it just needs to be packed down sometimes just watering it will make it pack down quickly. It has to be tested to determine the amount of compaction required to achieve 98% MMD & 99% FDD.

These sections should be where there is time to run compaction tests and it will not hold up traffic while doing so. Installation signboards have been used which are written in English and Bengali as “Speed Limit, Not exceed 5km/h.

Field tests like fineness modulus to determine the particle size/effective size, distribution of the given fine aggregate and to find out uniformly coefficient have been ensured. Field test on FDD, MDD & CBR to see the proper compaction or top soil restoration of the road is being done. The stronger the sub-grade (the higher the CBR reading) the less thick it is necessary to design and construct the road pavement, this gives a considerable cost saving. Conversely if CBR testing indicates the sub-grade is weak (a low CBR reading) we must construct a suitable thicker road pavement to spread the wheel load over a greater area of the weak sub-grade in order that the weak sub-grade material is not deformed, causing the road pavement to fail. The CBR in spite of its limited accuracy still remains the most generally accepted method of determining sub-grade strength, and as such this information, along with information on traffic flows and traffic growth is used to design road pavements.

Trial Pits excavation is going on under, C-2 to identify all underground utilities/ obstructions/culvert foundations along all pipeline routes. After trial hole digging, survey is made of all existing underground utilities, and then excavated removed soil immediately are being used for filling up trenches with leveling/ compacting by Tamping Rammer/Plate Compactor/Roller for top soil restoration.

To prevent soil erosion & road damage, C-2 Contractor are using Asphalt Cutter and all trenches are being made shoring with sheet piles & braced, stabilized to prevent land sliding/sloughing and also safely accommodate surface soil. The contractor is carrying out all temporary & permanent reinstatement of the roads with follow up previous temporary reinstatement of the road where pot holes/damaged/depression has been occurred and repair with adequate thick layer of Asphalt Mix to avoid public nuisances, soil erosion and top soil restoration.

2. Protection Habitats and fish breeding sites: N/A at this moment.

3. Solid Waste Management:

Excavated Materials & Debris are being disposed off far away from the excavation sites where CCC dumping trucks are carrying out to the Dumping Station, so there is no environmental effect in the city.

4. Air Pollution:

The environmental aspect of dust clouds on the Quaiish-Oxygen road mostly and DT Road, simultaneously CDA road development work is going on. Staffs wear face mask to prevent from drawing dusty air into the lungs.

To prevent the dust, unused excavated soil is being removed safely from the site; necessary arrangement is made to spray Water by Sprinkler method to the surrounding area of Trench Excavation/Construction/Installation sites and vehicle speed limits are being controlled through traffic management at sites through special arrangement like decoration with light/neon sign/flags by C-2 contractor. Signboard which are written in English and Bengali as “Speed Limit, not exceed 5km/h” including Environmental Health Messages will be used.

5. Noise pollution:

Necessary instruction has been given to KM-JV including sub-contractors to take measures & to causally handle all machinery/equipments in proper way to control noise pollution.

In order to control Noise Pollution, vehicles/equipments/grinding machines /excavator/ dump trucks/asphalt cutter/compactor/roller/crane/Pumps/Motors/Generators are being operated & maintained cautiously to prevent noise pollution. During sensitive/peak hour, operations of the machines/equipments are being used far away from the residence/school/college areas to prevent noise pollution.

6. Sanitation in Labor Camps/Sites:

Mobile sanitary latrines/temporary urinal facilities have been established at sites for safe disposal of human excreta to ensured environmental health at sites. Sanitation facilities are being ensured properly in the different site offices including safe drinking water and soap/detergent for hand washing facilities to ensure environmental safety of health. Field Offices have been established with environmental consideration having sanitary facilities and ensured water supply/solid waste management with all other facilities.

7. Permission from Concern Authority (trees & hill land cutting):

Road cutting permission for trench cutting, under crossing of bridges/culverts, divert crossing of bridges/culverts & trial hole digging has been taken from all concern authorities. Now there is no problem about road cutting permission. Pipe Line installation is going on in the CCC/CDA area and roads under RHD especially Kaptai road, so necessary permission has been taken from the concerned authority for roads/trees/hill land cutting. We are avoiding trees/hill land cutting to protect the environmental degradation. We got the road cutting permission from CCC/CDA/RHD for trial holes pits excavation & installation/construction of Conveyance/transmission / distribution pipelines. Road cutting permission from the RHD for installation of Pipe Lines / Trial Hole excavation /tree cutting/road restoration at Kaptai Road has been done through proper channel by CWASA. Permission of Tree Cutting on the road side in our Pipeline alignment has been taken from the RHD/CCC/Department of Forest.

Chapter 5: Findings and Conclusions

5.1 Findings

Time Overrun: The original project time was 30 months but the time is extended up to 40-50 months.

Political unrest: due to this goods transportation problem, labor and workman crisis etc.

Sub contracting Issue: Due to adversarial relationships between lead contractor and sub contractor the physical progress of work is hampered.

Safety, Security of foreign contractors: Local goons and miscreants try to disturb or stop the project work. They want money if contractors wish to work in their local area and even they threatened the contractor.

Stake holder Interest: Road cutting permission is delayed from roads and high ways department, Changes of pipe laying alignment for construction of flyover under Chittagong development authority.

Traffic Congestion: Laying of transmission and distribution pipes was done from midnight to early morning for boring to avoid traffic congestion.

Technical reasons: Pipe line laying over bridge and under bridge is technically risky and time consumable.

Again while interviewing with deputy managing director, deputy project director; Executive engineers mentioned the following points for delaying:

1. Land acquisition
2. Project implementation unit
3. Money disbursement
4. Contractors payment
5. Frequently change of project Directors.

5.2 Conclusions

In the above context Chittagong WASA has a dire need to implement the project within time, budget constraint and of course quality following decisions can be implemented

- To recruit separate subcontractors for each package of the project.
- Prepare appropriate work plan and schedule.
- Experienced and skilled engineers will be incorporated by the conditions of contract.
- Increase construction equipments in the site ensure quality of works.
- Deploy more work force and introduce additional work shift.

References

1. A Guide to the Project Management Body of Knowledge (PMBOK Guide),
2. Chittagong WASA Karnaphuli water supply project Consultant Report -75

List of Persons Met

1. Mr.Ratan Kumer Sarker

Deputy Managing Director (Engineering)

Chittagong WASA.

2. Mr.Zahurul Hoque

Superintending Engineer &

Deputy Project Director (KWSP).

Chittagong WASA.

3. Mr.Nazrul Hoque

Superintending Engineer (A.C) &

Executive Engineer-2 (KWSP)

Chittagong WASA.

4. Mr. Yakub Sirjidowllah

Deputy Chief Planning &

Project Director,(KWSP-2)

Chittagong WASA.

5. Mr.Shafiulla

Deputy Team Leader,

NJS Consultants Ltd.