バングラデシュ人民共和国
チョットグラム上下水道公社（CWASA）

バングラデシュ国
都市衛生改善アドバイザー業務

事業完了報告書

2023 年 10 月

独立行政法人
国際協力機構（JICA）

日本工営株式会社

環境
JR
23-089

都市衛生改善アドバイザー　活動写真集

キックオフミーティング

CWASA 職員と下水処理場用地確認
（一番右が PD の Amin 氏）

下水処理場用地に関する
CWASA と CCC の協議

下水処理場用地確認

組織図に関する CWASA との意見交換

上下水道各戸接続規則に関する CWASA の協議

最終ワークショップ

CWASA 職員による発表風景（各戸接続マニュアル：Bakkar 氏）

バングラデシュ国都市衛生改善アドバイザー業務
事業完了報告書

目次

<u>付属資料</u>

付属資料 -4　活動 1-4 の成果　新たな下水道整備事業計画の作成支援

- 第 2・4 処理区のプレ F/S 報告書

付属資料 -5　活動 2-1 の成果：進行中の下水道事業の計画を基に設計と建設時に想定される課題の整理

活動 2-2 の成果：上記の課題の解決策を通じた CWASA の設計・施工監理能力向上支援

- 活動 2-1 および 2-2 のサマリーレポート

付属資料 -6　活動 2-3 の成果 : 下水処理施設の設計指針、技術基準、マニュアルの策定支援

- 各戸接続マニュアル

付属資料 7　CWASA とのワークショップ/協議のプレゼンテーション資料と議事録

1) 2021 年 9 月 20 日：キックオフ・ミーティング
2) 2021 年 10 月 10 日：進捗会議
3) 2021 年 12 月 7 日：進捗会議
4) 2022 年 3 月 29 日：進捗会議
5) 2022 年 8 月 7 日：進捗会議
6) 2022 年 9 月 27 日：ワークショップ
7) 2023 年 2 月 22 日：ワークショップ
8) 2023 年 6 月 15 日：ワークショップ
9) 2023 年 8 月 28 日：最終ワークショップ

付属資料-8　JICA 協議のプレゼンテーション資料

1) 2021 年 10 月 6 日
2) 2021 年 10 月 26 日
3) 2022 年 3 月 3 日
4) 2022 年 4 月 7 日
5) 2022 年 8 月 18 日
6) 2022 年 10 月 14 日
7) 2023 年 2 月 2 日
8) 2023 年 3 月 1 日
9) 2023 年 3 月 22 日（JICA バングラデシュ事務所）
10) 2023 年 3 月 28 日
11) 2023 年 5 月 9 日
12) 2023 年 8 月 29 日（JICA バングラデシュ事務所）

表目次

図目次

略語集

ADB	Asian Development Bank	アジア開発銀行
AE	Assistant Engineer	アシスタントエンジニア
AFD	AGEnce Frangaise de Developpement	フランス開発庁
BBS	Bangladesh Bureau of Statistics	バングラデシュ統計局
BDT	Bangladesh Taka	バングラデシュタカ
BOD	Biochemical Oxygen Demand	生物化学的酸素要求量
CAS	Conventional Activated Sludge Process	標準活性汚泥法
CCC	Chattogram City Corporation	チョットグラム市役所
CDA	Chattogram Development Authority	チョットグラム開発庁
CE	Chief Engineer	チーフエンジニア
COD	Chemical Oxygen Demand	化学的酸素要求量
CWASA	Chattogram Water Supply and Sewerage Authority	チョットグラム上下水道公社
DOE	Department of Environment	環境局
DPP	Development Project Proposal	開発計画提案書
ECNEC	Executive Committee of the National Economic Council	国家経済会議理事会
F/S	Feasibility Study	実現可能性調査
FSM	Fecal Sludge Management	腐敗槽汚泥管理
EXIM Bank	Export-Import Bank of Korea	韓国輸出入銀行
GOB	Government of Bangladesh	バングラデシュ政府
IRR	Internal Rate of Return	内部収益率
JICA	Japan International Cooperation Agency	国際協力機構
JPY	Japanese Yen	日本円
KWSP	Karnaphuli Water Supply Project	カルナフリ上水道整備事業
LGRD	Local Government Regional Division	地方行政総局
M/D	Minutes of Discussion	議事録
MLD	Million Liter Per Day (100,000 m^3/day)	一日当たり百万リットル
MP	Master Plan	総合計画
O&M	Operation and Maintenance	維持管理
OD	Oxidation Ditch	オキシデーションディッチ法
ODA	Official Development Assistance	政府開発援助
PD	Project Director	事業実施責任者
PDPP	Preliminary Development Project Proposal	予備開発計画提案

PESSCM	Project for Establishment of Sewerage System in Chattogram Metropolitan	チョットグラム市下水道開発プロジェクト
PIU	Project Implementation Unit	業務実施部署
SAE	Sub-Assistant Engineer	サブアシスタントエンジニア
SDE	Sub-Divisional Engineer	サブディビジョナルエンジニア
SDGs	Sustainable Development Goals	持続可能な開発目標
SE	Superintending Engineer	スーパーインテンディングエンジニア
STP	Sewage Treatment Plant	下水処理場
T-N	Total Nitrogen	全窒素
TOR	Teams of Reference	付託条項
T-P	Total Phosphorus	全燐
TSS	Total Suspended Solid	全浮遊物質
USD	United States Dollar	アメリカ合衆国ドル
WB	World Bank	世界銀行
WS	Water Supply	給水
XEN	Executive Engineer	エクゼクティブエンジニア

第 1 章　　はじめに

1.1　本事業の背景

バングラデシュ南東部に位置するチョットグラム市は、同国最大の港を持つ産業と国際貿易の中心地である。首都ダッカに次ぐバングラデシュ第 2 の都市で、2011 年の国勢調査によると人口は約 259 万人、2020 年には約 310 万人に達すると予想されている。チョットグラムには集合型の公共下水道はなく、セプティックタンクやピットラトリンのようなオンサイト処理施設しかない。これらの施設からの汚泥の定期的な引抜、維持管理、適切な汚泥処理・処分は実施されていない。このように、生活環境の悪化と公共水域の汚染は明らかであり、急激な人口増加と経済拡大に伴い、さらに悪化することが予想される。

チョットグラム上下水道公社（以下「CWASA」）は、バングラデシュの国家戦略に基づき、2017 年に世界銀行の資金援助を受けてサニテーションマスタープラン（以下「マスタープラン」）を策定し、中心市街地の一部をカバーする第一処理区において下水道建設に向けた調査・設計を開始した。しかし、CWASA には下水道を管理した経験がないため、必要な組織体制や財政計画、従業員の能力を開発する必要がある。このような背景のもと、JICA は CWASA に対し、下水道システムの円滑な建設と適切な運営・維持管理、下水道サービスの管理のため、専門家の派遣を通じて能力強化を支援することに合意した。

1.2　本事業の目的

本事業は、JICA 専門家チームを以下の目的にて派遣する：

1) チョットグラムの下水道部門における課題を特定する。
2) M/P に基づく下水道整備の能力開発を支援する。
3) チョットグラムの衛生的な生活環境の持続可能な改善に貢献する。

1.3　期待される成果と活動計画

期待される成果と成果を達成するための活動は以下のように設定されている。

成果-1：下水道整備の政策・計画策定に係る能力が向上し、新たな下水道整備事業の計画が促進される。

活動 1-1： 既存のサニテーションマスタープラン及び第一処理区事業のレビューを行う。
活動 1-2：下水道整備事業の計画促進に向けた組織体制の課題整理を支援する。
活動 1-3：下水道整備事業の計画促進に向けた財務体制の課題整理を支援する。
活動 1-4： 新たな下水道整備事業計画の作成に係る支援を行う。

成果-2：下水道整備対象区域内の状況に応じた適用可能な技術を理解し、下水道施設の設計・建設に係る能力が強化される。

活動 2-1：第 1 処理区事業の計画を基に、設計・建設時に想定される課題整理を支援する。
活動 2-2：上記課題の解決策を通じて、CWASA の設計・施工監理能力向上を支援する。
活動 2-3: 下水処理施設の設計指針、技術基準、マニュアル等の策定に係る支援を行う。

1.4 アドバイザーおよび PIU メンバー

JICA 専門家チームと CWASA の PIU メンバーは以下の通りである。

1）JICA 専門家チーム

チーフアドバイザー／下水道処理計画担当	西川 貴政
組織体制／財務体制	玉眞 俊彦
設計／工事監督／下水道施設の維持管理	田村 秀久
コミュニケーション・レポーティングオフィサー	Ms. Nazia Nur

2）CWASA の PIU メンバー

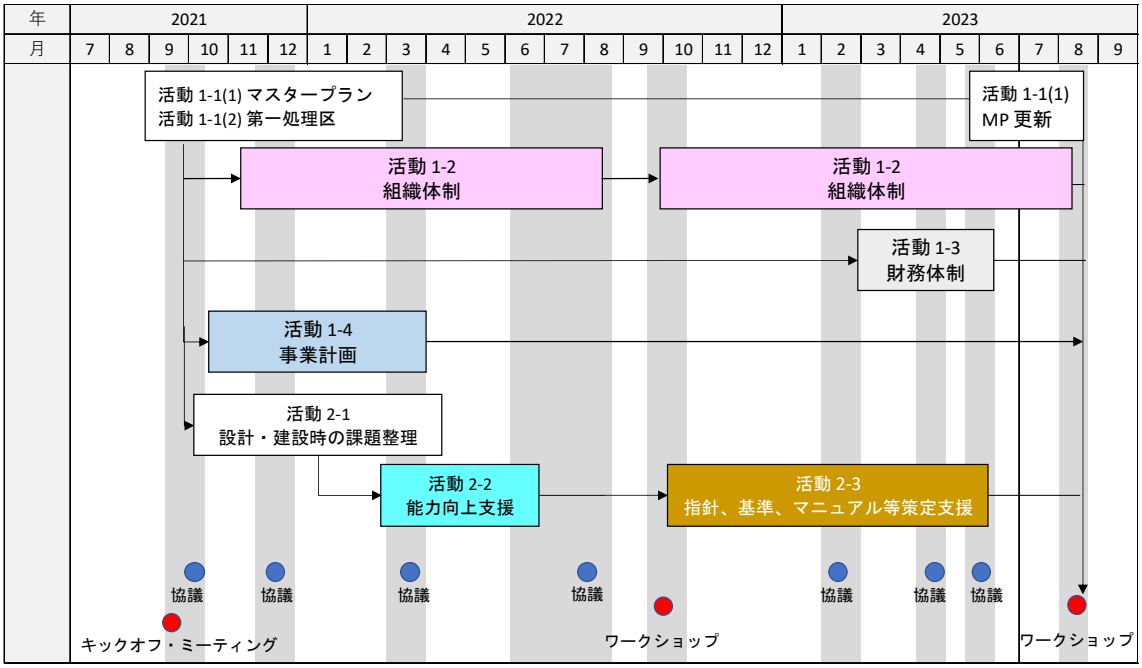
本業務の実施責任者、 スーパーインテンディング・エンジニア（MOD）	Mr. Muhammad Nurul Amin
本業務の副実施責任者、 エグゼクティブ・エンジニア（MOD-2）	Mr. Sajib Barua
エグゼクティブ・エンジニア（調達課）	Ms. Keya Chowdhury
エグゼクティブ・エンジニア（代務、設計課）	Mr. Richard Nelson Penheiro
アシスタント・エンジニア（KWSP-2）	Ms. Tanjin Mahmud
アシスタント・エンジニア（KWSP-2）	Mr. Md. Abu Bakkar Sidik
サブ・アシスタント・エンジニア（車両課）	Mr. Anwarul Kayum Chowdhury

第 2 章　　本業務の成果

2.1　プロジェクトの経緯

(1) 概要

2021 年 9 月から 2023 年 8 月までの約 2 年間、JICA 専門家チームが CWASA に断続的なアドバイザー活動を実施した。COVID-19 による制約が多い中で本事業は開始され、図 2-1 と表 2-1 に示す活動を実施した。



出典：JICA 専門家チーム

図 2.1 アドバイザーの実施スケジュール

表 2.1 アドバイザーサービスの経緯

期間	内容	現地業務		
		西川	玉眞	田村
2021 年 6 月 24 日	契約の締結			
2021 年 7 月 1 日	JICA 専門家の派遣通知			
2021 年 9 月 3 日～10 月 14 日	第 1 回現地業務	✓		✓
2021 年 11 月 20 日 ～12 月 11 日	第 2 回現地業務	✓		
2021 年 11 月 25 日	STP2・4 の土地取得の行政認可を求める書簡を、CWASA から地方政府部門の上級秘書官に送付			
2022 年 1 月 13 日	同省は、Kalurghat 集水域（STP 2）と Bakalia 集水域（STP-4）の土地取得を承認			
2022 年 3 月 5 日～3 月 31 日	第 3 回現地業務	✓		✓

2022 年 3 月 14 日	JICA 専門家チームは、土地取得 DPP とともに提出する第 2 と第 4 処理区のプレ FS を作成			
2022 年 4 月 18 日	CWASA は、土地取得のための DPP を同省に提出			
2022 年 6 月 5 日～6 月 25 日	第 4 回現地業務			✓
2022 年 7 月 17 日～8 月 12 日	第 5 回現地業務	✓	✓	
2022 年 9 月 24 日～10 月 14 日	第 6 回現地業務	✓		
2023 年 2 月 1 日～3 月 2 日 2023 年 4 月 2 日～4 月 18 日 2023 年 5 月 13 日～6 月 18 日迄	第 7 回現地業務	✓	✓	
8 月 7 日～8 月 31 日	第 8 回現地業務	✓	✓	
2023 年 10 月 31 日	契約完了			

出典：JICA 専門家チーム

(2) 活動概要

本業務の開始当初、第 1 処理区事業（PESSCM-1）はコロナ禍の影響で大幅に遅れており、CWASA の設計・施工監理を JICA 専門家チームがサポートする予定であったが、建設業者との契約が締結されていなかった。そのため、本業務の内容について第一回現地業務時に CWASA と協議し、修正を行った。

マスタープランのレビューにより、第 2・4 処理区の下水道整備が急務であることが確認されたが、マスタープランで提案された下水処理場の用地は、当時すでに別の目的のために占有されていた。そのため、CWASA と JICA 専門家チームは、第 2・4 処理区の統合下水処理場の別の候補地を提案し、同処理区の下水道整備に関するプレ FS 報告書を作成した。プレ FS 報告書は、2023 年 9 月現在承認手続き中の土地取得のための DPP に利用された。また、JICA はアドバイザー期間中、第 2・4 処理区における下水道整備のための開発準備調査を実施した。

さらに、CWASA は、各処理区の下水道システムを建設・運営するための新しい組織体制を整備する必要がある。その緊急性を考慮し、CWASA と JICA 専門家チームは、下水道の整備と O&M に必要な諸規則、すなわち、i）2023-2030 年組織図、ii）上下水道接続規則、iii）職員服務規程、iv）職員の昇進体系図、v）職員の職務記述書、vi）各部署の業務分掌を策定した。加えて、CWASA の財政運営上の課題についても確認を行い、解決策を協議した。CWASA の上下水道施設の建設・運営に係る財務管理は、JICA の次期技術協力プロジェクトにおいて支援される予定であることが確認された。

成果-2 に関して、JICA 専門家チームは第一処理区事業の文書を確認するとともに、カルナフリ上水道整備事業（KWSP-II）の活動を確認した。その結果、JICA 専門家チームは、CWASA の下水道整備にとって各戸接続が最も重要な課題であることを確認し、CWASA とともに各戸接続マニュアルを作成した。

2.2　事業成果の概要

2.2.1 活動 1-1：マスタープランと進行中の下水道事業の見直し

活動 1-1 に関する以下の作業が完了した。

a) PESSCM-1 に係るマスタープランとフィージビリティ・スタディの報告書、図面、入札書類のレビュー
b) プレ FS（第 6 処理区）、事業化調査（第 5 処理区）、FS（第 1,2,4,3 処理区）等の最新報告書に基づく実施計画及び事業費の更新。

2.2.2 活動 1-2：下水道整備事業の計画促進に向けた組織体制の課題整理の支援

活動 1-2 に関する以下の作業が完了した。

a) KWSP の PIU 組織と活動、CWASA の現行組織図と諸規程、マスタープランと第一処理区 PPS で計画された組織体制のレビュー
b) 下水道サービス特有のワークフロー
c) CWASA 規則の制定・改定
   - CWASA 上下水道接続規則
   - CWASA 職員服務規程別表
   - CWASA 職員の昇進体系図
   - CWASA 職員の職務記述書
   - CWASA 各部署の業務分掌
d) CWASA 組織図の改定（2023～2030 年）

2.2.3 活動 1-3：下水道整備事業の計画促進に向けた財務体制の課題整理の支援

活動 1-3 に関連する以下の作業が完了した。

a) JICA の第 2・4 処理区準備調査チームおよび世界銀行が作成した財政収支予測結果のレビュー
b) CWASA の財務状況の現状と将来見通しの評価
c) 対策案の提案と CWASA との協議

2.2.4 活動 1-4：新たな下水道整備計画の作成に係る支援

活動 1-4 に関する以下の作業が完了した。

a) 第 2・4 処理区のプレ F/S レポート
b) 第 2・4 処理区の下水処理場用地取得のための DPP：CWASA から上位機関（地方行政総局：LGRD）に提出済み
c) 第 2・第 4 処理区の下水道整備事業の DPP：CWASA から上位機関（LGRD）に提出済み

2.2.5 活動 2-1：下水道事業の設計・建設に関する CWASA の管理における課題の特定及び、活動 2-2：上記の課題に対する解決策の作成を通じた、下水道事業の設計・建設監督に関する CWASA の能力開発支援

活動 2-1、2-2 に関連する以下の作業が完了した。

a) 「KWSP-2 での教訓」: 2022 年 6 月 21 日の進捗会議と 9 月 27 日のワークショップで発表。

b) 活動 2-1 と 2-2 のサマリー・レポート

2.2.6 活動 2-3: 下水処理施設の設計指針、技術基準、マニュアルの策定支援

活動 2-3 に関連する以下の作業が完了した：

a) 各戸接続マニュアル

第 3 章　　各活動の成果

3.1　活動 1-1：マスタープランと PESSCM-1 のレビュー

3.1.1 マスタープランのレビュー

チョットグラム市を 6 つ処理区に分割した包括的な下水道整備計画が 2017 年のマスタープランで提案された。同マスタープランに基づき、CWASA はサブプロジェクトを実施するために、各下水処理区の予備開発事業計画書（PDPP）を提出した。第 1 処理区の PDPP はすでに国家経済会議理事会（ECNEC : GOB）によって承認されており、このサブプロジェクトは GOB の予算を活用してすでに開始されている。2023 年 10 月現在、CWASA は各ドナーや民間事業者と協力し、残りの処理区の下水道整備を実施している。

マスタープラン作成から 6 年が経過し、急速な都市化によりチョットグラム市の状況は変化している。特に下水処理場建設予定地の用地買収が困難になっており、下水道開発における重要な課題となっている。JICA 専門家チームは、CWASA による下水道整備を支援するため、マスタープランをレビューし、CWASA のスタッフとの面談や現地視察を通じ、マスタープランの提案と現状の乖離を確認した。

マスタープランレビューの主な結果を付属資料-1 に示す。さらに、マスタープランレビューの結果に基づいてこのアドバイザリー・サービスの業務計画が補正された。

3.1.2 2023 年にマスタープランを更新

(1) 2023 年 9 月現在の CCC における下水道整備状況

CWASA は、すべての処理区の下水道整備を並行して実施しており、その状況は以下の通りである。

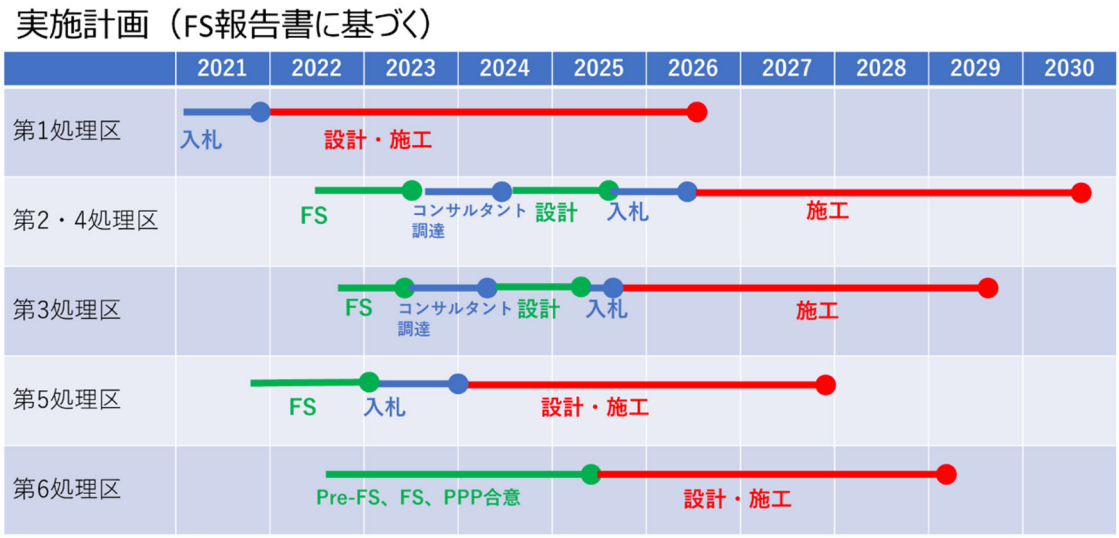
表 3.1 CWASA における下水道整備状況

処理区	ドナー	状況
第 1 処理区	バングラデシュ政府	工事は現在進行中
第 2・4 処理区	JICA	JICA の FS が完了した。 DPP の作成が完了した。
第 3 処理区	韓国輸出入銀行	FS が完成した。
第 5 処理区	フランス開発庁	事業準備調査が完了し、コンサルタントの調達が進行中である。
第 6 処理区	PPP（民間事業者）	民間事業者によるプレ FS は完了し、JICA による PPP-FS が進行中である。

出典：CWASA からの情報をもとに JICA 専門家チームが作成

最新の報告書に基づき、各処理区における下水道整備の実施スケジュールをまとめる

と、次の図のようになる。



出典：CWASA からの情報をもとに JICA 専門家チームが作成

図 3.1 報告書に基づく各処理区の実施計画

(2) 下水道整備費用

マスタープランで提案された下水道整備費用は、2030 年までの最初の整備で 2 億 7,180 万米ドル、2065 年までの全整備で 10 億 3,200 万米ドルであった。第 1 処理区におけるフィージビリティ・スタディの結果、下水道整備方針は以下のように変更された：

表 3.2 マスタープランからの設計条件の変更

	マスタープラン	現時点での計画
目標年	2030	2070
集水域	道路周辺のみ	市街全域
下水排除方式	遮集式	分流式
各戸接続	小規模	大規模
下水処理方式	散水ろ床法	OD法（窒素・リン除去無し） A_2O法（窒素・リン除去あり）
ポンプ場数	多い	少ない（管渠敷設深さは深くなる）

出典：CWASA からの情報をもとに JICA 専門家チームが作成

設計条件の変更、特に排除方式の変更：CCC エリア全体への分流式下水道システムの適用、処理プロセスの変更：散水ろ床からオキシデーションディッチもしくは嫌気無酸素好気法（A_2O）への変更により、建設コストは以下のように増加した。

表 3.3 最新の報告書と CWASA からの情報に基づき更新されたプロジェクト費用

事業	資金	施工			フェーズ I の費用（百万USD）		
		処理能力		処理方法	工事費	事務費	事業費
		フェーズ I	最終形				
第1処理区	自国資金	100MLD	300MLD	標準法	404.0	78.8	482.8
第5処理区	AFD	50MLD	100MLD	標準法	146.9	79.5	226.4
第6処理区	PPP	50MLD	100MLD	標準法	214.3	15.3	229.6
小計（西部）		**200MLD**	**500MLD**		**765.2**	**173.6**	**938.8**
第2・4処理区	JICA ODA	60MLD	300MLD	A2O	373.6	404.9	778.5
第3処理区	EDCF	60MLD	120MLD	A2O	176.3	99.3	275.6
小計（東部）		**120MLD**	**420MLD**		**549.9**	**504.2**	**1054.1**
チョットグラム市合計		**320MLD**	**920MLD**		**1,315.1**	**677.8**	**1,992.9**

*マスタープランにて提案の投資額は271.8百万USD(-2030)、1,032百万USD(-2065)

出典：CWASA からの情報をもとに JICA 専門家チームが作成

(3) ローン償還

中央政府を通じて CWASA に転貸され、DPP では "PA "と呼ばれている。PA の金利は最終的に 1.0%で、返済期間と返済猶予の条件は、ドナーから提供された借款の供与条件と同じである。PA の条件は現時点では未定であるため、暫定的に以下の条件で償還額を算出した。

表 3.4 償還額の算出条件

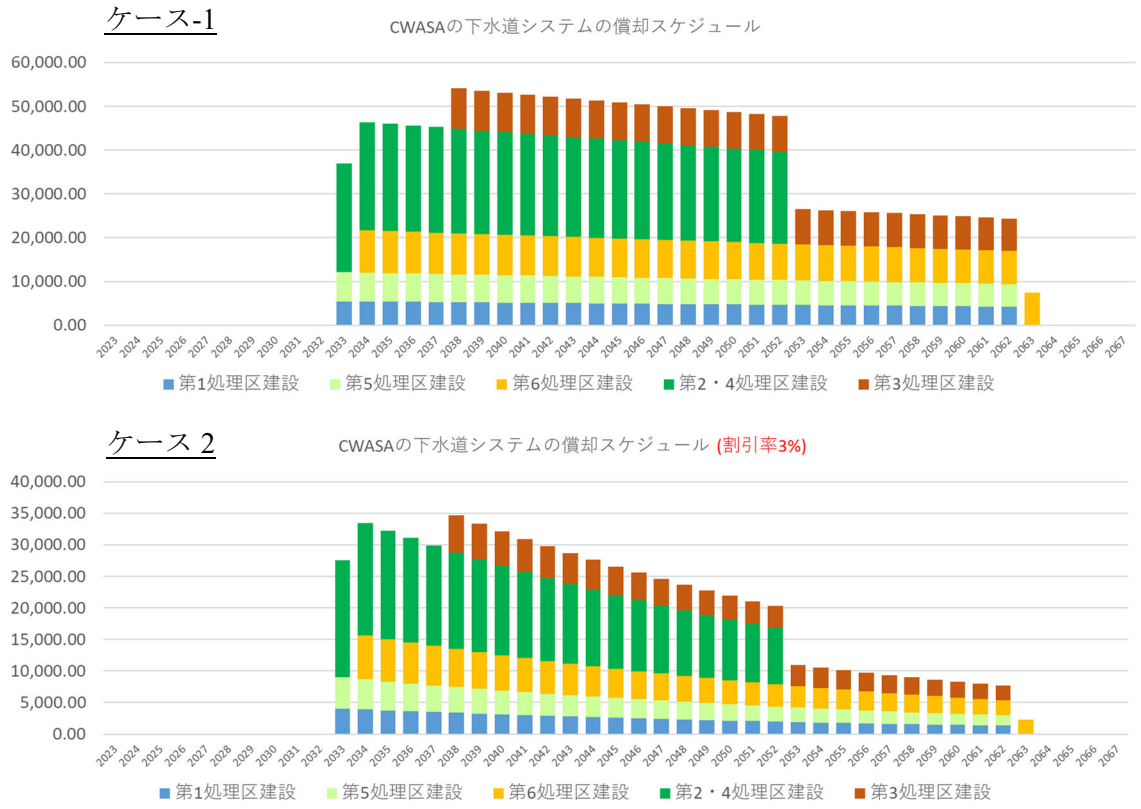
処理区	建設費を含む	PA がカバーする建設費の割合	PA の金利	返済期間	
					猶予期間
第 1 処理区	すべて	70%	1%	40 年	10 年
第 2・4 処理区	第 1 段階	100%	1%	30 年	10 年
第 3 処理区	第 1 段階	100%	1%	40 年	15 年
第 5 処理区	第 1 段階	100%	1%	40 年	10 年
第 6 処理区	第 1 段階	100%	1%	40 年	10 年

出典：CWASA からの情報をもとに JICA 専門家チームが作成

第 1 処理区事業はバングラデシュ政府（GOB）の全額負担で開始されたが、CWASA は PA の一部を負担するよう要請されている。2023 年 8 月現在、この問題は決着していないが、何パーセントかの債務を負うリスクがある。第 6 処理区事業については、PPP スキームで実施され、建設費と O&M 費はいずれも運転後にサービス料として出資者に返済される。現時点では、サービス料金の詳細な条件が確定していないため、今回の試算では工事のみを含めた償還とした。

以上の条件に基づき、下水道整備にかかる償還額を試算したところ、図 3.2 のようになった。

- ケース 1：インフレ（割引率）を考慮しない。
- ケース２：インフレを考慮し、割引率は 3%とする。



出典：CWASA からの情報をもとに JICA 専門家チームが作成

図 3.2 下水道整備の償却費

試算の結果、(i)バングラデシュの経済が期待通りに発展しない場合、下水道開発の第 1 段階でも莫大な償還が発生すること、(ii)予測は困難だが、将来の償還額にはインフレ（割引率）の影響も非常に大きいことが確認された。上記の暫定試算では、6%以上の GDP 増加が見込まれるにもかかわらず、割引率は 3%しか適用していない。

この問題に対処するためには、まず来るべき JICA 技術協力プロジェクトで財政計画を策定し、次に、少なくとも上下水道システムの維持管理費を賄う適切な上下水道料金を適用しなければならない。一方、CWASA が GOB と交渉し、PA 額の控除、金利の控除、返済期間の延長など、下水道システムの持続可能な発展を考慮した PA 条件の調整を行うことも、都市とその周辺地域の社会的・自然環境を守る下水道整備を進めるために重要であると考えられる。

3.1.3 PESSCM-1 のレビュー

GOB は、2017 年に策定されたマスタープランで設定された第一処理区における下水道整備事業を自己資金で実施することを決定した。プロジェクト名は「チョットグラム都市圏下水道整備事業フェーズ 1（以下、PESSCM-1）」である。プロジェクトのコンサルティング業務は 2019 年 11 月に開始された。2020 年 6 月に基本設計が完了し、2020 年 10 月までに 3 つのパッケージ（W1、W2、W3）からなる設計施工契約の入札書類が

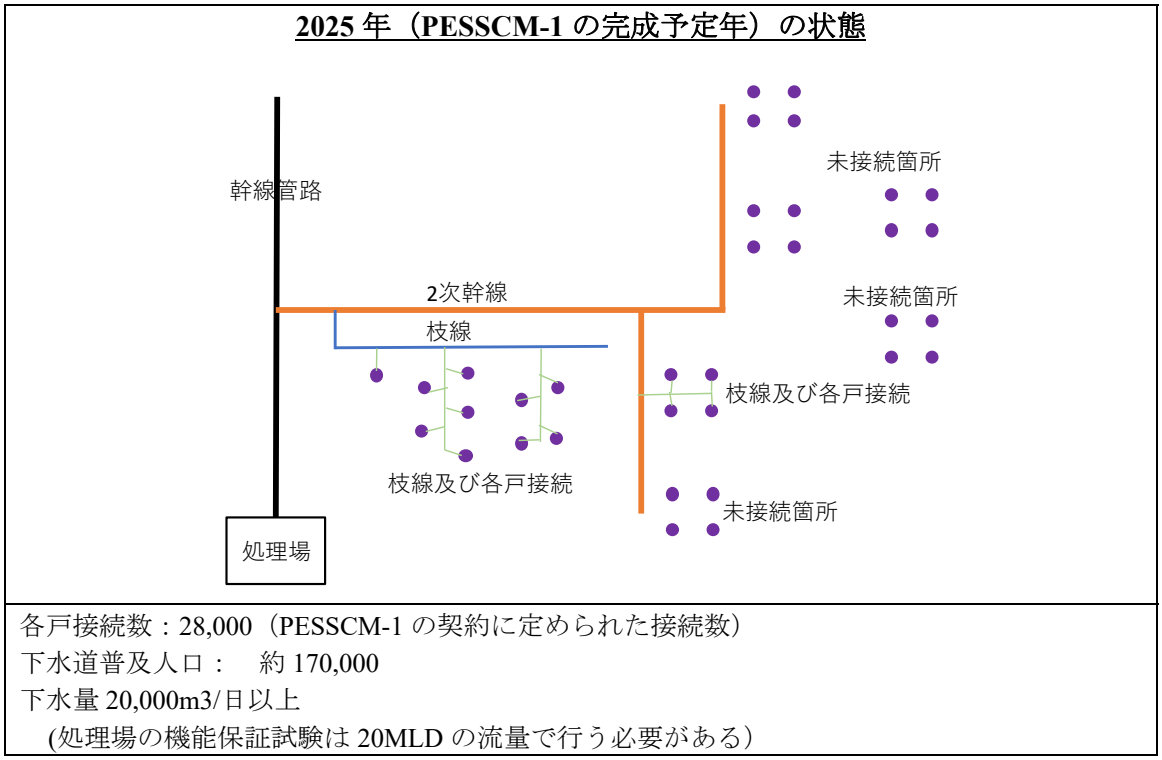
完成した。入札公告は 2020 年 10 月に行われ、入札は 2021 年 2 月に締め切られた。入札評価と契約交渉を経て、パッケージ W1 の契約は 2022 年 3 月に締結された。
JICA 専門家チームは基本設計図書と入札図書をレビューした。その後、JICA 専門家チームは PESSCM-1 の PIU に対し、これらの図書のいくつかの点について照会した。その結果、JICA 専門家チームは PESSCM-1 の施設計画・設計とプロジェクト実施のコンセプト理解し、CWASA とそれを共有した。PESSCM-1 の概要は以下の通り。

(1) 計画・フレームワーク

- 下水収集区域（3, 562 ヘクタール）
- 目標年 2070
  - 下水処理場の段階的建設（フェーズ 1：100MLD）
  - 下水管路網の設計目標年次は 2070 年
- 計画区域内人口： 897, 083 人（2011 年国勢調査）
  2, 609, 175 人（2070 年予測）
- 下水収集方式： 分流式
- 下水処理場の場所：Hlshahar 地区の海岸近く

(2) 下水収集のコンセプト

下水収集のコンセプトを図 3.3 に示す。

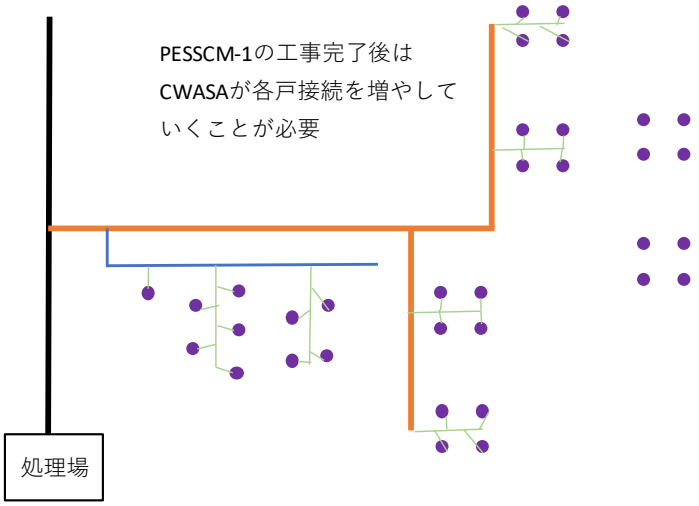


各戸接続数：28,000（PESSCM-1 の契約に定められた接続数）
下水道普及人口： 約 170,000
下水量 20,000m3/日以上
(処理場の機能保証試験は 20MLD の流量で行う必要がある）

出典：JICA 専門家チーム

図 3.3 （1）下水収集イメージ（2025 年）

2030 年（PESSCM-1 完了の 5 年後）の状態

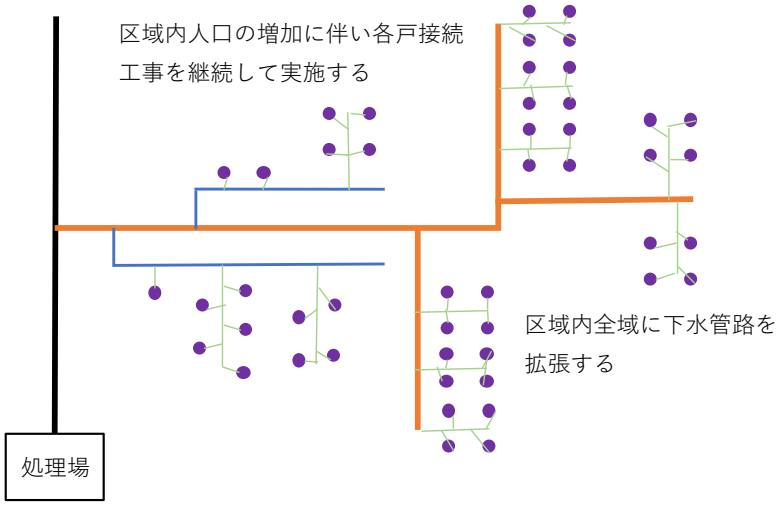


各戸接続数　134,000
　(PESSCM-1 以降も下水道網の拡張と敷地への接続工事を継続する必要がある)
下水道普及人口（2030 年）：800,000
下水量　96,000m3/日（処理場の容量は 100MLD）

出典：JICA 専門家チーム

図 3.3（2）下水収集イメージ（2030 年）

2070 年（PESSCM-1 事業の目標年）



幹線下水道と二次幹線は、2070 年の流量（312,000 m3/日）を想定して設計されている。
　(幹線下水道終端：D2000、I=1/2000)

各戸接続　437,000
　(下水道管網の拡張と各戸接続工事を継続する必要がある)
下水道普及人口（2070 年）：2,600,000 人（2070 年における対象地域の人口の 100%）
下水量　312,000m3/日

出典：JICA 専門家チーム

図 3.3　（3）下水収集イメージ（2070 年）

(3) プロジェクトの目的を達成するための重要事項

以上のように、PESSCM-1 の完成後も、下水道管路網の拡張と各戸接続工事を継続する必要がある。2070 年に対象地域の下水道普及率 100%を達成するためには、年間約 9,000 件の接続工事が必要である。

(437,000 接続-28,000 接続）/（2070 年-2025 年）＝9,000 接続/年

下水道管路拡張の継続的な実施と各戸の接続の増加は、プロジェクトの目的を達成するための重要事項のひとつである。

3.2　活動 1-2：下水道整備事業の計画促進に向けた組織体制の課題整理の支援

3.2.1 2023-2030 年 CWASA 組織図

円滑で持続可能な下水道施設の整備と管理には、建設と O&M の各段階に応じた適切な組織体制を構築し、実施することが決定的に重要である。

現行の 2020 年組織図のレビューを行ったのち、下水道建設段階での適用を想定した新しい 2023 年組織図を 2022 年 8 月に提案して CWASA と協議を重ね、2022 年 12 月 18 日に修正案を正式に MD に提出し、CWASA 理事会の承認を求めることとなった。その後、CWASA とのさらなる協議や要望をもとに大幅な修正が加えられた。主な修正点は以下の通りである。

- 上水道と下水道の建設事業のため 2 つの事業マネジメント部を設置することで合意していたが、PIU の一時的な性格や職員の給与源の違い（歳入予算ではなくプロジェクト予算）を考慮して取りやめられ、下水道施設の O&M 段階における組織体制を盛り込むことになった（2023 年 2 月～6 月にかけて協議・決定)。
- 2023 年組織図は、2023-2030 年組織図と改称され、節目となる年ごとに適用される新たな職種や部署を明示することとなった（2023 年 6 月に協議・決定)。
- 水処理・生産部（T&P Circle）と運営維持管理・配水部（MOD Circle）は、それぞれ 2 つに分割することとなった（2023 年 2 月に協議・決定)。
- 計画・開発・モニタリング（PDM）担当の Additional Chief Engineer を 1 名増員し、その下に研究・開発、環境・モニタリング、設計・GIS、研修などの課を設置することとした（2023 年 3 月に協議・決定)。
- 15 の部署における人員配置を調整した（2023 年 2 月～8 月にかけて協議・決定)。

最終案は 2023 年 8 月 17 日の CWASA 理事会で承認される予定であったが、会議の議題が急遽変更されたため、承認は 2023 年 10 月に開催予定の次回の理事会に延期されることになった。

2023 年 8 月 28 日に開催された最終ワークショップでは、CWASA（調達課）のエグゼクティブ・エンジニア（XEN）であり、アドバイザリー業務の PIU メンバーの一人であるケヤ・チョウドリー女史が 2023-2030 年組織図の要点を発表した。

3.2.2 2020 年 CWASA 職員服務規程の改定

職員の等級、採用条件（直接雇用、昇進、出向、およびそれらの混合）、および各職種の必要資格を示す標題の規程の別表（付属資料）を見直し、更新した。全 95 の職種（新規追加 9 職種と廃止する 4 職種を含む）のうち、22 の職種の等級と 48 の職種の採用条件・必要資格について改定または新規設定を行った。有能で資格を有する職員に意欲を持たせるため、昇進のない職種を減らすとともに、下位等級の職員の昇進機会を拡大するよう特に配慮した。改定案は、2023 年 4 月から 8 月にかけて、General Manager や総務局の担当者と協議を重ねた。

最終案（2023 年 CWASA 職員服務規程）は、2023 年 9 月または 10 月に開催される理事会において、2023-2030 年組織図とともに承認される予定である。

2023 年 8 月 28 日に開催された最終ワークショップでは、改定作業を担当した CWASA の Deputy Secretary（代務）であるナジム・ウディン氏が、改定点のポイントを説明した。

3.2.3 CWASA 職員の昇進体系図

CWASA 職員の職種は担当する職務によって細分化されており、例えば財務局では Budget Officer、Accounts Officer、Revenue Officer、総務局では Photocopy Operator、Record Keeper、Dispatch Rider、Helper、Cleaner、Office Assistant といったように職種が設定されている。それに伴い、採用・昇進制度も複雑なものとなっている。このため、職員服務規程の規定に基づいて局ごとに昇進体系図を作成することで、職員服務規程の改定に関する CWASA との協議が円滑に進められた。

3.2.4 CWASA 職員の職務記述書と各部署の業務分掌

CWASA 職員の職務記述書と各部署の業務分掌は、当初、2023 年 CWASA 人事管理規則を新たに策定し、その中に盛り込む予定であったが、CWASA との協議に基づき、新組織図の補足文書とすることで合意した。

各職種の職務記述書をレビューしたのち、既存の職種については更新を、新設の職種については新たに作成した。その結果、91 の職種について職務記述書を更新または新規に作成した。2023 年 3 月に草案を CWASA に提出後、財務局はレビューを終え、技術局と総務局のレビューは未完成であった。修正案は 2023 年 8 月に MD に提出され、2023-2030 年組織図と職員服務規程とともに CWASA 理事会に提出される予定である。

一方、各部署の業務分掌は、2023-2030 年組織図の補足資料として作成された。案は 2023 年 8 月に MD に提出され、上記の書類とともに CWASA 理事会に提出される予定である。

3.2.5 CWASA 上下水道接続規則

CWASA サービスガイドブックは、水道の接続、閉栓、再接続に必要な手続きについ

て、顧客に実務的な指針を与えているが、CWASA の規則としては成文化されていない。また、CWASA では下水道の整備を開始したばかりであるため、当該ガイドブックでは下水道接続についてふれていない。このため、CWASA と顧客それぞれの権利と義務、必要な手続きや申請書式を明示するために、上下水道接続に関する規則を制定することが強く推奨される。

バングラデシュ国内の先進 WASA であるダッカ WASA（DWASA）は、上下水道接続に関する包括的な規則「2011 年 DWASA 上下水道接続規則」を策定しているため、これを収集・英訳の上、CWASA における現在の実施内容との比較研究を行った。これに基づき、上水道接続に関する現行の業務フローを見直す必要性や、下水道接続に関する必要な手続きを議論し、2022 年 1 月に CWASA 上下水道規接続則の原案を作成した。その後、CWASA は JICA 専門家チームの助言を得て 2022 年 10 月、2023 年 2 月、2023 年 4 月と断続的に協議・検討を進めた。

最終案は、2023 年 9 月または 10 月に開催される CWASA 理事会において、2023-2030 年組織図および上述の関連文書とともに承認を得る予定である。

2023 年 8 月 28 日に開催された最終ワークショップでは、CWASA（MOD-2）の XEN であり、アドバイザリー業務の PIU メンバーの一人であるショジブ・バルア氏が規則の要点についてプレゼンテーションを行った。

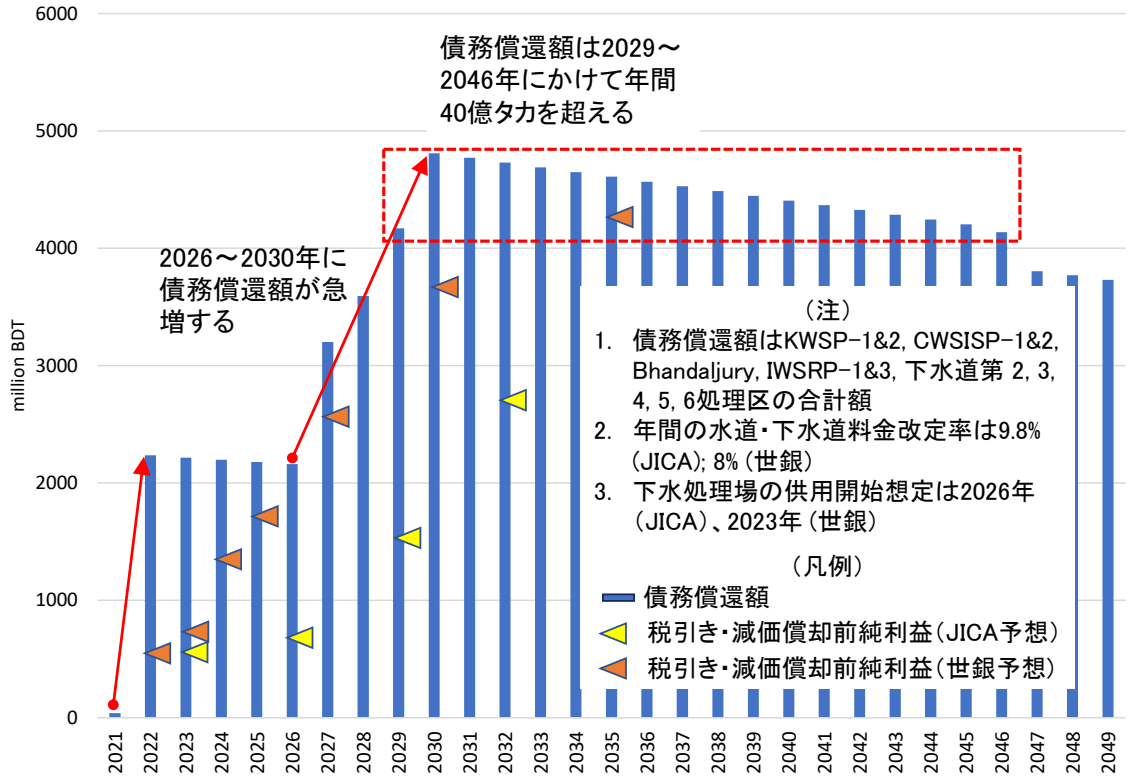
3.3 活動 1-3：下水道整備事業の計画促進に向けた財務体制の課題整理の支援

JICA 準備調査（2022-2023 年）および世界銀行（2022 年）が作成した CWASA の財政収支見通しを検討した結果、2029 年から 2046 年にかけて発生する年間 40 億 BDT を超える債務返済額を賄うことは困難であることが判明した（図 3.4 参照）。

したがって、将来起こりうる資金ショートを防ぐための提言を作成し、2023 年 2 月から 3 月にかけて、CWASA 財務局の管理職、すなわち Commercial Manager（DMD（Finance）代行）、Chief Revenue Officer、および Deputy Chief Accounts Officer と協議を行った。とりわけ、プリペイド式水道メーター（PPWM）の導入や、最新財務諸表の監査プロセスの加速化が議論の焦点となった。

前者の PPWM については、料金徴収率や未収金回収率の向上や Revenue Inspector（検針・料金徴収員）の増員数の削減が期待できることから、CWASA が JICA に要請している技術協力プロジェクトにおいて、PPWM のモデル導入を実施することが望ましいと考えられる。

後者については、債務の返済延期や減免に関する交渉を LGRD や MOF と開始するための最低条件として最新の財務諸表の提出が必要であるところ、監査課の人材不足のため、財務諸表の内部監査プロセスが大幅に遅れている。そこで、CWASA における監査活動を加速するため、2023-2030 年組織図では監査課に 2 名（Audit Officer 1 名と Office Assistant cum Computer Typist 1 名）を追加した。



出典：JICA 準備調査チームと世界銀行の情報を基に JICA 専門家チームが作成。

図 3.4 2049 年までの CWASA の財政収支見通し

3.4 活動 1-4：新たな下水道整備事業計画の作成支援

3.4.1 プレ F/S レポート作成

CWASA は、土地取得のための DPP の基礎となるプレ F/S レポートを JICA 専門家チームとともに作成した。本サービスでは、第 1 処理区事業（PESSCM-1）、第 5 処理区事業（AFD）、第 6 処理区事業（PPP）の計画条件に基づき、総人口、STP の容量、STP の処理プロセス、配置計画を更新した。研究内容は以下の通りである：

1. 本事業の概要
2. 人口予測
3. 下水量予測
4. 下水処理場の処理能力設定
5. 処理プロセスの選択
6. 下水処理場の配置計画
7. フィージビリティ・スタディへの申し送り事項

この活動の成果を付属資料-4 に示す。

3.4.2 土地取得 DPP での経済・財務分析

土地取得のための DPP では、F/S がまだ作成されていない段階でも、経済・財務分析が必要である。CWASA は、DWASA の DPP に基づく経済・財務分析の作成を JICA 専門家チームに提案し、以下の条件にて算出した。

(i) 年間収入
- 下水処理場容量相当の下水流入が発生する前提として、2022 年時点の水道料金である 1m^3 当たり 16.59BDT を乗じた。

(ii) 財務分析
- 投資コスト：CWASA が見積もった土地取得費用は 247.819 億タカに相当する。土地取得は 2023 年から 2026 年にかけて実施される。
- 運営費用：人件費 500 万タカと土地取得費の 0.5%の追加管理費。
- 便益：年間収入と同等とした
- 年あたり費用：割引率 12%で 2022 年の物価に換算した

(iii) 経済分析
- 投資コスト：CWASA が見積もった土地取得費用は 247.819 億タカに相当する。土地取得は 2023 年から 2026 年にかけて実施される。
- 運営費用：人件費 500 万タカ
- 便益：年間収入と同等とした
- 年あたり費用：割引率 12%で 2022 年の物価に換算した

その結果、経済的・財政的な実現可能性は暫定的に確認され、DPP の承認手続きを進めることになったが、経済的・財政的な実現可能性は F/S 段階で、総事業費とより合理的な便益を確認することになる。

3.4.3 CCC におけるセプテージ管理の状況と責任の確認

(1) チョットグラム市における汚泥管理の必要性

CCC 地域の 40%以上では下水道管布設が困難と想定されるため、セプティックタンクが継続的に必要となる。セプティックタンク汚泥（セプテージ）の回収を含む汚泥管理は CCC に責任があり、CCC とその周辺のスラムや低所得者居住地域（LIC）を含む下水道未接続地域に提供されなければならない。しかし、CCC の活動は予算や施設の不足のために十分ではない。

JICA 専門家チームは、CWASA が未接続世帯に汚泥収集管理サービスを提供し、現在の不十分な活動を改善し、結果的に SDGs 目標-6 を達成する計画があることを確認した。CWASA は第 1 処理区下水処理場に容量 300m3/日の汚泥処理施設を建設し、PESSCM-1 にて汚泥収集設備を調達する。CCC の汚泥量は 700m3/日と見積もられており、残りの 400m^3/日は CCC 所掌として回収・処理される。CWASA による汚泥の回収

は、民間委託により実施される予定である。

更に、CCC、CWASA、CDA、その他の関係者は、バングラデシュ工科大学（BUET）とともに、「CCC 全体の汚泥管理アクション・プラン」を策定した。2030 年までの宅内衛生設備の改善、セプテージの収集、その処理と処分に関するアクション・プランが提案された。

(2) スラムからの腐敗槽汚泥量の推定

CWASA は第 1 処理区事業（PESSCM-1）においてセプテージの収集施設の調達と、汚泥処理施設の整備を計画しているが、これは下水道整備には費用と時間がかかることを考慮し、CCC がセプテージの収集・処理を含む腐敗槽汚泥管理（FSM）のサービスを CWASA に移管するためである。2022 年現在、CCC の総人口の 320 万人のうち 150 万人がスラム地区に居住しており、スラムには下水道整備当初には管路が整備されない。2022 年 8 月に CCC から入手したスラム人口に基づき、各集水域のスラム地域からの腐敗槽汚泥量を以下のように推定した。

1) 2019年スラム人口: 1,465,028
2) 単位汚泥量: 0.07m3/人/年
3) 処理区単位の汚泥量

	2019年の汚泥量		汚泥処理施設（FST）
第1処理区	96.3 m³/日	(第1,5,6処理区) 140.8 m³/日	第1処理区のFST: 300 m³/日
第5処理区	26.4 m³/日		
第6処理区	18.1 m³/日		
第2処理区	59.6 m³/日	(第2,4処理区) 95.0 m³/日	第2・4処理区のFST: 200 m³/日 or 下水汚泥との共同処理
第4処理区	35.4 m³/日		
第3処理区	45.2 m³/日	(第3処理区) 45.2 m³/日	要検討
合計	(計) 281.0 m³/日		

出典 Sanitation マスタープランの情報と CCC のデータを基に JICA 専門家チームが作成。

図 3.5 セプテージの量

3.4.4 下水汚泥埋立地の確認

第 1・第 5・第 6 処理区の下水処理場の下水汚泥は、下水処理場敷地内に一時保管場所がある。CWASA は、これらの下水処理場（STP-1,5,6）の供用開始後 15 年間、このエリアを利用する予定である。一方、マスタープランにおいては CCC の既存のごみ最終処分場を下水汚泥の処分先として提案されているものの、CWASA は未だ最終確定していない。第 2・第 4 処理区の協力準備調査において、調査団は以下の理由により、CCC にとって新たな埋立地の開発が急務であることを確認した。

- 既存の埋立地、ハリシャハルの 6.0 エーカーとアレフィン・ナガルの 19.6 エーカーはほぼ満杯の状況であった。

- アレフィン・ナガルの埋立地の面積は、マスタープランでは 29.5ha（72 エーカー）と報告されているが、埋立地として CCC に引き渡されたのは 19.6ha のみで、それ以上の用地の取得は困難である。
- アレフィン・ナガルの埋立地が悪臭を放つため、CCC はその利用を中止するよう要請されている。

更に、CCC は 1 区（CCC 地域北部）に隣接するナンディラート地区に新たな最終処分場の開発を計画していることが確認し、JICA 専門家チームと JICA 調査団が 2022 年 8 月に行った現地視察を行い詳細な状況を確認した。その後第 2・第 4 処理区の協力準備調査実施中に、予定地は CCC の北にあるサンドウィップに変更された。

3.5 活動 2-1：継続中の下水道事業の設計と建設に関する CWASA の管理における課題特定の支援

3.5.1 現地調査とインタビュー

JICA 専門家チームは上水道接続工事の現場を訪れ、工事実施の手順や設計内容を視察した。JICA 専門家チームはまた、KWSP-2 のコンサルタント事務所（NJS Co.）と PESSCM-1 の施工業者事務所（Taeyoung E&C）を訪問し、チョットグラムの下水道事業における施設設計と建設における重要ポイントに関する情報を収集した。

3.5.2 設計と建設における課題の認識

上記のような現地調査とインタビューの結果、以下のような課題があることを確認した。

1) 下水道幹線建設工事における課題

下水道幹線ルート上には様々な地下埋設施設がある。これらの施設は下水道幹線の平面・縦断線形の計画に影響を与える。管路の平面図と縦断図を作成する前に、地下埋設施設の位置を確認する必要がある。

2) 各戸接続における課題

各戸の排水設備のレイアウトは建物ごとに異なるため、建物ごとに詳細な配管図を作成する必要がある。各戸接続の機能水準を一定レベル以上とすることを担保するため、統一的な設計基準に従って配管計画を作成すべきである。

3.6 活動 2-2：下水道事業の設計・建設に係る CWASA の能力開発を支援し、上記の課題に対する解決策の創出

上記の課題に対処するため、以下の解決策が提案された：

1) CCC エリアの地下埋設施設位置図を整備する

最初のステップとして、KWSP-1 と KWSP-2 の竣工図面を CAD/GIS データセットとしてまとめ、CWASA スタッフと共有する。

CAD/GIS データセットの作成にあたっては、以下の事項を確認すること：

- 座標系： BTM_Everest または UTM WGS84 のいずれかに統一
- 水準点の設定年次

2) 各戸接続工事の設計基準の作成

PESSCM-1 の現行契約書には、各戸接続の設計基準は規定されていない。従って、CWASA はそれを準備する必要がある。

3.7 活動 2-3：各戸接続マニュアルの作成支援

各戸接続マニュアルは、i) 東京都下水道局が作成した排水設備ガイドライン、ii) PESSCM-1 の各戸接続の技術仕様および設計に基づき作成された。また、PESSCM-1 のコントラクターからのコメントに従い、バングラデシュ建築基準（BNBC2020）の情報もマニュアルに追加した。

CWASA による数回にわたるレビューの後、2023 年 7 月 15 日のミーティングでマニュアルが説明され、2023 年 8 月 28 日に行われた最終ワークショップでは、PIU メンバーのモハンマド・アブ・バッカール・シディク氏が CWASA メンバーにマニュアルの内容を説明した。最終的なマニュアルは付属資料-6 に添付している。

第 4 章　　創意工夫と提言

4.1　活動を通しての課題、工夫、教訓

4.1.1 工事の進捗を加速させ、CWASA のオーナーシップを高めるための行動

CWASA は複数の上下水道開発プロジェクトを並行して実施しており、CWASA の職員数も限られているため、CWASA の PIU メンバーでさえ、KWSP-2 や JICA 準備調査など複数の業務を抱えており、このアドバイザー業務に集中することが難しい状況であった。そこで、JICA 専門家チームは 3 人の従事期間を分けることにし、JICA 専門家チームのメンバーのいずれかが極力長く CWASA に滞在して、活動を加速させることにした。また、JICA 専門家チームと CWASA は、活動 1-2（組織設立）の作業を加速させるために、数度にわたりオンライン会議を行った。さらに JICA 専門家チームは、OJT（実地訓練）のために PIU メンバーにできるだけ協力するよう要請し、少なくとも書類作成後に何度も協議の機会を持った。これらの活動の結果、及び並行して行われた JICA 準備調査により、下水道整備に対する CWASA の意識は十分に強化されたと考える。

4.1.2 CWASA の決定の遅れと頻繁な変更への対処

2023-2030 年組織図や CWASA 上下水道接続規則の最終決定過程で見られたように、CWASA の決定は遅延や頻繁な変更があり、いったん合意され議事録に記録された結論であっても取り消されることがあった。これに対処するため、JICA 専門家チームは、大きな会議での議論や、CWASA の経営陣に検討や承認を求める前に、個人レベル、XEN など職種のグループレベル、技術局や ICT 部などの部門レベルなど、あらゆるレベルで合意形成を図るべく必要な事前調整を行うよう努めた。この実践を通じて学んだ教訓は、いかなる合意、決定、承認も、人員の適切なグルーピングのもと、関係者全員との徹底的な協議に基づいて、最短期間で得るべきであるということである。このことは、新任の出向幹部からの干渉を避けるためにも有効である（省庁からの新任出向幹部は時に、すべての議論を一からやり直す傾向がある）。

4.1.3 活動 2-1＆2-2 の OJT を KWSP-1＆2 を対象とて実施

CWASA が実施している KWSP-1&2 は、チョットグラム市内の道路に水道管路を布設し、また各戸接続工事を行うものである。JICA 専門家チームのカウンターパートは KWSP-1＆2 の PIU に所属しているため、「KWSP-1＆2 からの教訓」を収集し、議論することができた。これらの活動は、下水道管路と各戸接続の設計・施工監理に関する CWASA 職員の能力開発に貢献した。

4.2　持続可能な下水道事業を実現するための提言

4.2.1 組織体制の整備

2023-2030 年組織図の実施にあたっては、必要な人材の新規採用を加速させることに加え、特に下水道施設の建設と下水道サービスの管理について、職員に体系的かつ広範な研修を実施すべきである。2021 年 11 月に開催された隔週会議で、JICA 専門家チームは以下のように提言した、

- 国際的な研修プログラムやワークショップに主に参加した 1 級職員をトレーナーとして、2 級以下の職員を対象とした社内研修を実施すること。
- バングラデシュ技術者協会（IEB）が提供する下水道施設や下水処理の基礎に関する研修コースを活用すること。
- DWASA や他の WASA との人事交流・出向プログラムを開発・実施すること。

また、下水道プロジェクトの PIU に配属された CWASA の職員からは、広範な研修の機会の提供と、下水道施設の建設・管理や下水道サービスに携わる職員に向けた包括的な研修モジュールの開発を求める声があがっている。

従って、上記のトレーニング・プログラムの開発と実施、とりわけ STP-1 の運転開始に先立つ 2023 年から 2026 年にかけて、トレーニング・オブ・トレーナーズ（ToT）を実施することが推奨される。そして、JICA の技術協力プロジェクトによりこれを支援することが推奨される。

4.2.2 財務スキーム

CWASA の幹部職員は、独立採算運営の原則や財政危機が来る可能性に対する意識レベルが全体に低く、CWASA が重い財政負担に直面した場合でも、それを軽減する方策を国（LGRD）が与えてくれることを確実視しているように見える。バングラデシュでは下水道事業に係る費用負担原則が確立されていないことも一因となっている。

下水道事業が提供する便益の公共性を考慮すれば、下水道事業者が資本的・収益的支出のすべてを下水道料金で回収することが必ずしも求められないことは、世界的に広く認識されている。我が国では、昭和 38 年度から昭和 60 年度までの 22 年間を計画期間とする第 1 次から第 5 次の各次の下水道整備五箇年計画がスタートする前に、各省庁、地方公共団体、利用者間の費用配分の原則や下水道事業の費用負担原則について、省庁横断的な委員会（下水道財政研究委員会）において広範かつ集中的な議論が行われ、国の補助金や低利の地方債の制度等が確立された。

したがって、LGRD は下水道の建設と O&M の関係者間で費用配分と回収の原則を確立するための議論を始めるべきであり、一方で、CWASA は料金の回収率を高め、検針・料金徴収員の人件費を削減する PPWM やスマート請求システムの導入を試験的に実施することが推奨される。

4.2.3 下水道整備の技術的課題

(1) 計画

各処理区における第 1 段階プロジェクトの完了後、CWASA は、第 2 段階の下水道整備を実施し、各戸接続を拡大するために、工事の進捗状況や設計条件の変更を考慮し、マスタープランを更新する必要がある。

さらに CWASA は、下水汚泥の再利用、リサイクル、処分を含む下水汚泥管理計画を策定することが求められる。下水道整備の最初の段階では、CWASA は下水汚泥を CCC の最終処分場に処分する予定である。CCC は新たな最終処分場を建設するが、その容量は有限である。CWASA の下水汚泥処理と CCC の固形廃棄物管理の両方の重要性を考慮し、チョットグラム市では混焼施設（廃棄物発電焼却炉）の建設を推奨する。この解決策を実現するためには、両者（CCC と CWASA）の協力と財源が必要である。

(2) 設計

前述したように、CWASA は各下水処理区の下水道整備に設計施工（DB）調達方式を適用する予定である。DB は、コントラクター側が責任を担い、コントラクターへの支払いのための CWASA 内部の事務手続きの負担を最小限にするために有効である。その一方、DB 契約では、CWASA に十分なノウハウや知識がなければ、設計や建設サービスの品質を維持することはむしろ難しい。このため、CWASA は設計と建設工事の品質を保証するために、設計と建設工事のマニュアルを作成することが望ましい。

なお、本業務で作成した接続マニュアルについては、各戸接続工事の課題が確認された場合、ある程度工事が完了した段階で内容を修正することを推奨する。

(3) 施工監理・運営

建設工事の品質を保証するために、CWASA の施工監理は非常に重要である。現在、CWASA では 2023-2030 年組織図が作成されているが、その人材が不足している。

下水道システムの適切な施工監理と運営のためには、CWASA 職員の新規雇用と育成プログラムが必要である。JICA、世界銀行、フランス開発庁（AFD）、韓国輸出入銀行等のドナーが協力する研修プログラムが必要である。

付属資料

付属資料-1：活動 1-1 の成果

マスタープランと進行中の下水道事業のレビュー

Findings through the Review of MP and PESSCM-1

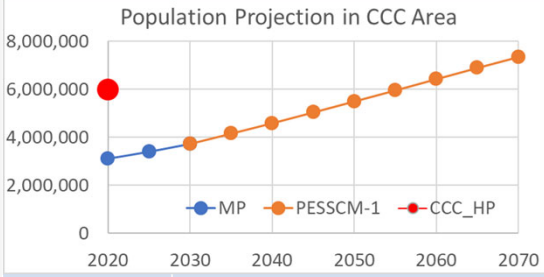
(1) Findings through M/P Review

Item	MP/Current	JET Findings
1) Target year of sewerage development	Much advanced from the MP ● MP: -2030 (Phase 3: short term), -2065 (long horizon) ● Current target: 2026 (PDPP), 2030 (SDGs)	● Sewerage development is critical issue in Chattogram city, so the CWASA's positive action is reasonable. ● Since many sewerage developments will be implemented in parallel:, i) establishment of organization and regulations for sewerage management, ii) capacity development of CWASA, and iii) financial capability of CWASA are critical issue. ● If the target year is far future, the projection is unforeseeable, so 30 years is recommendable to avoid excess investment. <to be discussed>

2

(1) Findings through M/P Review

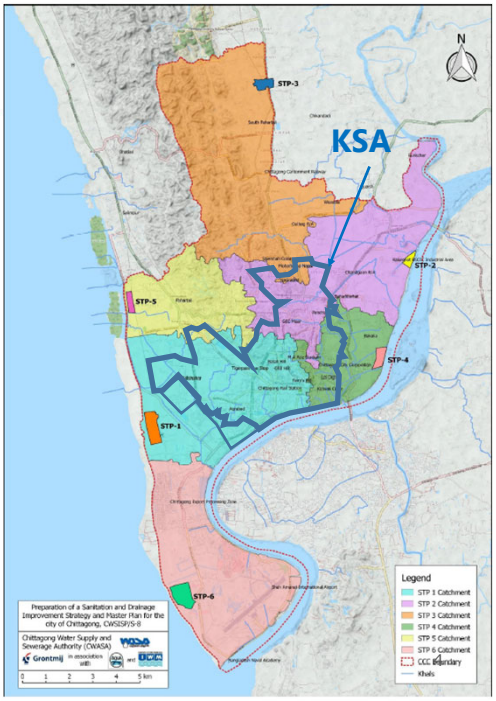
Item	MP/Current	JET Findings
2) Population in CCC area	● MP: - Based on BBS (Census) targeting for 2030 ● PESSCM-1: - Based on projection targeting for 2070	● Population in BBS and population in CCC information are much different: ✓ Population will be increased according to urbanization, however the increase rate in the maturated area will be much lower and city area will be expanded to peri-urban area. ✓ Due to the migration from rural area, the population of Chattogram will be increased. ✓ Due to aging, growth rate is normally decreased. ● Since no reliable population data for verification is available at this moment, the population projection at **next CENSUS** is needed. ● Population projection shall be consistent with **City development M/P.** CDA will start preparation soon. • According to the BBS, next CENSUS will be published on Dec.22, 2021.



3

(1) Findings through M/P Review

Item	MP/Current	JET Findings
3) Priority of sewerage develop ment	● MP: -2023 (Catchment-1), -2030 (Catchment-2)	● KSA is the most priority area since this area is with high population and enough sewage generation. (Catchment-1, 2, 4) ● Distribution network will be developed entire CCC area in the CWSISP-II, so surrounding catchments are next priority. (Catchment- 3,5,6)



(1) Findings through M/P Review

Item	MP/Current	JET Findings
4) Wastewater Generation	● Domestic+non-D: 103lpcd ● Large non-D: +α (industrial)	● Domestic + Small non-domestic (commercial): seemed to be reasonable. ● Industrial WW (Large non- domestic): ✓ It shall be collected only when the ETP of each industry is fully functioned. ✓ Wastewater from industrial zone shall be considered. ● Inflow and Infiltration shall be minimized. ● If the separated sewer system is applied: ✓ Sewage volume is limited especially in initial stage. ✓ At the initial stage, sewage is diluted due to I/I and limited sewage. It cause the difficulties of sewage treatment. ✓ HH connection shall be increased to increase sewage flow.

Table 7-7: Domestic and Small Non-Domestic Wastewater Production

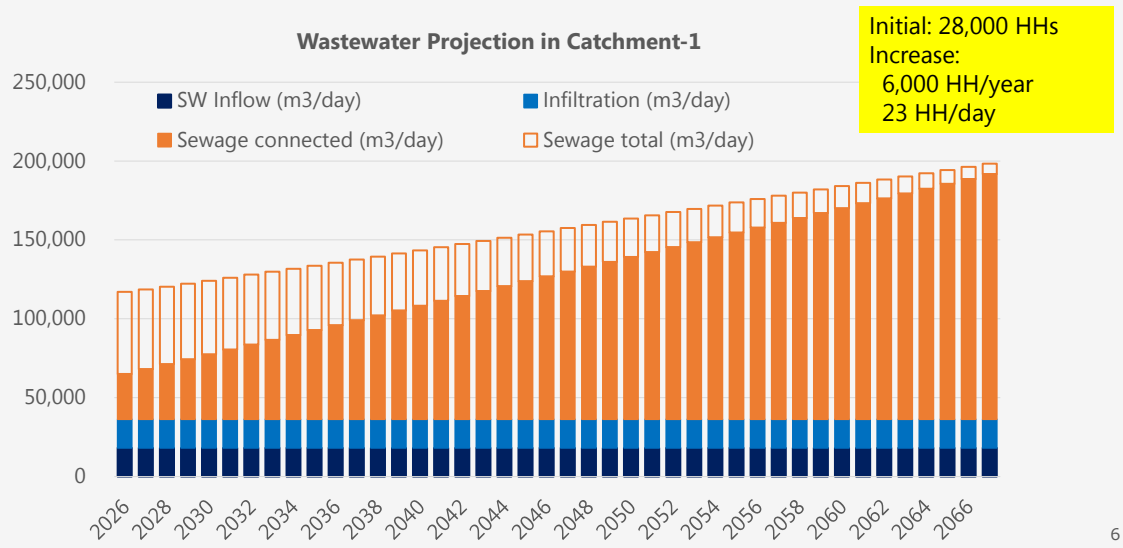
Per capita domestic water consumption (lcd)	Wastewater return rate (%)	Per capita Domestic wastewater generation (lcd)	Small Non-domestic Wastewater generation (lcd)	Total wastewater generation (lcd)
115	80%	92	11	103

Table 7-8: Wastewater flows to be discharged to Sewerage System in 2030 (assuming full implementat

STP	Population (capita)	Average Wastewater Generation: Domestic (m³/day)	Small Non-domestic (m3/d)	Large Non-domestic (m3/d)	Total (m³/d)	Infiltration (m³/d)	Total Average flow (m³/d)	Stormwater Inflows (m³/d)
STP 1	749531	68957	8275	5052	82283	18132	100416	18132
STP 2	316868	29152	3498	7858	40508	12130	52638	12130
STP 3	234990	21619	2594	3929	28143	5585	33728	5585
STP 4	405483	37304	4477	2245	44026	6292	50318	6292
STP 5	174274	16033	1924	6736	24693	5448	30141	5448
STP 6	199798	18381	2206	37870	58457	5781	64238	5781
Total	2080945	191447	22974	63690	278111	53368	331479	53368
% of Total Average Flow		57.8%	6.9%	19.2%	83.9%	16.1%	100.0%	
% of Total Peak Flow						10.4%	64.4%	10.4%

5

(1) Findings through M/P Review



Initial: 28,000 HHs
Increase:
6,000 HH/year
23 HH/day

6

(1) Findings through M/P Review

Item	MP/Current	JET Findings
5) Sewage collection system	● MP - Separated sewer system - Interceptor system ● Current - Separated sewer system	● Separated sewer system is ideal collection system theoretically, but it is a big challenge to construction of house connection. ● Interceptor system was not applied in Catchment-1 considering: ✓ Toxic industrial wastewater is flow in the khal, ✓ Sea water/river water backflow is expected, and ✓ Drainage system is under CCC's management. ● To increase the initial wastewater, interceptor system is conditionally reasonable where: no industrial WW and no backwater such as upstream of khal.
6) Capacity of Wastewater Treatment	● PDPP STP-1:100MLD STP-2: 90MLD STP-3: 60MLD STP-4: 80MLD STP-5: 60MLD STP-6:100MLD	● Currently, the capacity of STPs were estimated based on the MP. ● Setting the target year and population projection, the capacity of STPs will be determined.

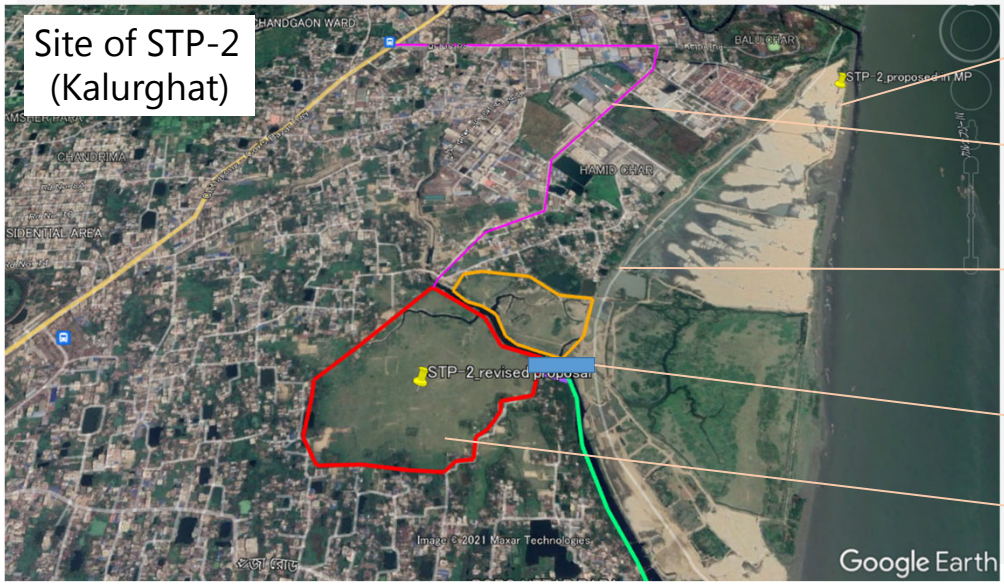
7

(1) Findings through M/P Review

Item	MP/Current	JET Findings
7) Site of STPs	● MP - 6 STPs are planned to be developed independently ● Current - STP-1, 5, 6 will be combined. - STP-3 site is owned by CWASA. - STP-2 site has been developed for university (no land). - STP-4 site is partially used as construction site of ring road.	● Site of STP-2 - Alternative land for STP-2 with area of 30ha is confirmed to be available near previous site. ● Site of STP-4 - Currently, the site is used for construction site of ring road, reserved area for residential development. - CDA has plan to utilize the land, if CWASA requests to utilize the land, high-level discussion is required. - The alternative site CDA recommended is used as fish pond and dry fish industry. Considering the LARAP, this site is seemed to be unreasonable. ➔Tentatively, the integration of STP-2 and 4 will be a solution. Required area of STPs shall be investigated at first.

8

(1) Findings through M/P Review



Initial site of STP-2 (developed for University)

Access road

Ring Road
*Its construction will be completed by June 2023. We can utilize ring road for construction.

Access road for construction (tentative)

Alternative site of STP-2 (30ha)

9

(1) Findings through M/P Review

Bakaria residential development

Original site of STP-4 (12ha)
- Private land and reserved area for residential use
- CDA has plan to utilize this area.

Original site of STP-4 (8-9ha)
- Private land and used for construction site for ring road.
- CDA has plan to utilize this area.

Alternative site of STP-4 proposed by CDA (25ha)
* Fish pond and dry fish industry

10

(1) Findings through M/P Review

Item	MP/Current	JET Findings
8) Effluent quality standard	● MP, Current - BOD: 40 mg/L - Nitrate: 250 mg/L - Phosphate: 35 mg/L - SS: 100 mg/L - Temperature: 30 ℃ - Coliform: 1000 MPN/100mL	● The effluent quality standard stipulates the maximum allowable effluent quality. ● Each value is not so strict, and nitrate and phosphate treatment is not always required.

11

(1) Findings through M/P Review

Item	MP/Current	JET Findings
9) Treatment Process	● MP - Trickling filter process was proposed ● PESSCM-1: - A2O was applied for STP-1.	● Trickling filter process is advantages in low operation cost, but this system is normally applied for small-middle STPs. ● A2O process is reasonable for nitrate and phosphorous treatment. ● The JET tentatively observed that - the STP-1 will be operated as "OD process (without N nor P treatment)" at the initial stage (when inflow is diluted: with low pollution load), then - it will be converted to A2O process (with N and P treatment) after inflow volume is increased (at that time, inflow quality is expected to be enough polluted) to satisfy the effluent quality standard. Because: - N treatment requires nutrient (BOD), however it is seemed to be difficult to provide enough nutrient due to diluted sewage inflow at the beginning. - A2O requires skill and know-how compared with OD.

12

(1) Findings through M/P Review

Item	MP/Current	JET Findings
9) Sanitation and Fecal Sludge Management	● MP/ Current - Septage collection is CCC's jurisdiction - CWASA will construct fecal sludge treatment facility in PESSCM-1.	● The allocation sewage treatment system will be studied in CWSISP-II coming WB project. The basic policy is as follows: - CCC area: centralized sewerage system - Outskirts: septic tank and DEWATS ● CWASA will construct additional fecal sludge treatment facility at north part of CCC area (tentatively proposed at Arefin Nagar.
10) Project Cost	● MP - MP proposes project cost for sewerage development	● The project cost shall be updated based on the change of capacity and treatment process of STPs. ● Financial capability of CWASA shall be studied to ensure sustainable management of sewerage system.

13

(1) Findings through M/P Review

Item	MP/Current	JET Findings
11) Organization	● MP/ Current - Organogram for sewerage development/management are proposed	● Property connections by the contractor should be carefully inspected by PIU to avoid misconnections; Plumbers of MODs should be involved in this process for OJT in operation phase ● CWASA shall strengthen the organization of sewerage development especially for the huge amount of house connection works.

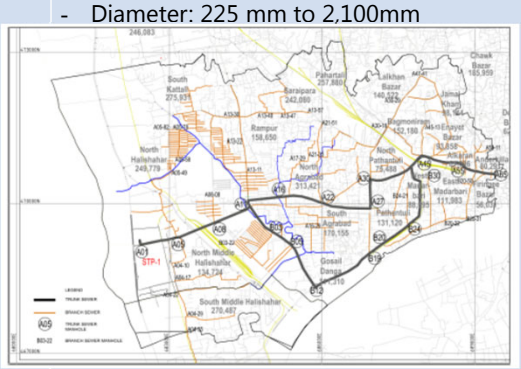
14

(2) Findings through PESSCM-1 Review (Final Design Report)

Item	Main Points	JET Findings
1) General	● Target Year: 2070 ● Separate collection type is applied for sewage collection.	- It is recommended that "Environmental Clearance Certificate" be obtained by CWASA. On the contrary, EIA is included in the scope of Package W1.
2) Sewerage Network Design	● Terrain Modelling - Google Earth® and Open Street Map® - Auto CAD Civil 3D ● Preliminary Design - DWF : 120 l/c/d, 90% sewage generation, 10% for stormwater inflow and groundwater infiltration - Peak factor = 5/(p/1000)^0.167, where P = population Velocity: 0.8 - 4.0 m/s	- The design manual that summarizes the design methodology should be prepared for utilization of CWASA for future expansion of the sewer network after completion of the construction packages. - "Overflow Pipe to Khal" is designed in the Trunk Main. It means the Trunk main will be full filled and internal pressure will act in the pipe. => JET would like to see the flow/hydraulic calculation of the conceptual design.

15

(2) Findings through PESSCM-1 Review (Final Design Report)

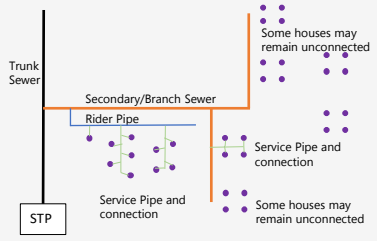
Item	Main Points	JET Findings
2) Sewerage Network Design	● Main Feature of Sewer Network - 113 km (trunk + branch + rider sewer) - Diameter: 225 mm to 2,100mm  ● The Concept of Sewage Collection is shown in the next page.	● Main Feature of Sewer Network - The sewer with diameter of 1500 mm to 2100mm is to be constructed by trenchless method. The longest tunneling span is more than 700m. - Several manholes will be constructed in the congested road. => Well experienced contractor needs to be appointed. ● As shown in the next page, CWASA is required to expand the sewerage network as well as property connection after completion of the construction package. =>Capacity development of CWASA is essential.

16

(2) Findings through PESSCM-1 Review (Final Design Report)

Concept of Sewage Collection ***"Interim Property Connection" is not included in the scope of construction packages.***

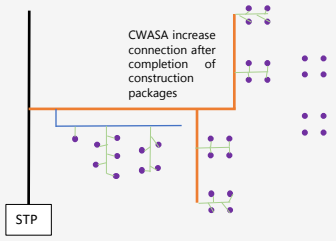
2025 (after construction)



Population served by sewer (2025): 150,000
(Connection: W1: 11,000 nos., W2: 11,000 nos., W3: 6,000 nos., totaling 28,000 connections ≒ 150,000 people)

Total wastewater flow: 18,000 m3/day
(150,000 x 120 l/c/d = 18,000m3/day)

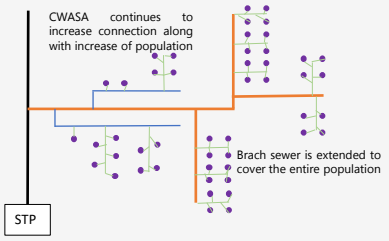
2030



Population served by sewer (2030): 800,000
(Connection work is to be continued after the construction package)

Total wastewater flow: 96,000 m3/day

2070



Population served by sewer (2070): 2,600,000
(Extension and connection work is to be continued)
Total wastewater flow: 312,000 m3/day
Trunk Sewer and Secondary Sewer is designed for 2070 flow.
(End of Trunk Sewer: D2100, I=1/2000)

17

(2) Findings through PESSCM-1 Review (Final Design Report)

Item	Main Points	JET Findings
3) Wastewater Treatment	● Design Inflow - The planned wastewater inflow is as shown below.	- The served population needs to be increased by 150,000 per year (28,000 connections/year≒100connections/day) after completion of the construction package. - The commissioning test needs to be carefully planned, since the expected inflow is 18 % of design capacity at the time of completion of the construction. - Training on how to deal with influent water quality fluctuations is needed.

WASTEWATER SOURCES	PESSCM-1 IMPLEMENTATION					
	2025	2026	2027	2028	2029	2030
Avg Wastewater Flow (L/cap-d)	120	120	120	120	120	120
CATCHMENT 1						
Total Population	1,331,406	1,357,105	1,383,346	1,410,142	1,437,506	1,465,451
Population Served by Sewers (%)	11.3%	22.1%	32.5%	42.5%	52.2%	54.6%
Population Served by Sewers (no.)	150,000	300,000	450,000	600,000	750,000	**800,000**
Population Served by FSM Only (no.)	1,181,406	1,057,105	933,346	810,142	687,506	**665,451**
Total Wastewater Flow (m3/day)	**18,000**	**36,000**	**54,000**	**72,000**	**90,000**	**96,000**

- Year 2025 (At the completion of the construction package): Approximately 18,000 m3/day (18 MLD)
- Design Annual Average Flow of STP: 100 MLD

● Requirements for Treated Effluent Quality
- BOD5: 20 mg/L, TSS: 30 mg/L

18

(2) Findings through PESSCM-1 Review (Final Design Report)

Item	Main Points	JET Findings
3) Wastewater Treatment	● Selection of Treatment Process - MLE Activated sludge with anaerobic selector was selected for secondary biological treatment	- According to FS report, the cost of STP is estimated at BDT 123,685 Lakh, which seems to be higher than the market price in South Asia. - The Conventional Activated Sludge process may also be applied.
	● It was decided that STPs for wastewater from Catchment 5&6 are to be constructed at STP-1 site. The ultimate design capacity including Catchment 5&6 would be 550 MLD.	- The earthworks, civil works needs to be designed for the future expansion.

19

(3) Findings through PESSCM-1 Review (Tender Document)

Item	Main Points	JET Findings
1) Composition of Tender Documents	Section 1. Instructions to Tenderers Section 2. Tender Data Sheet Section 3. General Conditions of Contract Section 4. Particular Conditions of Contract Section 5. Tender and Contract Forms Section 6. Employer's Requirements Scope of Supply (SS) Particular Specification (PS) Technical Specification - Civil Technical Specification - M&E Supplementary Information ? Section 7. Drawings	● The Tender documents is for the Design-Build Contract. ● The data for the detailed design should be attached to Section 6. Employer's Requirement as "Supplementary Information" ● Following data would be necessary for design of sewerage network: - Geotechnical survey data - Conceptual design data of sewer network as a reference: ✓ Flow/hydraulic computations ✓ Bill of quantity (length of sewer by diameter and depth)

20

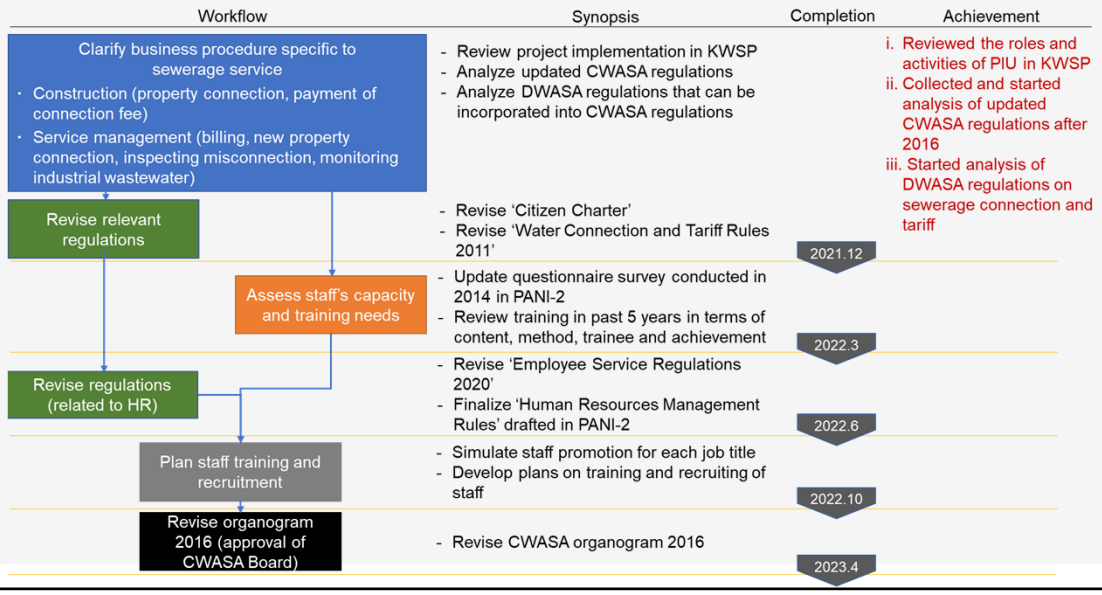
(3) Findings through PESSCM-1 Review (Tender Document)

Item	Main Points	JET Findings
2) Design of Trunk Main	● In SS.2.2 of "Scope of Supply" of the Tender Documents, the invert levels of connection manholes between W1 and W2 and W3 package are stipulated:	● This means the flow rate of Trunk Main should be given as the design condition.
3) Estimate of Risk	● The bidder is required to prepare the bidding design and submit their own BOQ based on his bidding design. ● The contract is lump-sum basis based on the agreed priced BOQ.	● The bidder needs to estimate the risk, which often leads to higher bid prices.

Manhole Ref. No.	Northing (m)	Easting (m)	Invert Level (m) MSL	Ground Level (m) MSL	Depth (m)
A10	469907	684545	-9.177	5.102	14.279
A15	470127	685156	-5.788	4.544	10.332
B01	469718	684738	-8.955	5.192	14.147

21

(4) Achievement on Institutional Issues (Activity 1-2)



22

Advisor on Urban Sanitation Improvement

Final Workshop

28th August 2023

Japan International Cooperation Agency (JICA)
Nippon Koei Co., Ltd (NK)

Agenda of Meeting

1. **Overview of Advisory Work**
2. Result of Activities

(1) CWASA Organogram 2023-2030

(2) CWASA Water and Sewerage Connection Regulations

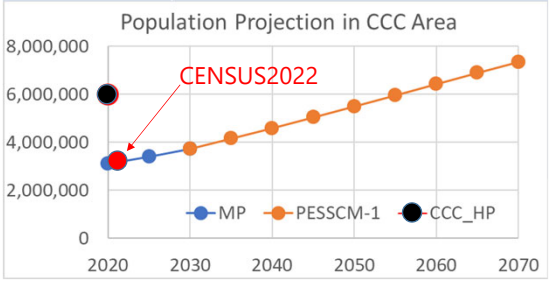
(3) CWASA Property Connection Manual

(4) CWASA Employees Service Regulations

2

Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Item	MP/Current	JET Findings
Population in CCC area	● MP: - Based on BBS (Census) targeting for 2030 ● PESSCM-1: - Based on projection targeting for 2070	● Population in BBS and population in CCC information are much different: ✓ Population will be increased according to urbanization, however the increase rate in the maturated area will be much lower and city area will be expanded to peri-urban area. ✓ Due to the migration from rural area, the population of Chattogram will be increased. ✓ Due to aging, growth rate is normally decreased. ● According to CENSUS 2022, population in CCC area is 3.2million, so population projection in the MP was accurate.

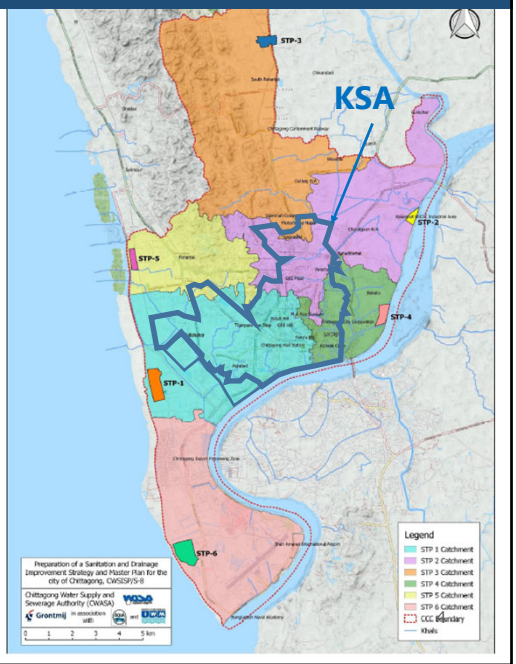


3

Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Item	MP/Current	JET Findings
Priority of sewerage develop ment	● MP: -2023 (Catchment-1), -2030 (Catchment-2)	● KSA is the most priority area since this area is with high population and enough sewage generation. (Catchment-1, 2, 4) ● Distribution network will be developed entire CCC area in the CWSISP-II, so surrounding catchments are next priority. (Catchment- 3,5,6)

Sewerage Development in Catchment-2 & 4 is urgently needed



Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Item	MP/Current	JET Findings
Project Cost	● MP - MP proposes project cost for sewerage development	● The project cost shall be updated based on the change of capacity and treatment process of STPs, etc. as below:

	MP	Current
Target year	2030	2070
Area	Nearby road	Entire city
Collection system	Interceptor + Separated sewer	Separated sewer
No. of connections	Smaller	Huge
Treatment process	Trickling filter system	OD without N,P treatment CAS with N,P treatment
No. of PS	Larger	Smaller (Sewer line will become deeper)

● Financial capability of CWASA shall be studied to ensure sustainable management of sewerage system.

5

Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Updated Project Cost (based on FS)

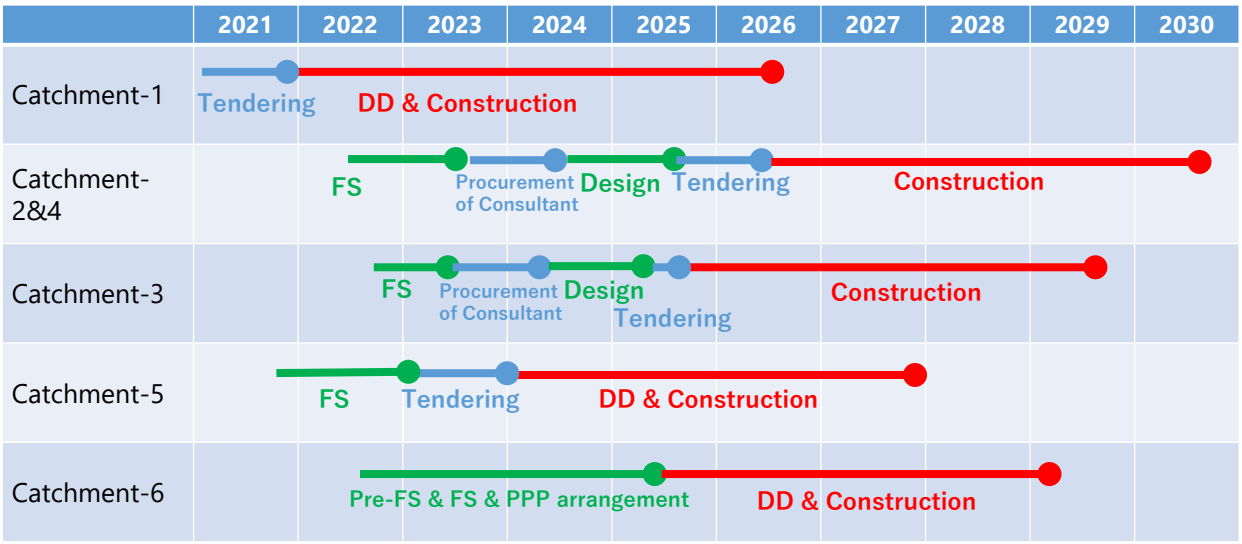
Project	Donor	Construction			Cost in million USD in Phase I		
		STP Capacity		STP Process	Construction	Other	Total
		Phase I	Final				
Catchment-1	BD fund	100MLD	300MLD	CAS	404.0	78.8	482.8
Catchment-5	AFD	50MLD	100MLD	CAS	146.9	79.5	226.4
Catchment-6	PPP	50MLD	100MLD	CAS	214.3	15.3	229.6
Subtotal (West)		**200MLD**	**500MLD**		**765.2**	**173.6**	**938.8**
Catchment-2&4	JICA ODA	60MLD	300MLD	A2O	373.6	404.9	778.5
Catchment-3	EDCF	60MLD	120MLD	A2O	176.3	99.3	275.6
Subtotal (East)		**120MLD**	**420MLD**		**549.9**	**504.2**	**1054.1**
Total in CCC		**320MLD**	**920MLD**		**1,315.1**	**677.8**	**1,992.9**

* Investment cost proposed in the Sanitation M/P: USD 271.8M (-2030) and USD 1,032M (-2065)

6

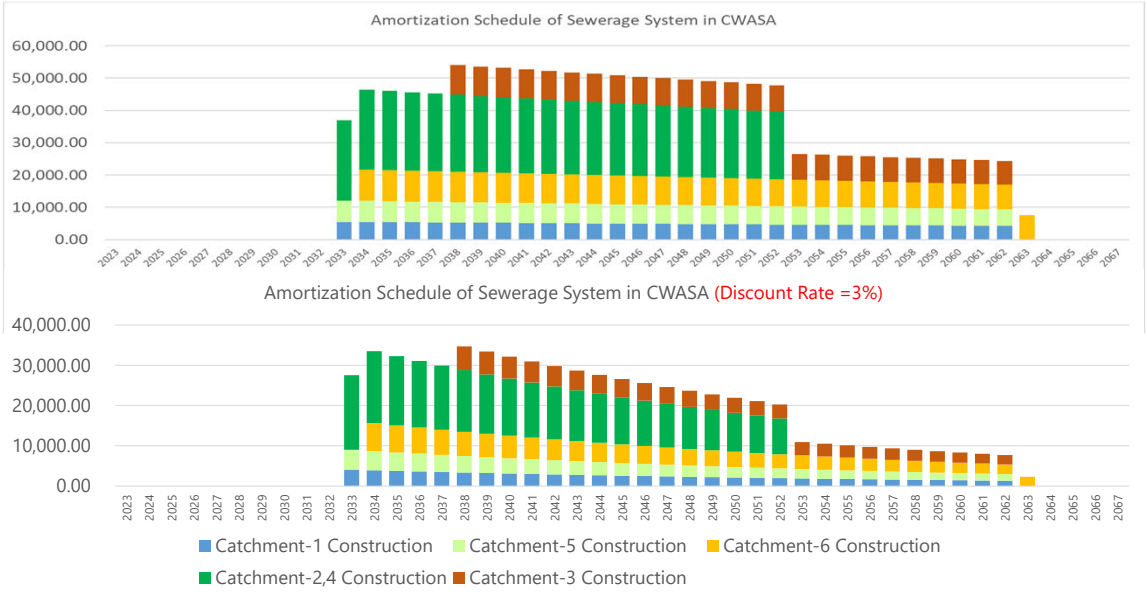
Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Updated Implementation plan (based on FS)



Activity 1-1: Review of Sanitation Master Plan and On-going Sewerage Project

Amortization Schedule for Sewerage Development (tentative)



付属資料 2：活動 1-2 の成果

組織体制の課題整理支援

付属資料-2.1：2023-2030 年組織図

CWASA Organogram from 2023 to 2030

05/09/2023

Office of Managing Director 6
1 Managing Director
1 Executive Engineer
1 Assistant Engineer
1 Stenographer cum C.O.
2 Office Assistant

Office of DMD (Engineering) 3
1 Dep. Managing Director
1 Stenographer cum C.O.
1 Office Assistant

Office of Chief Engineer 4
1 Chief Engineer
1 Assistant Engineer
1 Stenographer cum C.O.
1 Office Assistant

Office of DMD (Finance) 3
1 Dep. Managing Director
1 Stenographer cum C.O.
1 Office Assistant

Office of Commercial Manager 3
1 Commercial Manager
1 Stenographer cum C.O.
1 Office Assistant

Office of DMD (Admin.) 3
1 Dep. Managing Director
1 Stenographer cum C.O.
1 Office Assistant

Office of General Manager 4
1 General Manager
1 Asst. Programmer
1 Stenographer cum C.O.
1 Office Assistant

Office of Magistrate 4
1 Magistrate
1 Bench Assistant
1 O.A. cum C.T.
1 Office Assistant

Audit 7
1 Senior Audit Officer
1 Audit Officer
1 Audit Superintendent
1 Auditor
2 J.A. cum C.T.
1 Office Assistant

Office of Additional CE (PDM) 3
1 Additional Chief Engineer
1 Stenographer cum C.O.
1 Office Assistant

Office of Additional CE (WS) 3
1 Additonal Chief Engineer
1 Stenographer cum C.O.
1 Office Assistant

Office of Additional CE (Sewerage) 3
1 Additional Chief Engineer
1 Stenographer cum C.O.
1 Office Assistant

P&C Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

RDM Circle 3
1 Deputy Chief (Development)
1 Upper Division Assistant
1 Office Assistant

MOD -A Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

MOD -B Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

T&P -A Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

T&P -B Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

Sewerage Treatment -A Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

Sewerage Treatment -B Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

Revenue Billing Circle 5
1 Chief Revenue Officer
1 Asst. Programmer
1 Stenographer cum C.O.
1 Upper Division Assistant
1 Office Assistant

ICT Circle 5
1 Senior System Analyst
1 System Analyst
1 Computer Operator
2 Office Assistant

Accounts Circle 3
1 Chief Accounts Officer
1 Stenographer cum C.O.
1 Office Assistant

Administration-1 16
1 Deputy General Manager
1 Assistant General Manager
1 Office Superintendant
1 Head Assistant
3 Computer Operator
2 Upper Division Assistant
4 O.A. cum C.T.
1 Photocopy Machine Operator
2 Office Assistant

Public Relations 6
1 Snr. Public Relations Officer
1 Public Relations Officer
1 Photographer
2 O.A. cum C.T.
1 Office Assistant

Pipeline Network Expansion 15
1 Executive Engineer
2 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
1 Pipe Line Supervisor
1 Work Assistant.
1 O.A. cum C.T.
1 Office Assistant
2 Helper

Project Development 6
1 Senior Assistant Chief (Development)
1 Assistant Chief (Development)
1 Assistant Engineer
1 Research Officer
1 O.A. cum C.T.
1 Office Assistant

Sheikh Russel WTP 68
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
6 Sub Assistant Engineer
2 Electrician
2 O.A. cum C.T.
8 Operator
16 Assistant Operator
1 Senior Lab Assistant
3 Lab Assistant
2 Junior Electrician
2 Office Assistant
8 Security Guard
10 Helper
2 Cleaner

Sheikh Hasina WTP-1 88
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
9 Sub Assistant Engineer
1 Upper Division Assistant
2 O.A. cum C.T.
1 Mechanic
6 Electrician
2 Junior Electrician
1 Senior Lab Assistant
3 Lab Assistant
16 Operator
12 Assistant Operator
1 Asst. Security Inspector
2 Office Assistant
6 Helper
16 Security Guard
4 Cleaner

Mohora WTP 60
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
6 Sub Assistant Engineer
2 Electrician
2 O.A. cum C.T.
7 Operator
11 Assistant Operator
1 Senior Lab Assistant
3 Lab Assistant
2 Junior Electrician
2 Office Assistant
6 Security Guard
10 Helper
2 Cleaner

KIRP and Booster 52
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
5 Sub Assistant Engineer
2 O.A. cum C.T.
12 Operator
6 Assistant Operator
3 Electrician
1 Junior Electrician
1 Mechanic
2 Junior Mechanic
1 Office Assistant
6 Security Guard
5 Helper
4 Cleaner

Catchment-1&5 STP 64
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
1 Microbiologist
3 Sub Assistant Engineer
1 Accountant
2 O.A. cum C.T.
4 Mechanic
2 Junior Mechanic
3 Foreman (Mechanical)
4 Electrician
2 Junior Electrician
1 Snr. Lab Assistant
2 Lab Assistant
3 Operator
6 Assistant Operator
2 Work Assistant
1 Asst. Security Inspector
1 Office Assistant
6 Helper
8 Security Guard
6 Cleaner

Catchment-2&4 STP 63
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
1 Microbiologist
3 Sub Assistant Engineer
1 Accountant
2 O.A. cum C.T.
4 Mechanic
2 Junior Mechanic
3 Foreman (Mechanical)
4 Electrician
2 Junior Electrician
3 Lab Assistant
3 Operator
6 Assistant Operator
2 Work Assistant
1 Office Assistant
6 Helper
8 Security Guard
6 Cleaner

Revenue 17
2 Deputy Chief Revenue Officer
2 Revenue Superintendent
2 Head Assistant
2 Computer Operator
1 Data Entry Supervisor
1 Snr. Data Entry Operator
2 Upper Division Assistant
3 O.A. cum C.T.
2 Office Assistant

System Development 4
1 Programmer
2 Computer Operator
1 Office Assistant

Accounts (Finance) 45
2 Deputy Chief Accounts Officer
3 Accounts Officer
1 Asst.Programmer
5 Accountant
2 Commputer Operator
10 Accounts Assistant
3 Cashier
10 J.A.A. cum C.T
4 Record Keeper
5 Office Assistant

Training Center 6
1 Assistant General Manager
1 Training Assistant
1 Office Superintendant
2 O.A. cum C.T.
1 Office Assistant

Store 37
1 Executive Engineer
2 Assistant Engineer
2 Sub Assistant Engineer
1 Computer Operator
3 Store Keeper
1 O.A. cum C.T.
1 Office Assistant
3 Helper
22 Security Guard
1 Cleaner

Bldgs Mgmt & DTW Construction 13
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
3 Sub Assistant Engineer
1 O.A. cum C.T.
1 Work Assistant
1 Electrician
1 Office Assistant
2 Helper

Research 7
1 Executive Engineer
2 Sub Divisional Engineer
2 Assistant Engineer
1 O.A. cum C.T.
1 Office Assistant

Environment and Monitoring 8
1 Executive Engineer
1 Sub Divisional Engineer
1 Senior Chemist
1 Microbiologist
1 Chemist
1 Assistant Engineer
1 Lab Assistant
1 Office Assistant

Training 3
1 Sub Divisional Engineer
1 Training Assistant
1 Office Assistant

LIC Development & FSM 10
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub-Assistant Engineer
1 O.A. cum C.T.
1 Office Assistant

Meter Repair 8
1 Assistant Engineer
1 Sub Assistant Engineer
1 O.A. cum C.T.
2 Meter Mechanic
1 Office Assistant
1 Helper
1 Cleaner

Sheikh Hasina WTP-2 67
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
6 Sub Assistant Engineer
2 O.A. cum C.T.
1 Mechanic
2 Electrician
1 Junior Electrician
1 Senior Lab Assistant
3 Lab Assistant
9 Operator
9 Assistant Operator
1 Asst. Security Inspector
2 Office Assistant
5 Helper
13 Security Guard
6 Cleaner

Bhandaljury WTP 67
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
6 Sub Assistant Engineer
2 O.A. cum C.T.
1 Mechanic
4 Electrician
4 Lab Assistant
8 Operator
16 Assistant Operator
2 Office Assistant
10 Helper
6 Security Guard
2 Cleaner

Nasirabad Control & Booster 46
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
6 Sub Assistant Engineer
1 Instrumentation Technician
3 Electrician
2 Operator
10 Assistant Operator
2 Office Assistant
5 Helper
11 Security Guard
1 Cleaner

MOC -A Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

MOC -B Circle 3
1 Superintending Engineer
1 Upper Division Assistant
1 Office Assistant

Catchment-3 STP 63
1 Executive Engineer
1 Sub Divisional Engineer
3 Assistant Engineer
1 Chemist
1 Microbiologist
3 Sub Assistant Engineer
1 Accountant
2 O.A. cum C.T.
4 Mechanic
2 Junior Mechanic
3 Foreman (Mechanical)
4 Electrician
2 Junior Electrician
3 Lab Assistant
3 Operator
6 Assistant Operator
2 Work Assistant
1 Office Assistant
6 Helper
8 Security Guard
6 Cleaner

Accounts (Management) 15
1 Deputy Chief Accounts Officer
2 Accounts Officer
2 Accountant
4 Accounts Assistant
3 J.A.A. cum C.T.
3 Office Assistant

Accounts (Pension & GPF) 10
1 Deputy Chief Accounts Officer
1 Accounts Officer
2 Accountant
4 Accounts Assistant
2 Office Assistant

Budget 6
1 Budget Officer
1 Acountant
1 Accounts Assistant
2 O.A. cum C.T.
1 Office Assistant

Revenue (Accounts) 15
1 Deputy Chief Accounts Officer
2 Revenue Officer
2 Accountant
4 Accounts Assistant
4 J.A.A. cum C.T.
2 Office Assistant

Administration-2 17
1 Deputy General Manager
1 Assistant General Manager
1 Office Superintendant
1 Head Assistant
3 Computer Operator
2 Upper Division Assistant
1 Record Keeper
4 O.A. cum C.T.
1 Dispatch Rider
2 Office Assistant

Pension 3
1 Office Superintendent
1 O.A. cum C.T.
1 Office Assistant

Security 36
1 Security Inspector
2 Assistant Security Inspector
33 Security Guard

Estate 21
1 Senior Estate Officer
1 Estate Officer
2 Kanungo
1 O.A. cum C.T.
2 Surveyor
2 Care Taker
1 Chainman
1 Office Assistant
10 Cleaner

Medical 9
1 Senior Medical Officer
1 Medical Officer
2 Nurse
2 Medical Attendant
2 Office Assistant
1 Helper

Transport 116
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
2 Sub Assistant Engineer
3 O.A. cum C.T.
1 Foreman (Transport pool)
1 Mechanic
2 Junior Mechanic
65 Driver
2 Office Assistant
17 Helper

Procurement 8
1 Executive Engineer
1 Sub Divisional Engineer
1 Procurement Officer
1 Sub Assistant Engineer
2 O.A. cum C.T.
2 Office Assistant

Legal 5
1 Law Officer
1 Bench Assistant
2 O.A. cum C.T.
1 Office Assistant

MOC-1 (Agrabad) 33
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
1 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Plumbing Mechanic
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOC-2 (Dampara) 33
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
1 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
1 Work Assistant
2 Plumbing Mechanic
3 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOC-3 (Kalurghat) 33
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
1 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Plumbing Mechanic
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOC-4 (Jubilee Road) 33
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
1 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Plumbing Mechanic
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOC-5 (Patenga) 33
1 Executive Engineer
1 Sub Divisional Engineer
1 Assistant Engineer
1 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Plumbing Mechanic
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOD-1 (Agrabad) 76
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Foreman (Tube well/ Meter)
2 Head Plumbing Mechanic
3 O.A. cum C.T.
2 Work Assistant
10 Operator
1 Plumbing Mechanic
22 Assistant Operator
2 Asst. Plumbing Mechanic
1 Electrician
2 Office Assistant
7 Helper
6 Security Guard
6 Cleaner

MOD-2 (Dampara) 72
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Foreman (Tube well/ Meter)
1 Head Plumbing Mechanic
3 O.A. cum C.T.
2 Work Assistant
15 Operator
1 Plumbing Mechanic
17 Assistant Operator
3 Asst. Plumbing Mechanic
1 Junior Electrician
2 Office Assistant
3 Helper
6 Security Guard
6 Cleaner

MOD-3 (Kalurghat) 60
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Foreman (Tube well/ Meter)
1 Head Plumbing Mechanic
3 O.A. cum C.T.
2 Work Assistant
4 Operator
2 Plumbing Mechanic
12 Assistant Operator
2 Asst. Plumbing Mechanic
1 Electrician
2 Office Assistant
7 Helper
6 Security Guard
6 Cleaner

MOD-4 (Jubilee Road) 53
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Foreman (Tube well/ Meter)
1 Head Plumbing Mechanic
3 O.A. cum C.T.
2 Work Assistant
10 Operator
2 Plumbing Mechanic
3 Assistant Operator
2 Asst. Plumbing Mechanic
1 Electrician
2 Office Assistant
3 Helper
6 Security Guard
6 Cleaner

MOD-5 (Patenga) 41
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Operator
2 Plumbing Mechanic
2 Assistant Operator
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOD-6 (Patiya) 37
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
1 Work Assistant
2 Plumbing Mechanic
3 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOD-7 (Anwara&Boalkhali) 37
1 Executive Engineer
1 Sub Divisional Engineer
2 Assistant Engineer
4 Sub Assistant Engineer
2 Computer Operator
1 Pipe Line Supervisor
1 Head Plumbing Mechanic
2 O.A. cum C.T.
2 Work Assistant
2 Plumbing Mechanic
2 Asst. Plumbing Mechanic
2 Office Assistant
4 Helper
8 Security Guard
3 Cleaner

MOD-1 Revenue 26
1 Revenue Officer
2 Revenue Superintendent
20 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-2 Revenue 21
1 Revenue Officer
2 Revenue Superintendent
15 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-3 Revenue 21
1 Revenue Officer
2 Revenue Superintendent
15 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-4 Revenue 21
1 Revenue Officer
2 Revenue Superintendent
15 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-5 Revenue 21
1 Revenue Officer
2 Revenue Superintendent
15 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-6 Revenue 24
1 Revenue Officer
2 Revenue Superintendent
18 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

MOD-7 Revenue 21
1 Revenue Officer
2 Revenue Superintendent
15 Revenue Inspector
2 Data Entry Operator
1 Office Assistant

Proposed/ Approved Number of Staffs

Approved in Organogram 2020

Sl	Grade	Approved in 2016 (a)	Increase (b)	Decrease (c)	Approved (d)=(a)+(b)-(c)
1	Grade 1-9	85	41		126
2	Grade 10	46	22		68
3	Grade 11-16	454	13		467
4	Grade 17-20	463		5	458
	TOTAL	1,048	76	5	1,119

In 2023 except new departments (bordered in black)

Sl	Grade	Approved in 2020 (a)	Increase (b)	Increase (c)=(b)/(a)	In 2023 (d)=(a)+(b)
1	Grade 1-9	126	20	15.9%	146
2	Grade 10	68	3	4.4%	71
3	Grade 11-16	467	59	12.6%	526
4	Grade 17-20	458	63	13.8%	521
	TOTAL	1,119	145	13.0%	1,264

In 2025 before starting O&M of sewerage works (addition bordered in purple)

Sl	Grade	In June 2023 (a)	Increase (b)	Increase (c)=(b)/(a)	In 2025 (d)=(a)+(b)
1	Grade 1-9	146	29	19.9%	175
2	Grade 10	71	18	25.4%	89
3	Grade 11-16	526	116	22.1%	642
4	Grade 17-20	521	103	19.8%	624
	TOTAL	1,264	266	21.0%	1,530

In 2026 when O&M of sewerage works starts (addition bordered in blue)

Sl	Grade	In 2025 (a)	Increase (b)	Increase (c)=(b)/(a)	In 2026 (d)=(a)+(b)
1	Grade 1-9	175	22	12.6%	197
2	Grade 10	89	10	11.2%	99
3	Grade 11-16	642	55	8.6%	697
4	Grade 17-20	624	92	14.7%	716
	TOTAL	1,530	179	11.7%	1,709

In 2030 with expanded O&M of sewerage works (addition bordered in green)

Sl	Grade	In 2026 (a)	Increase (b)	Increase (c)=(b)/(a)	In 2030 (d)=(a)+(b)
1	Grade 1-9	197	22	11.2%	219
2	Grade 10	99	8	8.1%	107
3	Grade 11-16	697	65	9.3%	762
4	Grade 17-20	716	103	14.4%	819
	TOTAL	1,709	198	11.6%	1,907

Abbreviation

WS	: Water Supply
MOD	: Maintenance, Operation & Distribution
MOC	: Maitenance, Operation & Connection
T&P	: Treatment and Production
P&C	: Planning and Construction
PDM	: Planning, Development, and Monitoring
RDM	: Research, Development, and Monitoring
STP	: Sewage Treatment Plant
WTP	: Water Treatment Plant
KIRP	: Kalurghat Iron Removal Plant
CE	: Chief Engineer
Stenographer cum C.O.	: Stenographer cum Computer Operator
O.A. cum C.T.	: Office Assistant cum Computer Typist
J.A.A. cum C.T.	: Junior Accounts Assistant cum Computer Typist
J.A. cum C.T.	: Junior Auditor cum Computer Typist
Snr.	: Senior
Asst.	: Assistant
Bldgs.	: Buildings
DTW	: Deep Tube Well
Mgmt.	: Management
FSM	: Fecal Sludge Management
LIC	: Low Income Community

Legend

Department name shown in Red	: New department
Department name shown in Blue	: Renamed department
Designation shown in Red	: New designation in the department
Designation shown in Blue	: Renamed designation
Number of staff shown in Red	: Number increased/decreased from Organogram 2020
bordered in black	: In 2023 except new departments
bordered in purple	: From 2025 before starting O&M of sewerage works
bordered in blue	: From 2026 after starting O&M of sewerage works in Catchment 1
bordered in green	: From 2030 with expanded O&M of sewerage works

Note

MOD -A Circle is responsible for MOD-1, MOD-4, and MOD-5.
MOD -B Circle is responsible for MOD-2, MOD-3, MOD-6, and MOD-7.
Sewerage Treatment- A Circle is in charge of Catchment 1, 5, and 6.
Sewerage Treatment- B Circle is in charge of Catchment 2, 4, and 3.
MOC- A Circle is in charge of MOC-1, MOC-4, and MOC-5.
MOC- B Circle is in charge of MOC-2 and MOC-3.

付属資料-2.2：CWASA 上下水道接続規則

Chattogram Water Supply and Sewerage Authority (Water and Sewerage Connection) Regulations, 2023

Table of Contents

Chapter 1 General

1. Short Title and Applicability

(1) These regulations may be called as the Chattogram Water Supply and Sewerage Authority (Water and Sewerage Connection) Regulations, 2023.

(2) These regulations shall be applicable to Chattogram Water Supply and Sewerage Authority established under Water Supply and Sewerage Authority Act, 1996 (Act no 6 of 1996).

2. Definitions

Unless there is anything repugnant to the subject or context-

(1) “Authority” means Chattogram Water Supply and Sewerage Authority (CWASA);

(2) “Board” means the board of the Authority;

(3) "Branch sewer" or "service pipe" means a sewer line which receives sewage from property through lateral sewer or from a relatively small area and discharges the sewage into a trunk sewer;

(4) “Building” means any structure surrounded by any metallic portion constructed for human dwelling, shelter of animals or for preserving any property;

(5) “Chairman” means the Board Chairman of the Authority;

(6) “Chief Engineer” means the Chief Engineer of the Authority;

(7) “Chief Revenue Officer” means the Chief Revenue Officer of the Authority;

(8) “Commercial Manager” means the Commercial Manager of the Authority;

(9) “Form” means any form of schedule;

(10) “Holding” means any land or buildings classified under regulation 3;

(11) “Indoor drainage facility” consists of i) drainage pipe and ancillary equipment from indoor sanitary facility to outdoor drainage facility and ii) stormwater pipe beside the building from roof drain to outdoor drainage facility;

(12) "Lateral sewer" means a public sewer that conveys sewage from public inspection chamber to a branch sewer / service pipe through a tee branch or manhole;

(13) “Law” means the Water Supply and Sewerage Authority Act, 1996 (Act no 6 of 1996);

(14) “Outdoor drainage facility” consists of i) outdoor chamber and drain pipe for sewage in private property up to public inspection chamber and ii) stormwater pipe inside the property up to roadside ditch;

(15) “Owner of the holding” means any owner of the holding and any legally authorized person other than the owner or the legal inhabitants in the concerned holding are also included in this regard;

(16) “Plumbing system” means the service pipe for water supply installed by the Authority inside or nearby area of any building, structure, or holding;

(17) “Property connection” means drainage facility for sewage connecting from the building to public sewer and drainage facility for stormwater from property to roadside ditch nearby the property. Property connection is composed of i) drainage facility, public inspection chamber, and lateral sewer connecting from building to public sewer and ii) stormwater pipe discharging stormwater from property to roadside ditch;

(18) “Public inspection chamber” is a chamber which receives sewage (black water and grey

water) from outdoor drainage facility connected to the lateral sewer. Public inspection chamber is the boundary of the responsibility of the operation and maintenance (O&M) between CWASA and owner of the property. CWASA owns it for O&M of property connection;

(19) "Schedule" means the schedule of these regulations;

(20) "Section" means sections of any Act;

(21) "Tariff" means the tariff determined by the Authority for water, and as the case may be, for sewerage;

(22) "Trunk sewer" means a main sewer that conveys sewage to treatment facilities;

(23) "Water connection" means service connection to water main provided by the order of the Authority; and

(24) "Water main" means distribution main set up and preserved by the Authority.

3. Classification of Holding

The Authority can classify holding under its jurisdiction based on the use of the holding such as:

(a) Residential: The complete or partial residence, social institution, religious institution or the used part of such infrastructure shall be considered as residential or social class;

(b) Commercial: Any building used or under construction for buying and selling of commercial goods and services, marketing, or earning profit or any building or infrastructure used or under construction completely or partially as Government institution or private (non-Monthly Payment Order (MPO)) educational institution shall be considered as commercial class;

(c) Industrial: Any industry completely or partially used for the production, value addition or processing factory shall be considered as industrial class.

Chapter 2 Water Connection

4. Application for water connection

(1) For water connection an owner of the holding shall apply in Form A, provided that, when any person other than the owner of the holding applies for the connection then he has to attach a power of attorney (or a notarized consent letter in case of renter or tenant) from the owner of the holding with the application form.

(2) The following documents and information shall be submitted with the application form:

(a) A building plan and a site plan with the proof of ownership of the holding for which the connection is applied for;

(b) Existing or, as the case may be, proposed plumbing system in the holding; and

(c) Existing or, as the case may be, proposed plumbing system with a site plan for any fire hydrant, park or garden.

(3) In every water connection the diameter of the service pipe shall be determined by the Chief Engineer.

(4) Before providing water connection the site plan and the plumbing system shall be approved by the Chief Engineer according to the sub-regulations (2) and (3), provided that, when any plumbing system is set up before these regulations take effect, some change may be required by the inspecting officer in the existing plumbing system and in such a case the Chief Engineer

shall approve it and without such change no approval of connection shall be permitted.

(5) If the Chief Engineer thinks it necessary, he can inspect any or all documents submitted with the application form.

(6) Considering public health, the Managing Director can take necessary steps to receive the application form on-line or in MODs or any other place of the Authority.

5. Inspection with permission and report

(1) After receiving the application according to regulation 4, any officer of the Authority authorized by the Chief Engineer shall determine the probability and rationality of providing water connection after examining and inspecting the proposed place, setup of water connection, water main, plumbing system, site plan, and availability of water in the existing water supply system of concerned area and the officer shall make a report to the Chief Engineer in this regard.

(2) The inspection and examination mentioned in sub-regulation (1) shall be completed within 30 days of the submission of the application, provided that, if it is not possible to complete the inspection and examination within the period of 30 days for logical reason, the inspecting officer shall inform the Chief Engineer appropriate reason in writing and if the Chief Engineer thinks it satisfactory, he can extend 30 days more by recording the reason in writing. If the concerned inspecting officer fails to complete inspection and examination within the extended period then the Chief Engineer shall inform the Authority to take necessary steps against the negligence of duty of the concerned officer.

(3) An officer authorized by the Chief Engineer shall submit the inspection report mentioned in sub-regulation (1) to the Chief Engineer for further processing.

6. Distance between water line and sewer

(1) The water line and sewer shall be separated and there shall be at least 10 feet parallel distance and 1 feet vertical distance between these two lines.

(2) If it is not possible to maintain 10 feet parallel distance as mentioned in the sub-regulation (1) due to the condition of the holding, then two lines can be installed keeping vertical distance of 2 feet and parallel distance of less than 10 feet.

(3) The sewer shall be installed under water line, and by no means shall sewer and water line be installed in the same ditch.

(4) By no means sewer and water line shall cross each other, provided that, when such crossing is not avoidable, the Chief Engineer after examining the plan, when necessary, may give additional direction to the water line according to his consideration.

7. Decision for providing water connection

(1) Within 15 days after receiving the report under Regulation 5, the DMD (Engineering) after considering the report submitted by the Chief Engineer, shall decide regarding water connection and inform the applicant in writing.

(2) When it is decided to reject the application of connection, while informing the decision the reason for rejecting the application shall be informed to the applicant in writing.

(3) In case of decision to provide connection, the connection fee and security deposit according to regulation 8, the description of necessary pipes and fittings for setting up water connection, and other conditions, if any, shall be informed to the applicant in writing.

(4) The DMD (Engineering) may grant water connection of not more than 2-inch diameter pipe

in any holding and the prior approval of Managing Director is required when the connection more than 2-inch diameter pipe is necessary.

8. Connection fee and security deposit

(1) If any application for water connection in any holding is accepted, the in-charge division of the Authority shall issue a demand note to the applicant to pay the prescribed connection fee and security deposit, before temporary or permanent connection is provided.

(2) According to regulation 7 within 45 days of being informed of the decision the applicant shall pay the prescribed connection fee and security deposit and other charges, if any.

(3) The decision of providing the applicant with water connection may be cancelled if the fee and charges, if any, are not paid according to sub-regulation (2).

(4) When the connection is handed over for any reason the security deposit without interest shall be returned, provided that, the Authority has the right to deduct the payment of the applicant to the Authority from the security deposit.

(5) The Authority shall preserve the security deposit in a separate account.

(6) The amount of security deposit shall be predetermined once in every five years after making a review according to the inflation rate and tariff rate.

(7) A receipt shall be given to every security depositor.

9. Installation of service pipe and its cost

(1) Upon the confirmation of the payment of connection fee and security deposit from the applicant, the Authority shall issue an approval letter to the applicant, in the name of the Executive Engineer, DMD (Engineering), Managing Director, and the Board for the connection of which diameter is 3/4 inch, 1 inch, 2 inch, and over 2 inch respectively.

(2) A meter chamber shall be installed in a convenient place of the holding according to the direction of the Chief Engineer and the service pipe shall be installed from the water main to the meter chamber of the concerned holding.

(3) For all connections the pipe to be used shall be in accordance with the quality determined by the Authority.

(4) For holding with flats a separate connection can be made for one or more than one or for all flats from the water main.

(5) The applicant has to bear all expenses for the procurement of pipes and fittings and the expenses related to the installation.

10. Transfer of connection or increasing the size of connection

(1) To transfer the connection or to increase the size of connection, an application in Form A shall be submitted to the Chief Engineer and when such an application is submitted the Chief Engineer shall decide after inspection in such a way as determined in regulation 5.

(2) If application to transfer the connection or increase the size of the connection is granted, the provisions of regulations 8 and 9 shall be applied with necessary adjustment, provided that, the water connection shall not be transferred, or the size shall not be increased if there are any arrears to the Authority including existing water connection fee and security deposit and other charges.

11. Water Meter

(1) No connection shall be provided in any holding and, as the case may be, in any flat without

meter installation.

(2) For every connection the applicant has to purchase a meter at his own cost.

(3) The size of the meter shall be determined by the Chief Engineer and when a new building is constructed in any holding, no new connection shall be provided until the payment of arrears of water tariff with other fees for existing water connection.

12. Temporary connection

(1) Notwithstanding anything contained in these regulations, by considering special circumstances, in accordance with the payment of prescribed fees of the Authority in time according to the size of the meter, the temporary water connection may be provided for not more than 1 month.

(2) Generally, the water connection more than 1-inch diameter shall not be provided, provided that, the Chief Engineer can consider providing temporary water connection of more than 1-inch diameter for important national conference, exhibition, or any other necessity.

(3) For the connection under sub-regulation (1) the Chief Engineer, if he thinks it necessary, with the approval of the Managing Director, can provide the connection of more than 1-inch diameter, provided that, when any completed portion of the construction is usable for any purpose then meter shall be installed for that portion and just after completion of the structure such connection with meter shall be disconnected.

(4) Meter installation for temporary connection shall not be barred by any provision of these regulations.

13. Water connection in slums

(1) Notwithstanding anything contained in these regulations, the Authority can provide water connection in slums considering public health and poverty alleviation, upon the condition that the land ownership is certain and the slum is not located at naturally risky areas.

(2) The water connection fee, other fees, and tariff rate shall not exceed the residential rate, provided that, when it is necessary the Authority may determine lower water tariff for slums than the water tariff for residential class.

(3) Local organizations and the organizations mentioned in these regulations may apply directly to the Authority for water connection of the slums in the land of government/ semi-government/ autonomous organization/ corporation, and the Authority shall provide the organization with water connection in a common way. The organization shall pay the water tariff, provided that, when a concerned authority wants to do any development work by evicting the slum it has to pay the installation cost of water connection and the arrears of tariff.

(4) When the owner applies directly for water connection of the slum made in his own land then the Authority shall provide water connection in a common way and the owner shall pay the tariff accordingly.

(5) If the owner is unable to take connection for the slum made in the land of his personal ownership then the organization, by the approval of the owner, shall apply to the Authority directly and water service shall be provided accordingly. That organization shall pay tariff to the Authority accordingly. When the owner wants to do any development work or construction work by evicting the slum he has to pay the installation cost of water connection and the arrears of tariff.

(6) The organization may apply for the water connection of the slum in such a land as the ownership of which is not certain and the Authority shall provide the connection accordingly

and the organization has to pay the tariff, provided that, after assuring the ownership if the owner wants to do any development work by evicting the slum he has to pay the installation cost of water connection and the arrears of tariff.

(7) The organization shall maintain the water distribution system in the slum and the Ward Sanitation Task Force shall monitor their activities.

(8) The Authority shall issue a No Objection Certificate for the provision of water connection if the slum is located at its own land.

(9) Notwithstanding anything contained in these regulations any person or organization may apply for the water connection in his name or in the name of the organization by showing the proof of land ownership (documents, etc.).

(10) To ensure the water service of slum dwellers for maintaining public health, the Authority shall provide subsidy or bear the expenses of connection by taking an aid from development assistant organization through a project.

(11) The Authority, if it thinks it necessary, shall take assistance from any non-government or volunteer organization working in Bangladesh for water and realizing the tariff.

14. Permission and renewal fee for installation of deep tube wells

In the areas of the Authority in which water network does not exist the Authority shall take prescribed permission and renewal fees for the installation of deep tube wells under private or organizational ownership until the installation of water network.

15. Removal of defects

When the plumbing system of the service line is defective, dissatisfactory or inconsistent with these regulations, then it shall be inspected and examined, and the owner shall be informed regarding the defects and he shall repair and rectify the defects according to the direction of the Chief Engineer within a prescribed time.

16. Water dripping and dissipation

In an unmetered water connection when there is water dripping, overflow or any other defect and in a metered connection when there is water dissipation due to any defect in plumbing system or if any officer of the Authority notices any hindrance in the water supply then he shall issue a notice to the owner to repair and reform it within a prescribed time.

17. Disconnection

(1) Connections installed without the approval of proper authority or not installed properly in accordance with the approval of the Authority shall be considered as illegal water connection and the Authority or any person authorized by the Authority shall order to disconnect the illegal connection following the provisions of these regulations.

(2) The Authority may disconnect any connection or may stop supplying water in any holding by issuing a notice of 10 days to the owner of the holding for any reason as follows:

(a) If any holding or owner does not pay the arrears within a prescribed time of the Authority or fails to obey the order of the Authority;

(b) If the owner does not pay water tariff, fee, surcharge etc. or other arrears within a prescribed time of the Authority;

(c) If the owner of the holding fails to pay the water tariff, fee, surcharge etc. or any other related payment to the Authority within a prescribed time;

(d) If the owner interferes in the service line in any inconsistent way with these regulations,

damages, makes any change or pervert in any way;

(e) When any staff authorized by the Authority is obstructed or refused to enter in any holding by the owner from sunset to sunrise for the purpose of examining or inspecting the connection taps or the equipment adjacent to the plumbing system of the holding, or evaluating the imposed tariff or meter reading;

(f) If water is leaked or overflowed from underground reservoir or if water is leaked from plumbing system or service line or if plumbing system is not maintained and preserved according to these regulations.

(3) According to the sub-regulations (2)(a) and (2)(b), before disconnecting any line or before stopping the water supply, the owner shall be issued a prior notice of 30 days and in other case he shall be issued a prior notice of 10 days.

18. Reconnection

An application can be made for reconnection after repairing the defects of plumbing system according to the direction of the Chief Engineer or after obeying the order of any authorized officer for this purpose and when such an application is made, as the case may be, if the reconnection fee, arrears of tariff, and other arrears are paid the Chief Engineer shall permit the reconnection.

19. Regularization of the connection

(1) The Managing Director may direct to regularize the connection of the customer who takes unauthorized connection from the commission date of taking connection of water line or construction of the concerned holding whichever is later after realizing the fine according to section 52 of the Law.

Provided that, all formalities starting from the application of a new connection shall be maintained for the direction of the Managing Director and the diameter of the water connection and technically proper installation shall be ensured by digging the connection point at the cost of customer.

(2) When the meter is stolen the concerned owner shall file a General Diary at Thana, and when the case is under investigation he shall apply to the Executive Engineer or the Revenue Officer within 15 days of the meter being stolen with attested copy of the General Diary for installing the next meter, provided that, the General Diary recorded at Thana is not acceptable for this provision.

20. The differences between water supply and water production

(1) The Chief Engineer, the Chief Revenue Officer and the Commercial Manager shall jointly determine the volume of unaccounted-for water (UFW) once in every three months by calculating the total water production and the billed amount and shall report to the Managing Director regularly with the expected reason of the UFW and the Managing Director shall inform the Board regularly.

(2) The Managing Director shall take necessary steps to reduce the UFW and if the submitted report identified the reason as under billing then he shall take disciplinary steps against the Revenue Inspector, as the case may be, against the concerned staff.

21. Notice for violation

For the violation of the law or any provision of these regulations, a notice for the violation shall be issued to the owner of concerned holding by mail or by determined staff of the Authority.

22. Ensuring sewage management

No water connection shall be permitted in any holding until and unless there is effective drainage system and outflow of sewage.

23. Connection from different sources is forbidden

No connection from the water source other than the Authority shall be permitted.

24. The connection between water supply pipe and drain is forbidden

No water connection shall be permitted between the water supply pipe and drain or outflow pipe.

25. Regular water supply

The Authority will not be liable for interruption in water supply for natural disaster or for any other reasons beyond the control of the Authority. The Authority shall take all probable steps as soon as possible for recovery.

Chapter 3 Sewerage Connection

26. Application for sewerage connection

(1) All owners of holdings shall take sewerage connection within six months of the completion of sewerage system in an area constructed by the Authority, as stipulated in the Article 9 (1), Chapter 3 of the Water Supply and Sewerage (Water and Sewerage Tariff) Rules, 2011.

(2) Structure and installation of the property connection must comply with the technical standards and/or guideline which shall be determined by the Authority.

(3) The owner of the holding shall apply for sewerage connection (property connection) in Form B except the sewerage connection in slums, provided that, when any person other than the owner of the holding applies, he shall attach a power of attorney (or a notarized consent letter in case of renter or tenant) from the owner of the holding with the application.

(4) With the application a building plan, a site plan, and a sewage drainage system plan together with the proof of the ownership shall be submitted.

(5) In the property connection of an industrial holding, a plan of an effluent treatment plant (ETP) should be included. Domestic wastewater from industrial holding can be discharged to public sewer. Effluent from industry shall satisfy the standards stipulated in the Schedule-10 ‘Standards for Waste from Industrial Units or Projects Waste’ of the Environment Conservation Rules, 2023. The treated wastewater in ETP should not be discharged to public sewer.

(6) Before providing property connection the site plan and the sewage drainage system plan shall be approved by the Chief Engineer according to the sub-regulation (4), provided that, when any sewage drainage system is set up before these regulations take effect, any change may be required by the inspecting officer which shall be approved by the Chief Engineer and the owner of concerned holding shall make the corresponding changes.

(7) If the Chief Engineer thinks it necessary, he can inspect any or all documents submitted with the application form.

(8) The application form shall be downloaded on-line from the website of the Authority free of charge or the application form and these regulations shall be obtained from the Chief Engineer and MOCs of the Authority by paying prescribed fees.

(9) Considering public health the Managing Director can make an arrangement to receiving

application on-line or in MOCs of the Authority or any other places.

27. Inspection and reporting with permission

(1) After receiving any application under regulation 26, any officer of the Authority authorized by the Chief Engineer or delegated contractor shall determine the diameter of the permissible sewer after inspecting and auditing the local sewer structure with the size of branch sewer or service pipe to which lateral sewer is to be connected and place of connection.

(2) The inspection and audit mentioned in sub-regulation (1) shall be completed within 30 days of the submission of the application, provided that, if it is not possible to complete the inspection and examination within the period of 30 days for logical reason, the inspecting officer or delegated contractor shall inform the Chief Engineer of the appropriate reason in writing. If the Chief Engineer thinks it satisfactory, he can extend 30 days more by recording the reason in writing. When the concerned inspecting officer or delegated contractor fails to complete the inspection and examination within the extended period, the Chief Engineer shall inform the Authority to take necessary steps against the negligence of duty of concerned officer or delegated contractor.

(3) An officer authorized by the Chief Engineer shall submit the inspection report mentioned in sub-regulation (1) to the Chief Engineer for further processing.

28. Distance between water line and sewer

(1) The water line and sewer shall be separated and there shall be at least 10 feet parallel distance and 1 feet vertical distance between these two lines.

(2) If it is not possible to keep 10 feet parallel distance as mentioned in the sub-regulation (1) due to the condition of the holding, then two lines can be installed keeping vertical distance of 2 feet and parallel distance of less than 10 feet.

(3) The sewer shall be installed under water line, and by no means shall sewer and water line be laid in the same ditch.

(4) By no means sewer and water line shall cross each other, provided that, when such crossing is not avoidable, the Chief Engineer after examining the plan, when necessary, may give additional direction regarding sewer according to his consideration.

29. Connection fee and security deposit, etc.

(1) For property connection in any holding the applicant shall pay the prescribed connection fee and security deposit in this regard in time according to the class of holding classified in regulation 3.

(2) The applicant shall bear the expense of purchasing pipes and other materials and the cost of construction/ replumbing work.

(3) Notwithstanding the provision of sub-regulation (2), the applicant shall be exempted from the payment of the cost of construction/ plumbing work if the applicant applies for property connection in parallel to the sewerage construction by the Authority in the area where the holding of the applicant is located or within six months of the completion of sewerage system in the area.

30. Paying connection fee, etc.

(1) The DMD (Engineering) shall give a decision of providing the applicant with property connection, after the approval stipulated in sub-regulation (6) of the regulation 26.

(2) The in-charge division of the Authority shall issue a demand note to the applicant to pay

the prescribed connection fee and security deposit and the expense of purchasing pipes and other materials and of construction/ replumbing work.

(3) Within 30 days of the issuance of the demand note issued under the provision of sub-regulation (2), the applicant shall pay the prescribed fee and the expense.

(4) The decision of providing property connection to the applicant may be canceled if the fee and the expense, if any, are not paid according to sub-regulation (3).

(5) When the connection is handed over for any reason the security deposit without interest shall be returned, provided that, the Authority has the right to deduct the payment of the applicant to the Authority from the security deposit.

(6) The Authority shall preserve the security deposit in a separate account.

(7) The amount of security deposit shall be predetermined once in every five years after making a review according to the inflation rate and tariff rate.

(8) A receipt shall be given to every security depositor.

31. Connection work

(1) Upon the confirmation of the payment of connection fee and security deposit from the applicant, the Authority shall issue an approval letter to the applicant, in the name of the Executive Engineer, DMD (Engineering), and Managing Director of the Authority for the connection of which diameter is 4 inch, 6 inch and 8 inch, and over 10 inch, respectively.

(2) There shall be a separate lateral sewer from branch sewer or service pipe to public inspection chamber provided by the Authority to every holding.

(3) The Authority or its delegated contractor shall construct lateral sewer from branch sewer/ service pipe to the public inspection chamber for the holding, as well as the installation of the outdoor drainage facility and its connection to the public inspection chamber and the closure of septic tank.

(4) The property connection (outdoor drainage facility) shall be maintained by and at the expense of the owner of the holding, after the completion and starting operation of sewerage system in the area. The public inspection chamber and lateral sewer are owned and maintained by CWASA.

(5) Notwithstanding the provision of sub-regulation (4), the Authority can decide that the property connection (outdoor drainage facility) shall be maintained by the Authority at the expense of the owner of the holding, until the expiry of the period that the Authority specifies. After the expiry of the period, the property connection (outdoor drainage facility) shall be maintained by and at the expense of the owner of the holding.

(6) Separate tariff shall be imposed to every connection.

(7) For all connections the pipe of prescribed quality by the Chief Engineer shall be used.

32. Removal of defects

(1) When it is evident that the lateral sewer, public inspection chamber, and/or outdoor drainage facility are defective, dissatisfactory, or inconsistent with these regulations, then the in-charge Executive Engineer shall inspect and examine the site, and the owner shall be informed regarding the defects. The in-charge Executive Engineer shall repair and rectify the defects within a prescribed time.

(2) If the defects of sub-regulation (1) are due to the connections installed by unauthorized contractors without an approval of the Authority, the Authority shall order the owner to pay all the prescribed cost including the connection fee and security deposit and the expense to

repair and rectify the defects.

33. Removal of obstacle in sewer

(1) When it is seen that the sewer is overflowed by any obstacle in the holding then the in-charge Executive Engineer shall remove the obstacle upon request of the owner of the holding in accordance with the payment of the fee that the Authority specifies by the owner.

(2) When it is evident that the sewer is overflowed due to thrown domestic waste, brick stone, or any other solid material in the manhole and it is required to clean the manhole by lifting up the thrown wastage, brick stone, or any other solid material from 4 feet to 20 feet depth then the in-charge Executive Engineer shall determine it with the owner of the holding.

(3) Despite the provision of sub-regulation (2), if it is required to use any mechanical equipment to remove the obstacle or to clean the sewer, then the Authority can determine it in time and additional fee prescribed by the Authority shall be paid by the owner before the Authority cleans the sewer up to 100 feet depth.

(4) When the operational cost is increased due to inflation of currency then to bear additional expenses, the Authority by the approval of the Board, can adjust the payable charges yearly not exceeding by 5% under these regulations.

34. Property connection in slums

(1) Notwithstanding anything contained in these regulations, the Authority will provide fecal sludge collection service in slums considering public health and poverty alleviation.

(2) The fee for desludging of septic tank and other fees and tariff rate shall be specified by the Authority and shall not exceed the residential rate.

(3) Local organizations and the organizations mentioned in these regulations may apply directly to the Authority for property connection in the slum made on the land of government/ semi-government/ autonomous organization/ corporation and the Authority shall provide these organizations with property connection in a common way and the organization shall pay the sewerage tariff, provided that, when the concerned Authority wants to do any development work by evicting the slum it has to pay the installation cost of property connection and the arrears of tariff.

(4) When the owner applies directly for property connection of the slum in his own land, the Authority shall provide property connection in a common way and the owner shall pay the tariff accordingly.

(5) If the owner is unable to take connection for the slum in the land of his personal ownership, the organization, by the approval of the owner, shall apply to the Authority directly and connection shall be provided accordingly. That organization shall pay tariff to the Authority accordingly. When the owner wants to do any development or construction work by evicting the slum, he has to pay the installation cost of property connection and the arrears of tariff.

(6) That organization shall maintain the sewerage distribution system in the slum and the Ward Sanitation Task Force shall monitor their activities.

(7) Notwithstanding anything contained in these regulations any person or organization may apply for the property connection in his name or in the name of an organization by showing the proof of land ownership (documents, etc.).

35. Imposing additional condition

In special circumstances when it is evident that the sewerage preservation and maintenance in any holding is not mentioned in these regulations or imposing such condition or conditions are

necessary then by the prior approval of the Board, the condition or conditions shall be imposed, and the owner of the concerned holding shall be bound to obey it.

Chapter 4 Miscellaneous

36. Realizing arrears

Any arrears from any person under these regulations shall be realized as public demand under The Public Demands Recovery Act, 1913.

Chapter 5 Schedule

Form A (for Water Connection)

Chattogram Water Supply and Sewerage Authority
Office of Chief Engineer
WASA Building, Dampara, Chattogram
c/o Office of Executive Engineer of Sales or MODs

Rules to submit the application after filling it up-

After filling up the application form, the applicant shall submit it by himself or by a nominated person on behalf of him, together with the following attachments:

(1) Bank receipt.

(2) Two sets of attested photocopies of land deed of the proposed connection area.

(3) Two sets of attested photocopies of B.S. Khatian of the proposed connection area.

(4) Three sets of attested photocopies of the concerned portion of the B.S. sheet (12"×10").

(5) Two sets of photocopies of attested permission letter / approved building plan of CDA.

(6) If no plan is approved by CDA separate show cause letter to be submitted by the applicant.

(7) Two copies of attested passport size photo of the applicant.

(8) If the applicant is a tenant, consent letter from the owner with signature of the advocate in a non-judicial stamp of 300Taka and affidavit from notary public.

(9) Two copies of attested photocopy of the voter ID card/ birth certificate/ passport of the applicant.

(10) If the applicant is an owner by inheritance no objection letter from the legal heirs in non-judicial stamp of 300 Taka with one copy passport size photo (to be submitted with affidavit from notary public).

(11) A pledge of the applicant in a non-judicial stamp of 300 Taka writing that there is no disconnection for the arrears in the connection area or other places.

Terms and Conditions

1. The production capacity of CWASA may be insufficient compared with the demand. Water production may not be possible according to the production capacity for irregular electricity supply. Moreover, water supply may be interrupted for repairing pipeline or for technical malfunction or things beyond control.
2. The customer shall submit the road cutting permission letter after collecting it from the concerned authority. The cost of this shall be carried by the customer. CWASA shall write a letter to the concerned authority requesting the road cutting.
3. The pipe and fittings used in the connection shall be made of GI and approved by CWASA and the customer shall bear the expenses.
4. If pipe and fittings are supplied by CWASA then the customer shall pay the total cost to CWASA.
5. The connection shall be disconnected if low quality materials are used.
6. The customer shall select a place for meter installation where the Authority/ nominated persons of the Authority can take meter reading. Otherwise, new water connection shall not be provided.

7. To ensure the water supply, customers have to construct water reservoir with appropriate capacity. After receiving the demand note the new water connection shall be provided when the customer constructs underground water reservoir.
8. The water meter shall be installed in the area of the customer and customer has to ensure the security of the meter.
9. Changing the nature of the meter, damage or all kind of illegal interference or activities are punishable by the law. For such kind of activities water connection shall be disconnected.
10. If the meter is theft for any reason, then the main copy of the G.D. entry in the police station shall be submitted with the application of the customer to issue a new meter and the price of the new meter with the fine shall be paid by the customer.
11. If there is any leakage from the connection place of main line to the meter then the customer shall repair the leakage under the supervision of CWASA by customer's own initiative and cost. Otherwise, the water connection shall be disconnected.
12. If there is any leakage in the connection after meter then the customer shall repair it at his own initiative and cost. Otherwise, the water connection shall be disconnected.
13. The pipeline is needed to be changed at own cost of customer under the supervision of CWASA if the connection pipe of the customer is damaged excessively for any reason.
14. If CWASA thinks it necessary, it can suggest the customer to transfer the connection pipeline. According to the suggestion of CWASA the customer has to transfer the connection at his own cost by paying prescribed fees of transfer.
15. After taking connection if it is proved that the document submitted by the customer is false or if the customer conceals any information to take connection then legal actions shall be taken against him including disconnecting his water connection.
16. If there is any complaint regarding water supply then it shall be informed at the complaint center of CWASA first.
17. The water reservoir and overhead tank shall be cleaned and free of germs. Otherwise, CWASA preserves the right of disconnection.
18. The internal supply line shall be cleaned properly and free of pollution.
19. If the customer does not receive the bill in time, then the customer has to deposit the bill in the bank within prescribed time after collecting it in each month. If two months' bill is unpaid then then the authority shall disconnect without showing any cause.
20. If there is arrear bill of commercial connection, after providing the chance of paying installment if the installment is not paid on time, later if it is required to disconnect with the help of police and when the customer wants to reconnect, he/ she may need to pay additional 1 (one) lac taka if the diameter of the connection is 1'' or more than that.
21. Pumping water directly from the water supply connection line of CWASA is legally punishable. For the customers involved in such illegal works shall be punished with fine, connection shall be disconnected including seizure of motor.
22. For the connection in washing plant, beverage plant, fish processing plant, vegetables and oil industry and mineral water bottling plant, additional 2 (two) lac security shall be deposited for ¾'' diameter connection, 2.5 lac taka for 1'' diameter connection and 4 (Four) lac for 2'' diameter connection in favor of MD of CWASA.
23. Connection fee, prescribed development charge, etc. shall be deposited at Janata Bank in favor of MD as mentioned in the demand note.

24. Connection without meter shall be provided to the customer if there is no meter in stock of CWASA. Meter shall be installed after meters are in stock of CWASA. Bill on prescribed water rate shall be provided for the period without meter. The customer may know the prescribed rate from Sales or MOD division while taking connection.
25. Water used for household work, non-commercial, non- profit work shall be considered as residential and water used for other purposes is considered non-residential.
26. For non-residential connection the following security shall be deposited but for the condition prescribed in number 22, the security of nonresidential connection shall be unchanged:
    a) 40,000 Taka for ¾" connection
    b) 80,000 Taka for 1" connection
    c) 200,000 Taka for 2" connection
    d) 800,000 Taka for 4" connection
    e) 1,000,000 Taka for 6" connection
27. (a) It is mandatory to change the name of the owner or transfer the connection to CWASA if the owner of the connection is changed. (b) The security shall be doubled if the applicant is a tenant.
28. If the ownership of the connection is changed the new owner has to pay all arrear bill of that connection.
29. Prescribed transfer fee shall be paid if the connection place is changed.
30. For disconnection and reconnection, the fee of road cutting while disconnecting and reconnecting shall be collected from the customer.
31. The customer has to pay prescribed fee for the replacement of meter.
32. If there is more than one connection but one reservoir in the same holding then to disconnect one connection for arrear bill other connections shall be disconnected too.
33. Prescribed security shall be deposited after taking approval of the Authority when residential connection is taken but later used as non-residential/ commercial/ educational institution.
34. Connection pipeline and meter installation shall be done together. Otherwise, connection shall not be provided. All works shall be completed within seven days of issuing meter. Otherwise, meter shall be returned and pipe materials shall be seized.
35. The customer interested to take temporary connection shall mention the approximate period of taking connection. The temporary connection is not transferrable. For this purpose, the security to be deposited under condition number 26 shall be applicable.
36. The customer can apply to the Chief Revenue Officer for disconnecting the connection. All arrear bills shall be paid before disconnection.
37. No infrastructure shall be constructed on the connection pipe from the main distribution line to the meter so that the person assigned by CWASA has no problem for inspection. If any infrastructure is found on the connection pipe then the connection shall be disconnected without notice and legal actions shall be taken against the customer for breach of condition.
38. If an owner has an arrear bill for one connection, his other connections shall be disconnected too.

39. The connection shall be disconnected instantly if there is any bypass line in the meter. The customer shall be punished with fine and legal actions shall be taken against him for such type of illegal work.
40. The connection shall be disconnected instantly if the customer is involved in any work which is against the interest of CWASA.
41. If there is any arrear bill of water of any customer then the arrear bill shall be realized later from the occupier of the same holding.
42. If any customer uses water for non-residential work after taking residential connection, then the bill shall be considered at non-residential rate.

I have read the conditions stated above and I am committed to be abide by the conditions.

Signature of the Applicant
Date:

Executive Engineer
Sales /MOD Division,
Chattogram WASA,
Chattogram

Chittagong Water Supply and Sewerage Authority
WASA Bhaban, Dampara, Chattogram

Photo

To
The Executive Engineer,
Sales/ MOD Division,
Chattogram WASA, Chattogram.

Subject: Application for new water connection.

Sir,
Based on the true information stated below and pledge I, the undersigned person is applying to take a connection from CWASA.

1. Name of the applicant/ organization: .....
2. a) Name of the authorized applicant from the organization: .....
   b) Name of the father/ spouse of the applicant: .....
   c) Name of the mother of the applicant: .....
3. Present Address:
   a) Holding Number: ..... Plot: .....
   b) Road: .....
   c) Thana: .....
4. Address of the place where the applicant wants to take water connection:
   a) Holding Number: ..... Plot: .....
   b) Road: .....
   c) Mahalla: ..... Ward: .....
   d) Thana: .....
   e) R.S. Khatian No: ..... Plot: .....
   f) P.S. Khatian No: ..... Plot: .....
   g) B.S. Khatian No: ..... Plot: .....
   h) Mouja: ..... J.L. No: ..... Sheet No: .....
   i) District: .....
5. The nearby road by which the applicant wants to take connection: .....
6. Proposed place of connection:
   a) Vacant place: .....
   b) Kacha: .....
   c) Semi pacca: .....
   d) Building: .....
   e) Number of floors and flats in each floor: .....
   f) Plinth area of each flat: .....
   g) Total number of flats in the building: .....

h) Date of construction: .....

7. Type of using water (tick in the proper place): Residential/ Commercial

8. Purpose of using water: .....

9. Telephone number of the consumer:

Office: .....

Home:..... Mobile: .....

10. How many gallons of water is required everyday: .....

11. The diameter (inches) of connection the consumer wants to take:.....

12. For how long water connection is required: .....

13. Name of the owner of the building/ house/ holding: .....

14. Name of the dweller of the building/ house/ holding: .....

15. Tenant of the applicant or owner of the proposed place: .....

16. If tenant, the consent and signature of the owner with his address: .....

17. Was there any water connection from before in the proposed place?

If yes, the address and the account number of the WASA bill: .....

a) What was the source of the water of the applicant till now? .....

b) Is there any deep tube well in the proposed place of connection? If yes, the diameter of the water connection: .....

18. Is there any water connection in the name of the applicant or in the name of his representative? If yes, the detail description:

a. Account number: ..... b. Area: .....

19. If there is any other connection at any other place in the name of the applicant or his representative, up to which month the bill is paid?: .....

I ensure that, the information stated above is true to my knowledge and belief and I shall be obliged by the WASA news rules, government notification number S/9/A-8/65/431 enacted on 23.04.1996 and the notifications amended afterwards and necessary future conditions imposed by CWASA. I also promise that I shall collect and pay the WASA bills within time. I also certify that, I shall not make any modifications/ addition in the water connection provided by the authority.

If any information stated above is proved as false and the authority take any ex parte decision, then my objection shall not be granted legally. I am signing this document consciously without anyone's instigation. I shall not use any electrical motor directly.

Based on the information stated above I am requesting to provide a water connection in the proposed place by the authority.

Yours faithfully,

Date: ..... Signature of the applicant:

The serial number of register of receiving application by Sales/MOD division:.....

Date: ..... Signature of the Receiver:

Designation:.....

Design prepared by the Applicant

Date: .....

Signature of the Applicant:

Inspection Report Prepared by the Sales/MOD Division for Providing Water Connection in the Proposed Place

Date of Inspection: .....

1. Name and designation of the Inspector: .....
2. Serial number of accepting application form: ..... Date: .....
3. Name of the applicant/ organization: .....
4. a. Authorized person of the organization:.....
   b. Name of the Father/Husband of the applicant: .....
   c. Name of the mother of the applicant:.....
5. Address of the proposed connection of the applicant:
   a) Holding No: ..... Plot No:.....
   b) Road:.....
   c) Name of the Area: .....
   d) Thana: .....
   e) Mouja: ..... J.L. No: ..... Sheet No: .....
   h) R.S. Khatian No:..... Plot No:.....
   i) B.S. Khatian No: ..... Plot No:.....
6. Name of the Sub Locality (Mahalla): ..... Ward No: .....
7. The important place nearby the connection: .....
8. The connection place (tick in the proper place): Residential/ Shop/ Business / Commercial establishment
9. The nearby road from which the connection shall be provided: .....
10. The diameter of the connection and the type of main line from which the connection shall be provided (tick in the proper place): 2"/ 4"/ 6"/ 8"/ 10"/ 12"; PVC/ AC/ HDPE
11. The exact distance from the main line to the connection: .....
12. From which authority the road cutting permission is required: ..... feet
13. Whether a meter can be installed in such a place where reading can be taken easily (tick in the proper place): Yes/ No
14. Whether there is clearance from Revenue Section if there is any previous connection (tick in the proper place): Yes/ No
15. Description if there is a connection from before:
   a) Account Number:..... b) Arrear bill: .....
   c) The period of connection: .....
16. Whether there is any other connection of the applicant or not (tick in the proper place): Yes/ No
17. The type of the main line from which the connection is provided (tick in the proper place): Rising/ General distribution line
18. Water pressure of the main line (tick in the proper place): High/ Normal/ Low
19. The purpose of using water (tick in the proper place): Residential/ Commercial

20. The diameter of the connection: ..... inches diameter
21. The design number approved by CDA: .....
22. Description of the water tank (tick in the proper place): Over head tank/ Underground reservoir
23. The current source of water: .....

Field investigation is completed and documents are checked. The new connection can be provided.

Signature of Sub Assistant Engineer
Date: .....

The above stated inspection report is checked. In the proposed place of the applicant a connection of .....inches can be provided.

Signature of Assistant Engineer
Date: .....

The approval of the Executive Engineer of the Sales/ MOD Division.

Signature of Executive Engineer
Date: .....

a) Name of the Applicant/ organization: .....

b) Name of the authorized applicant from the organization:.....

c) Name of the father/ spouse of the applicant:.....

d) Name of the mother of the applicant:.....

e) Serial number of the application: .....Date: .....

f) Address of the applicant: .....

Signature of the Assistant Engineer:

Date: .....

Signature of the Sub Assistant Engineer:

Date: .....

Information about Necessity of Water and Uses of the Connection Receiver

1. Purpose of Using Water (Tick in the proper place):

For own family/ Tenant/ Commercial/ Industrial

2. Size of the Building:..... Square Feet
3. Number of Flat: .....
4. The number of the member of family: .....
5. Name and Age:
   (1) .....
   (2) .....
   (3) .....
   (4) .....
   (5) .....
   (6) .....
   (7) .....
   (8) .....
   (9) .....
   (10) .....
6. Analysis of the Water they need: Daily ..... Gallons.

(For residential purpose it is considered that each person needs 30 gallons daily. If water is used for any other purpose the description of the purpose should be provided. For example: if water is required for washing plant the basis of the volume of water required daily should be mentioned.)

7. Required Daily Water: .....

Signature of the Applicant

Rules regarding providing Water to Farm or Organization

When there is an application for water connection by farm or organization then for the farms which are limited company, the certified/ notarized copy/ attested copy by first class gazetted officer of the registration and memorandum of articles of association shall be provided. The signatory shall be responsible personally and on behalf of the farm for all conditions stated in the contract. The signature other than the owner shall not be accepted. For the limited company the decision of the Board for the permission of taking connection and signature in the contract and the signature of the Managing Director are required.

The conditions stated above are accepted and fulfilled.

Name and Signature of the Applicant: .....

Present Address: .....

The Account number of current water connection: .....

Executive Engineer
Sales /MOD Division
Chattogram WASA, Chattogram.

Form B (for Sewerage Property Connection)

Chattogram Water Supply and Sewerage Authority
Office of Chief Engineer
WASA Building, Dampara, Chattogram
c/o Office of Executive Engineer of Sales or MOCs

Rules to submit the application after filling it up-

After filling up the application form, the applicant shall submit it by himself or by a nominated person on behalf of him, together with the following attachments:

(1) Bank receipt*[1].

(2) Two sets of attested photocopies of land deed of the proposed connection area.

(3) Two sets of attested photocopies of B.S. Khatian of the proposed connection area.

(4) Three sets of attested photocopies of the concerned portion of the B.S. sheet (12"×10").

(5) Two sets of photocopies of attested permission letter / approved building plan of CDA.

(6) If no plan is approved by CDA separate show cause letter to be submitted by the applicant.

(7) Two copies of attested passport size photo of the applicant.

(8) If the applicant is a tenant, consent letter from the owner with signature of the advocate in a non-judicial stamp of 300Taka and affidavit from notary public.

(9) Two copies of attested photocopy of the voter ID card/ birth certificate/ passport of the applicant.

(10) If the applicant is an owner by inheritance no objection letter from the legal heirs in non-judicial stamp of 300 Taka with one copy passport size photo (to be submitted with affidavit from notary public).

(11) A pledge of the applicant in a non-judicial stamp of 300 Taka writing that there is no disconnection for the arrears in the connection area or other places.

Terms and Conditions

1. There may be a portion of an area that the sewer system of CWASA cannot provide drainage service of sewage, due to the conditions of the area such as narrow/ no road for the sewer to access and collect sewage. For this portion of the area, CWASA will provide the collection and transfer service of fecal sludge in septic tanks instead.
2. The customer shall submit the road cutting permission letter after collecting it from the concerned authority. The cost of this shall be carried by the customer. CWASA shall write a letter to the concerned authority requesting the road cutting.
3. The pipe used in the connection shall be made of PVC and approved by CWASA and the customer shall bear the expenses.
4. If pipe and fittings are supplied by CWASA then the customer shall pay the total cost to CWASA.

*[1] In case the applicant applies for property connection in parallel to the sewerage construction by CWASA in the area where the holding of the applicant is located or within six months of the completion of sewerage system in the area, the applicant shall be exempted from the payment of prescribed fee and expense as stipulated in Sub Regulation (3) of Regulation 29. In that case, this bank receipt shall be omitted.

5. Septic tank shall be disconnected from indoor/ outdoor drainage facility, emptied and backfilled with soil or other proper material.
6. If there is any issue of property connection such as overflow of sewage from public inspection chamber or outdoor drainage facility, then the customer shall repair/ clean/ desludge the pipeline and chambers under the supervision of CWASA by customer's own initiative and cost.
7. Pipes and chambers are needed to be replaced at the own cost of customer under the supervision of CWASA if public inspection chamber or outdoor drainage facility are damaged excessively for any reason.
8. After taking connection if it is proved that the document submitted by the customer is false or if the customer conceals any information to take connection then legal actions shall be taken against him.
9. If there is any complaint regarding the drainage of sewage then it shall be informed at the complaint center of CWASA first.
10. The indoor/ outdoor drainage facility shall be cleaned properly and free of clogging.
11. If the customer does not receive the bill in time, then the customer has to deposit the bill in the bank within prescribed time after collecting it in each month. If two months' bill is unpaid then the authority shall take legal actions without showing any cause.
12. Connection of stormwater pipe to the sewer line of the outdoor drainage facility is prohibited.
13. Connection fee, security deposit, and other charges shall be deposited at Janata Bank in favor of MD as mentioned in the demand note.
14. (a) It is mandatory to change the name of the owner or transfer the connection to CWASA if the owner of the connection is changed. (b) The security shall be doubled if the applicant is a tenant.
15. If the ownership of the connection is changed the new owner has to pay all arrear bill of that connection.
16. Prescribed transfer fee shall be paid if the connection place is changed.
17. Prescribed security shall be deposited after taking approval of CWASA when residential connection is taken but later used as non-residential/ commercial/ educational institution.
18. No infrastructure shall be constructed on/over the lateral sewer and public inspection chamber so that the person assigned by CWASA has no problem for inspection. If any infrastructure is found on/over the lateral sewer and public inspection chamber then the legal actions shall be taken against the customer for breach of condition.
19. If there is any arrear bill of sewerage of any customer then the arrear bill shall be realized later from the occupier of the same holding.
20. In case the period specified by CWASA in sub-regulation (4) of regulation 31 is effective, the payment of the customer stipulated in the condition 6 and 7 shall be exempted.

I have read the conditions stated above and I am committed to be abide by the conditions.

Signature of the Applicant
Date:

Executive Engineer
Sales /MOC Division,
Chattogram WASA,
Chattogram

(Underline: Revision/addition after 28/March/2023)

Chittagong Water Supply and Sewerage Authority
WASA Bhaban, Dampara, Chattogram

Photo

To
The Executive Engineer,
Sales/ MOC Division,
Chattogram WASA, Chattogram.

Subject: Application for new sewerage property connection.

Sir,
Based on the true information stated below and pledge I, the undersigned person is applying to take a property connection from CWASA.

1. Name of the applicant/ organization: .....
2. a) Name of the authorized applicant from the organization: .....
   b) Name of the father/ spouse of the applicant: .....
   c) Name of the mother of the applicant: .....
3. Present Address:
   a) Holding Number: ..... Plot: .....
   b) Road: .....
   c) Thana: .....
4. Address of the place where the applicant wants to take water connection:
   a) Holding Number: ..... Plot: .....
   b) Road: .....
   c) Mahalla: ..... Ward: .....
   d) Thana: .....
   e) R.S. Khatian No: ..... Plot: .....
   f) P.S. Khatian No: ..... Plot: .....
   g) B.S. Khatian No: ..... Plot: .....
   h) Mouja: ..... J.L. No: ..... Sheet No: .....
   i) District: .....
5. The nearby road by which the applicant wants to take connection: .....
6. Proposed place of connection:
   a) Vacant place: .....
   b) Kacha: .....
   c) Semi pacca: .....
   d) Building: .....
   e) Number of floors and flats in each floor: .....
   f) Plinth area of each flat: .....
   g) Total number of flats in the building: .....

h) Date of construction: .....

7. Type of using water (tick in the proper place): Residential/ Commercial

8. Telephone number of the consumer:

Office: .....

Home:..... Mobile: .....

9. The diameter (inches) of property connection the consumer wants to take: .....

10. Name of the owner of the building/ house/ holding: .....

11. Name of the dweller of the building/ house/ holding: .....

12. Tenant of the applicant or owner of the proposed place: .....

13. If tenant, the consent and signature of the owner with his address: .....

14. Was there any property connection from before in the proposed place?

If yes, the address and the account number of the WASA bill: .....

15. Is there any water connection in the name of the applicant or in the name of his representative? If yes, the detail description:

a. Account number: ..... b. Area: .....

16. If there is any other water/ property connection at any other place in the name of the applicant or his representative, up to which month the bill is paid?: .....

I ensure that, the information stated above is true to my knowledge and belief and I shall be obliged by the WASA news rules, government notification number S/9/A-8/65/431 enacted on 23.04.1996 and the notifications amended afterwards and necessary future conditions imposed by CWASA. I also promise that I shall collect and pay the WASA bills within time.

If any information stated above is proved as false and the authority take any ex parte decision, then my objection shall not be granted legally. I am signing this document consciously without anyone's instigation. I shall not use any electrical motor directly.

Based on the information stated above I am requesting to provide a sewerage property connection in the proposed place by the Authority.

Yours faithfully,

Date: ..... Signature of the applicant:

The serial number of register of receiving application by Sales/MOC division: .....

Date: ..... Signature of the Receiver:

Designation:.....

Design prepared by the Applicant

Date: .....

Signature of the Applicant:

Inspection Report Prepared by the Sales/MOC Division for Providing Property Connection in the Proposed Place

Date of Inspection: .....

1. Name and designation of the Inspector: .....
2. Serial number of accepting application form: ..... Date: .....
3. Name of the applicant/ organization: .....
4. a. Authorized person of the organization:.....
   b. Name of the Father/Husband of the applicant: .....
   c. Name of the mother of the applicant:.....
5. Address of the proposed connection of the applicant:
   a) Holding No: ..... Plot No:.....
   b) Road:.....
   c) Name of the Area: .....
   d) Thana: .....
   e) Mouja:..... J.L. No: ..... Sheet No: .....
   h) R.S. Khatian No:..... Plot No:.....
   i) B.S. Khatian No: ..... Plot No:.....
6. Name of the Sub Locality (Mahalla):..... Ward No: .....
7. The important place nearby the connection: .....
8. The connection place (tick in the proper place): Residential/ Shop/ Business / Commercial establishment
9. The nearby road from which the connection shall be provided: .....
10. The diameter of the connection and the type of branch sewer/ service line from which the connection shall be provided (tick in the proper place): 6"/ 8"/ 10"/ 12"/ 14"; PVC/ HP
11. The exact distance from the branch sewer/ service line to the connection: ..... feet
12. From which authority the road cutting permission is required: .....
13. Whether there is clearance from Revenue Section if there is any previous property connection (tick in the proper place): Yes/ No
14. Description of existing water connection:
    a) Account Number:..... b) Arrear bill: .....
    c) The period of connection: .....
15. The current source of water (other than CWASA): .....
16. Whether there is any other connection of the applicant or not (tick in the proper place): Yes/ No
17. The type of the sewer from which the connection is provided (tick in the proper place): Branch sewer/ Service pipe
18. The diameter of the connection: ..... inches diameter
19. The design number approved by CDA: .....

Field investigation is completed and documents are checked. The property connection can be provided.

Signature of Sub Assistant Engineer
Date: .....

The above stated inspection report is checked. In the proposed place of the applicant a connection of .....inches can be provided.

Signature of Assistant Engineer
Date: .....

The approval of the Executive Engineer of the Sales/ MOC Division.

Signature of Executive Engineer
Date: .....

a) Name of the Applicant/ organization: .....

b) Name of the authorized applicant from the organization:.....

c) Name of the father/ spouse of the applicant:.....

d) Name of the mother of the applicant:.....

e) Serial number of the application: .....Date: .....

f) Address of the applicant: .....

Signature of the Assistant Engineer:

Date: .....

Signature of the Sub Assistant Engineer:

Date: .....

付属資料-2.3：2023年CWASA職員服務規程（別表）

Revision Draft of
Schedule of Employees Service Regulations

August 2023

Chattogram Water and Sewerage Authority

Advisor on Urban Sanitation Improvement, JICA

List and grade of designations (Grade shown in red is tentative.)

SI.	Grade	Designation	Note
1	2	Chief Engineer	Proposed to be changed from Grade 3 to Grade 2
2	3	Commercial Manager	
3	3	Additional Chief Engineer	*1
4	4	General Manager	
5	4	Superintending Engineer	
6	4	Deputy Chief (Development)	
7	4	Chief Accounts Officer	
8	4	Senior System Analyst	*2
9	5	Chief Revenue Officer	
10	5	System Analyst	
11	5	Executive Engineer	Proposed to be changed from Grade 6 to Grade 5
12	6	Magistrate	
13	6	Programmer	*3; renamed from Computer Programmer following the Computer Personnel Recruitment Rules, 2019
14	6	Deputy Chief Accounts Officer	
15	6	Deputy Chief Revenue Officer	*1
16	6	Deputy General Manager	
17	6	Senior Assistant Chief	
18	6	Sub Divisional Engineer	*1
19	6	Senior Chemist	*1
20	6	Senior Estate Officer	*1
21	6	Senior Medical Officer	*1
22	6	Senior PR Officer	*2
23	6	Law Officer	*2
24	6	Senior Audit Officer	Proposed to be 6 instead of 8.
25	9	Assistant General Manager	
26	9	Assistant Chief (Development)	
27	9	Research Officer	
28	9	Assistant Engineer	
29	9	Microbiologist	*1
30	9	Chemist	
31	9	Accounts Officer	
32	9	Revenue Officer	
33	9	Budget Officer	
34	9	Audit Officer	*2
35	9	Medical Officer	*3
36	9	PR Officer	
37	9	Procurement Officer	
38	9	Estate Officer	
39	9	Assistant Programmer	Renamed from Assistant the Computer Programmer

SI.	Grade	Designation	Note
			following Computer Personnel Recruitment Rules, 2019
40	9	Assistant Maintenance Engineer	*2
41	10	Kanungo	
42	10	Sub Assistant Engineer	
43	11	Training Assistant	*1; renamed from Trainer
44	11	Office Superintendent	
45	11	Accountant	
46	11	Audit Superintendent	
47	11	Revenue Superintendent	
48	11	Data Entry Supervisor	*2
49	13	Stenographer cum Computer Operator	
50	13	Computer Operator	
51	13	Head Assistant	
52	13	Senior Laboratory Assistant	
53	13	Instrumentation Technician	*2
54	14	Upper Division Assistant	
55	14	Bench Assistant	
56	14	Accounts Assistant	
57	14	Auditor	
58	14	Laboratory Assistant	
59	14	Pipeline Supervisor	
60	14	Foreman	
61	14	Senior Data Entry Operator	*2
62	15	Nurse	
63	15	Head Plumbing Mechanic	
64	16	Office Assistant cum Computer Typist	
65	16	Photographer	*1
66	16	Junior Auditor cum Computer Typist	
67	16	Junior Accounts Assistant cum Computer Typist	
68	16	Cashier	
69	16	Data Entry Operator	
70	16	Revenue Inspector	Renamed from Meter Inspector
71	16	Electrician	
72	16	Mechanic	Proposed to be 16 instead of 18.
73	16	Work Assistant	
74	16	Security Inspector	
75	16	Store Keeper	
76	16	Driver	
77	16	Meter Mechanic	
78	16	Operator	
79	16	Plumbing Mechanic	
80	16	Surveyor	
81	17	Caretaker	
82	18	Photocopy Machine Operator	

SI.	Grade	Designation	Note
83	18	Record Keeper	
84	18	Medical Attendant	
85	18	Assistant Operator	
86	18	Assistant Plumbing Mechanic	
87	18	Dispatch Rider	
88	18	Junior Electrician	
89	18	Assistant Security Inspector	
90	18	Junior Mechanic	
91	18	Chainman	*2
92	20	Office Assistant	
93	20	Security Guard	
94	20	Helper	
95	20	Cleaner	
Deleted Designations in the Organogram 2023-2030			
		Assistant Security Officer	Created in Organogram 2020 but not included in Employees Regulations 2020 (thus grade was not fixed).
		Sub Assistant Public Relations Officer	
		Sub Assistant Security Officer	
	16	Draftsman	

(Note)

*1: Designation newly created in Organogram 2020 but not included in Employees Service Regulations 2020, thus the grade is tentative.

*2: Designation newly created in Organogram 2023, thus the grade is tentative.

*3: Designation existing before Organogram 2020, but not included in Employees Service Regulations 2020.

Schedule

[See Regulation 2(6)]

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
(1)	(2)	(3)	(4)	(5)	(6)
1	**Chief Engineer**	2	-	By promotion	a) B.Sc. (Hons) in Engineering or equivalent degree or Associate Membership of Institution of Engineers (AMIE) (part-A & part-B) from any recognized institute or organization with minimum 2nd class or equivalent GPA. b) At least 3 years' work experience as Additional Chief Engineer with 18 years' experience in the post of grade 9 or above.
2	**Commercial Manager**	3	-	By promotion; By deputation if there is no eligible candidate to be promoted.	For promotion: a) At least 5 years' experience as Chief Accounts Officer; and b) At least 15 years' experience in the post of grade 9 or above. For Deputation: Any officer in the post of Deputy Secretary of Bangladesh Civil Service.
3	**Additional Chief Engineer**	3	-	By promotion	a) B.Sc. (Hons) in Engineering or equivalent degree or Associate Membership of Institution of Engineers (AMIE) (part-A & part-B) from any recognized institute or organization with minimum 2nd class or equivalent GPA. b) At least 3 years' experience as Superintending Engineer with 15 years' experience in the post of grade 9 or above.
4	**General Manager**	4	-	By promotion; By deputation if there is no eligible candidate to be promoted.	For promotion: a) At least 5 years' experience as Deputy General Manager. b) At least 10 years' experience in the post of grade 9 or above. For Deputation: Any officer in the post of Deputy Secretary of Bangladesh Civil Service.
5	**Superintending Engineer**	4	-	By promotion	a) At least 5 years' experience as Executive Engineer. b) At least 10 years' experience in the post of grade 9 or above.
6	**Deputy Chief (Development)**	4	-	By promotion	a) At least 5 years' experience as Deputy Chief Accounts Officer, or Senior Assistant Chief (Development) with 10

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
					years' experience in the post of grade 9 or above; or b) At least 3 years' experience as Executive Engineer.
7	**Chief Accounts Officer**	4	-	By promotion	At least 5 years' experience as Deputy Chief Accounts Officer or Senior Audit Officer with minimum 10 years' experience in the post of grade 9 or above.
8	**Senior System Analyst**	4	According to Computer Personnel Recruitment Rules, 2019 of the government organization.		
9	**Chief Revenue Officer**	5	-	By promotion; By deputation if there is no eligible candidate to be promoted.	For promotion: At least 3 years' experience as Deputy Chief Revenue Officer with minimum 10 years' experience in the post of grade 9 or above. For Deputation: Any officer in the post of Senior Assistant Secretary of the Government.
10	**System Analyst**	5	According to Computer Personnel Recruitment Rules, 2019 of the government organization.		
11	**Executive Engineer**	5	-	By promotion	At least 5 years' experience as Sub Divisional Engineer.
12	**Magistrate**	6	-	By deputation	Any officer in the post of Senior Assistant Secretary of the Government.
13	**Programmer**	6	According to Computer Personnel Recruitment Rules, 2019 of the government organization.		
14	**Deputy Chief Accounts Officer**	6	-	By promotion	a) At least 5 years' experience as Accounts Officer, Budget Officer, Revenue Officer (Accounts) or Audit Officer.
15	**Deputy Chief Revenue Officer**	6	-	By promotion	a) 5 years' experience as Revenue Officer (Billing).
16	**Deputy General Manager**	6	-	By promotion	At least 5 years' experience as Assistant General Manager.
17	**Senior Assistant Chief (Development)**	6	-	By promotion	At least 5 years' experience as Assistant Chief (Development) or Research Officer.
18	**Sub Divisional Engineer**	6	-	By promotion	At least 5 years' experience as Assistant Engineer.
19	**Senior Chemist**	6	-	By promotion	At least 5 years' experience as Chemist or Microbiologist.
20	**Senior Estate Officer**	6	-	By promotion	At least 5 years' experience as Estate Officer.
21	**Senior Medical Officer**	6	35 years	(a) By promotion; (b) By direct recruitment	For promotion: At least 5 years' experience as Medical Officer. For direct recruitment:

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
				if eligible employee is unavailable	(a) MBBS degree from any recognized university or institution. (b) At least 5 years' experience as medical practitioner. (c) Minimum 3 years' experience as foreign fellow or membership certificate holder.
22	**Senior PR Officer**	6	-	By promotion	At least 5 years' experience as PR Officer.
23	**Law Officer**	6	-	By deputation	Deputation amongst the officer of Bangladesh Judicial Service.
24	**Senior Audit Officer**	6	-	By promotion	At least 5 years' experience as Audit Officer or Accounts Officer or Budget Officer or Revenue Officer (Accounts).
25	**Assistant General Manager**	9	30 years	a) 50% by promotion; by direct appointment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 7 years' experience as Office Superintendent; or b) At least 10 years' experience as Stenographer cum Computer Operator. For direct recruitment: a) Post graduation or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
26.	**Assistant Chief (Development)**	9	30 years	By direct recruitment	a) Post graduation or equivalent degree in Economics or any subject of science from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in Economics or any subject of science from any recognized university with minimum 2nd class or equivalent CGPA.
27	**Research Officer**	9	30 years	By direct recruitment	a) Post Graduation or equivalent degree in Economics, Social Science, or any subject of science from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in Economics, Social Science, or any subject of science from any

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
					recognized university with minimum 2nd class or equivalent CGPA.
28	**Assistant Engineer**	9	30 years	a) 33% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 67% by direct recruitmen.	<u>For promotion:</u> At least 7 years' experience as Sub-Assistant Engineer. <u>For Direct Appointment:</u> a) BSc. in Civil, Mechanical, Electrical, Computer Science and Engineering (CSE), Electrical and Electronics Engineering, Water Supply Engineering or Environmental Engineering from any recognized university with minimum 2nd class or equivalent CGPA. b) Associate Membership of Institution of Engineers (AMIE) (part A and B) from any recognized institute or organization.
29	**Microbiologist**	9	30 years	By direct recruitment	a) Post Graduation or equivalent degree in Microbiology from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in Microbiology from any recognized university with minimum 2nd class or equivalent CGPA.
30	**Chemist**	9	30 years	By direct recruitment	a) Post Graduation or equivalent degree in Chemistry, Organic Chemistry, Microbiology, Applied Chemistry or Genetic Engineering and Organic Technology from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in Chemistry, Organic Chemistry, Microbiology, Applied Chemistry or Genetic Engineering and Organic Technology from any recognized university with minimum 2nd class or equivalent CGPA.
31	**Accounts Officer**	9	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be	<u>For promotion:</u> a) At least 7 years' experience as Accountant or Audit Super. b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA. <u>For direct recruitment:</u>

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
				promoted; and b) 50% by direct recruitment	a) Post graduation or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
32	**Revenue Officer (Billing)**	9	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 7 years' experience as Office Superintendent or Revenue Superintendent; or c) At least 10 years' experience as Stenographer-cum-Computer Operator. For direct recruitment: a) Post graduation or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
	Revenue Officer (Accounts)	9	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 7 years' experience as Accountant or Audit Superintendent; or For direct recruitment: a) Post graduation or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
33	**Budget Officer**	9	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and	For promotion: a) At least 7 years' experience as Accountant or Audit Superintendent. b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA. For direct recruitment: a) Post graduation or equivalent degree in any subject of Commerce from any

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
				b) 50% by direct recruitment	recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
34	**Audit Officer**	9	30 years	By promotion; if there is no eligible candidate to be promoted, then by direct recruitment.	<u>For promotion:</u> a) Minimum 7 years' experience in Accountant or Audit Superintendent. b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA. <u>For direct recruitment:</u> a) Post graduation or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
35	**Medical Officer**	9	30 years	By direct recruitment	a) MBBS degree from recognized university/ institution. b) 2 years' practicing experience.
36	**Public Relation Officer**	9	30 years	By direct recruitment	Post graduation or equivalent degree in mass communication and journalism from any recognized university with minimum 2nd class or equivalent CGPA or GPA.
37	**Procurement Officer**	9	30 years	By direct recruitment	a) Post graduation or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA or GPA; or b) Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
38	**Estate Officer**	9	30 years	By direct recruitment	a) Graduation (Hons.) or equivalent degree in Law from any recognized university with minimum 2nd class or equivalent CGPA. b) At least 1 year's experience in land acquisition and requisition.
39	**Assistant Programmer**	9	According to Computer Personnel Recruitment Rules, 2019 of the government organization.		

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
40	**Assistant Maintenance Engineer**	9	According to Computer Personnel Recruitment Rules, 2019 of the government organization.		
41	**Kanunga**	10	30 years	a) 50% by promotion and b) 50% by direct recruitment	For promotion: At least 10 years' experience as Surveyor. For direct recruitment: a) Graduation (Hons.) or Post graduation with minimum 2nd class or equivalent CGPA from any recognized university; Or b) Diploma in Engineering (Surveying) survey from any recognized institution or organization. b) At least 5 years' practical experience in the concerned field.
42	**Sub-Assistant Engineer**	10	30 years	By direct recruitment	Diploma in engineering in Civil, Mechanical, Electrical, CSE, Electronics, Environment, Power or Automobiles Engineering from any institute or organization with minimum 2nd class or equivalent CGPA.
43	**Training Assistant**	11	30 years	By direct recruitment	a) Graduation (Hons.) with minimum 2nd class or equivalent CGPA from any recognized university. b) Minimum 2nd class in all examination of educational life.
44	**Office Superintendent**	11	-	By promotion	a) At least 3 years' experience as Head Assistant. b) At least 5 years' experience as UDA or Accounts Assistant. c) Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
45	**Accountant**	11	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: At least 5 years' experience as UDA, Accounts Assistant or Auditor. For direct recruitment: Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
46	**Audit Superintendent**	11	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: At least 5 years' experience as UDA, Accounts Assistant or Auditor. For direct recruitment: Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
47	**Revenue Superintendent**	11	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 3 years' experience as Head Assistant or Stenographer cum Computer Operator; or b) At least 5 years' experience as UDA or Accounts Assistant; or c) At least 10 years' experience as Revenue Inspector. For direct recruitment: Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
48	**Data Entry Supervisor**	11	According to Computer Personnel Recruitment Rules, 2019 for government organizations.		
49	**Stenographer cum-Computer Operator**	13	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: At least 3 years' experience as UDA or Bench Assistant. For direct recruitment: a) Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA. b) Speed of word processing, data entry and typing, etc. shall be- ・ Bengali: minimum 25 words per minute ・ English: minimum 30 words per minute
50	**Computer Operator**	13	According to Computer Personnel Recruitment Rules, 2019 for government organizations.		
51	**Head Assistant**	13	-	By promotion	At least 3 years' experience as UDA, Bench Assistant or Accounts Assistant.
52	**Senior Lab. Assistant**	13	-	By promotion	At least 3 years' experience as Lab. Assistant.

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
53	**Instrumentation Technician**	13	30 years	Direct recruitment	a) Diploma in engineering in electronics, computer science or a related field from any reputed institute or organization. But there shall be a priority for the people who completed PLC (programmable logic controller) training program provided by any recognized institute or organization, such as Bangladesh Council of Scientific and Industrial Research.
54	**Upper Division Assistant**	14	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: At least 5 years' experience as Office Assistant cum Computer Typist, Junior Auditor cum Computer Typist, Junior Accounts Assistant cum Computer Typist, or Cashier. For direct recruitment: Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
55	**Bench Assistant**	14	30 years	By promotion; By direct recruitment if there is no candidate to be promoted.	For promotion: At least 5 years' experience as Office Assistant cum Computer Typist, Junior Auditor cum Computer Typist, Junior Accounts Assistant cum Computer Typist, or Cashier. For direct recruitment: Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
56	**Accounts Assistant**	14	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: At least 5 years' experience as Office Assistant cum Computer Typist, Junior Auditor cum Computer Typist, Junior Accounts Assistant cum Computer Typist, or Cashier. For direct recruitment: Graduation (Hons.) or equivalent degree in any subject of Commerce from any recognized university with minimum 2nd class or equivalent CGPA.
57	**Auditor**	14	30 years	By direct recruitment	Graduation (Hons.) or equivalent degree in any subject of Commerce from any

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
					recognized university with minimum 2nd class or equivalent CGPA.
58	**Laboratory Assistant**	14	30 years	By direct recruitment	Graduation (Hons.) or equivalent degree in any subject of Science from any recognized university with minimum 2nd class or equivalent CGPA.
59	**Pipeline Supervisor**	14	30 years	By promotion; By direct recruitment if there is no eligible candidate to be promoted.	For promotion: a) At least 3 years' experience as Head Plumbing Mechanic, or b) At least 5 years' experience as Work Assistant. For direct recruitment: Graduation (Hons.) or equivalent degree from any recognized university with minimum 2nd class or equivalent CGPA.
60.1	**Foreman (Transport pool)**	14	-	By promotion	At least 5 years' experience as Mechanic in Administration Wing, or Driver.
60.2	**Foreman (Tube well/ Meter)**	14	-	By promotion	At least 5 years' experience as Electrician, Operator, or Meter Mechanic.
60.3	**Foreman (Mechanical)**	14	-	By promotion	At least 5 years' experience as Mechanic in Engineering Wing or Operator.
61	**Senior Data Entry Operator**	14	According to Computer Personnel Recruitment Rules, 2019 for government organizations.		
62	**Nurse**	15	30 years	By direct recruitment	Diploma in nursing and midwifery from any recognized institute and organization.
63	**Head Plumbing Mechanic**	15	-	By promotion	At least 3 years' experience as Plumbing Mechanic.
64	**Office Assistant-cum-Computer Typist**	16	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 3 years' experience as Dispatch Rider or b) At least 7 years' experience as Office Assistant, Helper, or Cleaner. c) Speed of word processing, data entry and typing, etc. shall be- · Bengali: minimum 25 words per minute; · English: minimum 30 words per minute. d) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. For direct recruitment: a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) Speed of word processing, data entry and typing, etc. shall be- · Bengali: minimum 25 words per minute;

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
					▪ English: minimum 30 words per minute.
65	**Photographer**	16	30 years	By direct recruitment	a) HSC or equivalent degree in any subject from any recognized university with minimum 2nd class or equivalent CGPA. b) 3 years' practical experience as a professional photographer or photojournalist.
66	**Junior Auditor-cum-Computer Typist**	16	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50% by direct recruitment	For promotion: a) At least 3 years' experience as Dispatch Rider or b) At least 7 years' experience as Office Assistant/ Helper/ Cleaner. c) Speed of word processing, data entry and typing, etc. shall be: ▪ Bengali: minimum 25 words per minute; ▪ English: minimum 30 words per minute. d) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. For direct recruitment: a) HSC or equivalent from any recognized board with minimum 2nd class or equivalent GPA. b) Speed of word processing, data entry and typing, etc. shall be: ▪ Bengali: minimum 25 words per minute; ▪ English: minimum 30 words per minute.
67	**Junior Accounts Assistant cum Computer Typist**	16	30 years	By direct recruitment	a) HSC or equivalent from any recognized board with minimum 2nd class or equivalent GPA. b) Speed of word processing, data entry and typing, etc. shall be: ▪ Bengali: minimum 25 words per minute; ▪ English: minimum 30 words per minute.
68	**Cashier**	16	30 years	By direct recruitment	HSC or equivalent in Commerce from any recognized board with minimum 2nd class or equivalent GPA.
69	**Data Entry Operator**	16	According to Computer Personnel Recruitment Rules, 2019 for government organization.		
70	**Revenue Inspector**	16	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate	For promotion: a) At least 3 years' experience as Care Taker; or b) At least 5 years' experience as Photocopy Operator, Record Keeper, Assistant Operator , Assistant Plumbing Mechanic, or Dispatch Rider.

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
				to be promoted; and b) 50% by direct recruitment	<u>For direct recruitment:</u> HSC or equivalent in Commerce from any recognized board with minimum 2nd class or equivalent GPA.
71	**Electrician**	16	30 years	By promotion or by direct recruitment	<u>For promotion:</u> At least 5 years' experience as Junior Electrician. <u>For direct recruitment:</u> a) HSC or equivalent from any recognized board with minimum 2nd class or equivalent GPA. b) Auto Electrical Course from any recognized institute or organization. c) At least 5 years' experience in the concerned work.
72	**Mechanic**	16	30 years	By promotion or by direct recruitment	<u>For promotion:</u> At least 5 years' experience as Junior Mechanic. <u>For direct recruitment:</u> a) HSC or equivalent degree from any recognized education board with 2nd class or equivalent GPA. b) Trade course or equivalent degree in concerned subject from any recognized institution or organization. c) At least 3 years' experience in auto mobile workshop to repair the machineries, in case of Mechanic in Administration Wing.
73	**Work Assistant**	16	30 years	By direct recruitment	a) HSC or equivalent in science from any recognized board with minimum 2nd class or equivalent GPA. b) Trade course or equivalent in civil/ electrical/ mechanical for 2 years' from any recognized institution or organization.
74	**Security Inspector**	16	30 years	By promotion or by direct recruitment	<u>For promotion:</u> At least 5 years' experience as Assistant Security Inspector. <u>For direct recruitment:</u> a) HSC or equivalent from any recognized board with minimum 2nd class or equivalent GPA. b) Person with sound health. c) Has the training of ansar or VDP.

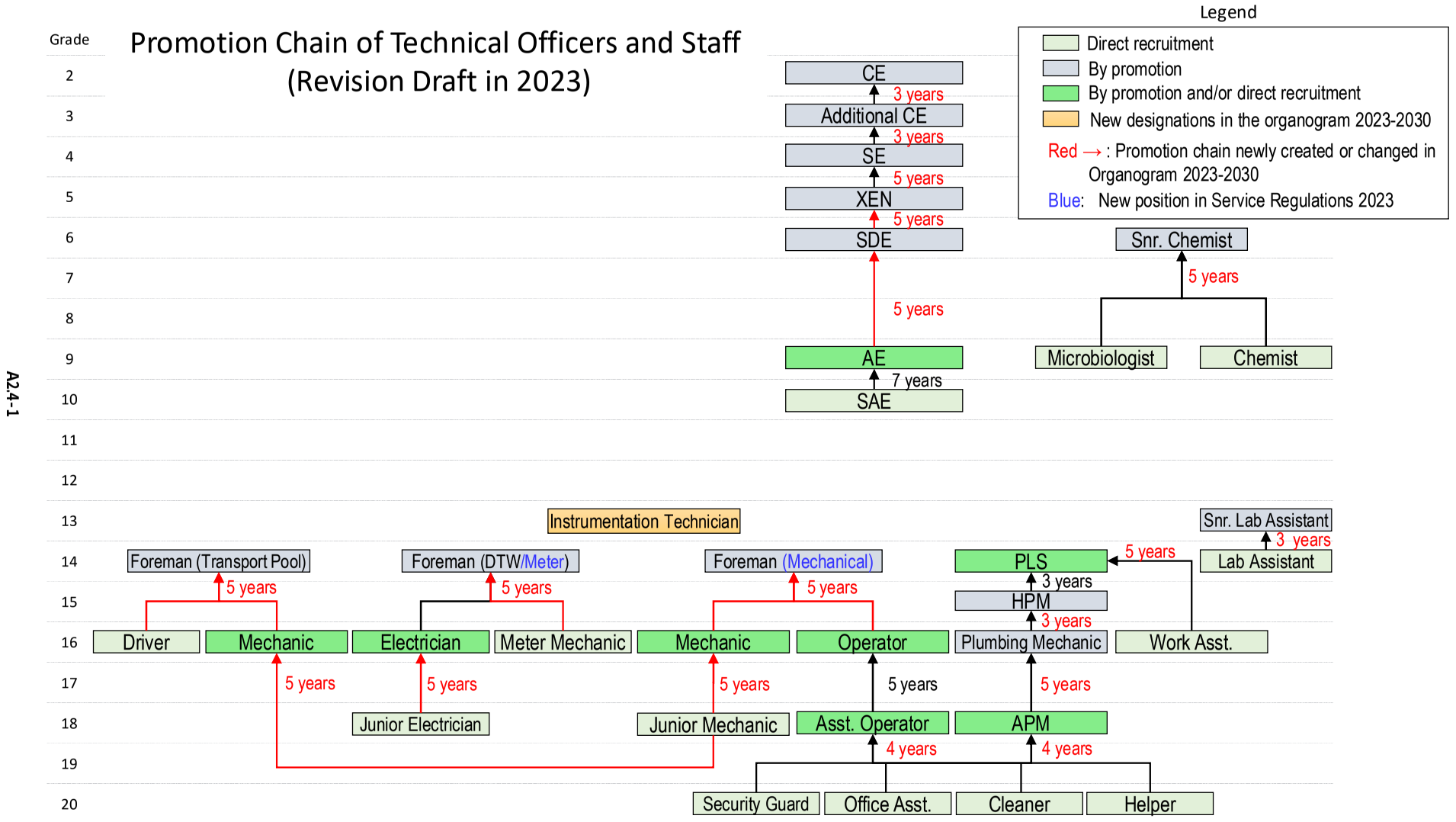
Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
					d) Minimum 3 years' experience in the concerned work.
75	**Storekeeper**	16	30 years	By direct recruitment	HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
76	**Driver**	16	30 years	By direct recruitment	a) At least SSC or equivalent degree from any recognized board having driving license. b) Minimum 3 years' experience in the concerned work.
77	**Meter Mechanic**	16	30 years	By direct recruitment	a) At least HSC Vocational or Equivalent degree from any recognized board in mechanical subject with minimum 2nd class or equivalent GPA. b) 1 year trade course or equivalent degree in mechanical subject from any recognized institute or organization.
78	**Operator**	16	30 years	a) 67% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 33% by direct recruitment	For promotion: At least 5 years' experience as Assistant Operator. For direct recruitment: a) At least HSC or equivalent degree in science from any recognized board in mechanical subject with minimum 2nd class or equivalent GPA. b) At least 2 years' experience in the concerned work.
79	**Plumbing Mechanic**	16	30 years	By promotion	At least 5 years' experience as Assistant Plumbing Mechanic.
80	**Surveyor**	16	30 years	By promotion or by direct recruitment	For direct recruitment: a) 4 years' diploma in survey from any recognized institute or organization. b) Computer operating efficiency with Microsoft Office and database.
81	**Caretaker**	17	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and	For promotion: a) At least 2 years' experience as Record Keeper or Dispatch Rider. b) At least 5 years' experience as Office Assistant. For direct recruitment: a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
				b) 50 % by direct recruitment	
82	**Photocopy Operator**	18	30 years	By direct recruitment	HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
83	**Record Keeper**	18	-	By promotion	At least 4 years' experience as Office Assistant, Helper, or Cleaner.
84	**Medical Attendant**	18	30 years	By direct recruitment	HSC or equivalent degree in science from any recognized board with minimum 2nd class or equivalent GPA.
85	**Assistant Operator**	18	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50 % by direct recruitment	For promotion: At least 4 years' experience as Office Assistant, Security Guard, Helper, or Cleaner. For direct recruitment: HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
86	**Assistant Plumbing Mechanic**	18	30 years	a) 50% by promotion; by direct recruitment if there is no eligible candidate to be promoted; and b) 50 % by direct recruitment	For promotion: At least 4 years' experience as Office Assistant, Security Guard, Helper, or Cleaner. For direct recruitment: HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
87	**Dispatch Rider**	18	30 years	By promotion; By direct recruitment if there is no eligible candidate to be promoted.	For promotion: a) At least 3 years' experience as Office Assistant. b) Shall have the license of motorcycle. For direct recruitment: a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) Shall have the license of motorcycle.

Sl.	Name of Post	Grade	Age Limit for Direct Appointment	Recruitment System	Qualification
88	**Junior Electrician**	18	30 years	By direct recruitment	a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) At least 1 year experience in the concerned work.
89	**Assistant Security Inspector**	18	30 years	By direct recruitment	a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) At least 1 year experience in the concerned work.
90	**Junior Mechanic**	18	30 years	By direct recruitment	a) HSC or equivalent degree from any recognized board. b) At least 1 year experience in the concerned work.
91	**Chainman**	18	30 years	By direct recruitment	a) HSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) At least 1 year experience in the concerned work.
92	**Office Assistant**	20	30 years	By direct recruitment	a) SSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA. b) At least 1 year experience in the concerned work.
93	**Security Guard**	20	30 years	By direct recruitment	SSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
94	**Helper**	20	30 years	By direct recruitment	SSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.
95	**Cleaner**	20	30 years	By direct recruitment	SSC or equivalent degree from any recognized board with minimum 2nd class or equivalent GPA.

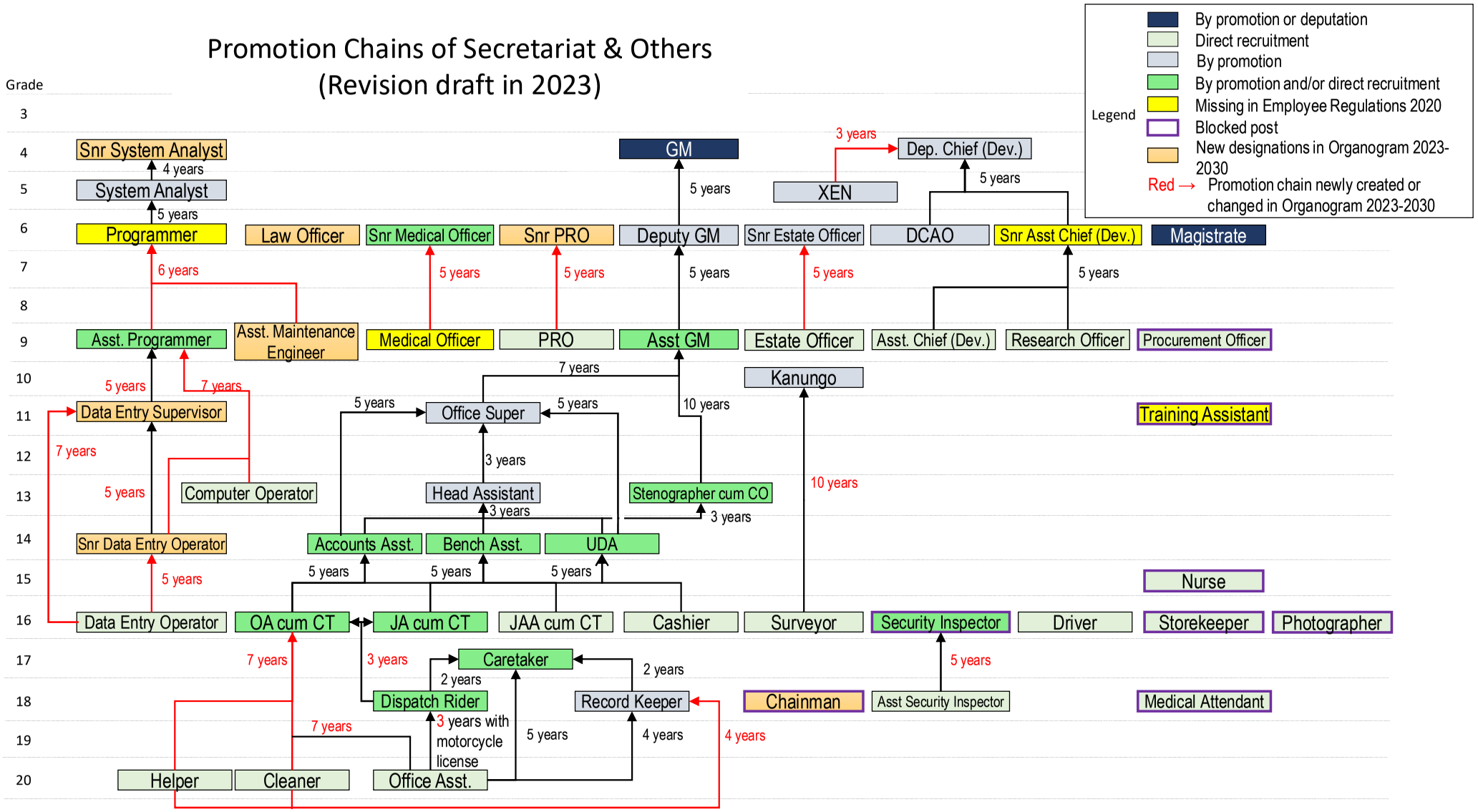
付属資料-2.4：CWASA 職員の昇進体系図

Promotion Chain of Technical Officers and Staff
(Revision Draft in 2023)



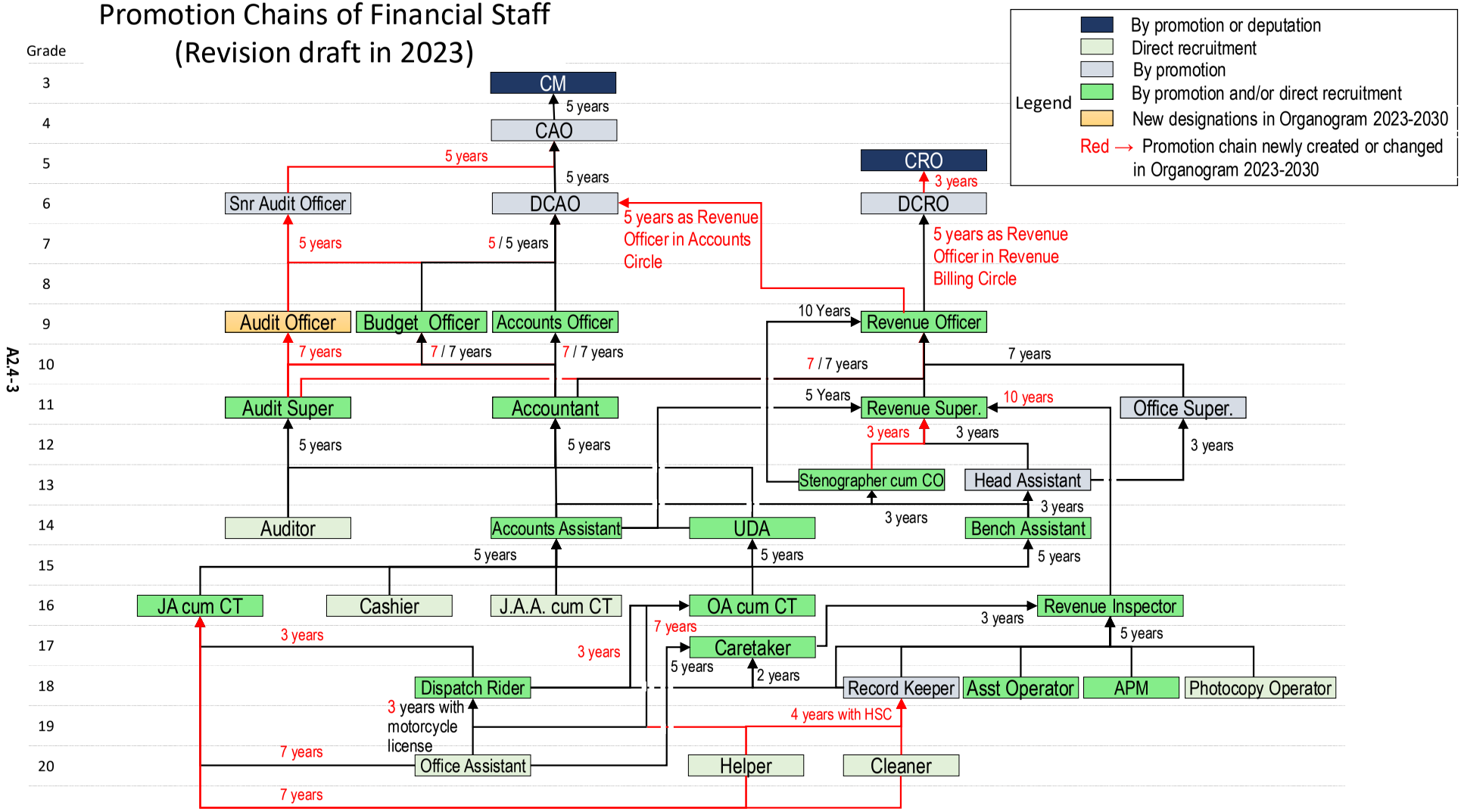
A2.4-1

Promotion Chains of Secretariat & Others
(Revision draft in 2023)



A2.4-2

Promotion Chains of Financial Staff
(Revision draft in 2023)



付属資料-2.5：CWASA 職員の職務記述書

Revised Job Descriptions for Employees

August 2023

Chattogram Water and Sewerage Authority

Advisor on Urban Sanitation Improvement, JICA

Table of Contents

List and grade of designations

(Grade shown in red is tentative and not yet decided by the Ministry.)

S/N	Grade	Designation	Wing	Note
1	2	Chief Engineer	Eng	Proposed to be changed from Grade 3 to Grade 2
2	3	Commercial Manager	Com	
3	3	Additional Chief Engineer	Eng	*1
4	4	General Manager	Admin	
5	4	Superintending Engineer	Eng	
6	4	Deputy Chief (Development)	Eng	
7	4	Chief Accounts Officer	Com	
8	4	Senior System Analyst	Com	*2
9	5	Chief Revenue Officer	Com	
10	5	System Analyst	Com	
11	5	Executive Engineer	Eng	Proposed to be changed from Grade 6 to Grade 5
12	6	Magistrate	Admin	
13	6	Programmer	Com	*3; renamed from Computer Programmer
14	6	Deputy Chief Accounts Officer	Com	
15	6	Deputy Chief Revenue Officer	Com	*1
16	6	Deputy General Manager	Admin	
17	6	Senior Assistant Chief	Eng	*3
18	6	Sub Divisional Engineer	Eng	*1
19	6	Senior Chemist	Eng	*1
20	6	Senior Estate Officer	Admin	*1
21	6	Senior Medical Officer	Admin	*1
22	6	Senior PR Officer	Admin	*2
23	6	Law Officer	Admin	*2
24	6	Senior Audit Officer	Admin	Proposed to change from Grade 8 to 6.
25	9	Assistant General Manager	Admin	
26	9	Assistant Chief (Development)	Eng	
27	9	Research Officer	Eng	
28	9	Assistant Engineer	Eng	
29	9	Microbiologist	Eng	*1
30	9	Chemist	Eng	
31	9	Accounts Officer	Com	
32	9	Revenue Officer	Com	
33	9	Budget Officer	Com	
34	9	Audit Officer	Admin	*2
35	9	Medical Officer	Admin	*3
36	9	PR Officer	Admin	
37	9	Procurement Officer	Admin	
38	9	Estate Officer	Admin	
39	9	Assistant Programmer	Com	Renamed from Assistant Computer Programmer
40	9	Assistant Maintenance Engineer	Com	*2

S/N	Grade	Designation	Wing	Note
41	10	Kanungo	Com	
42	10	Sub Assistant Engineer	Eng	
43	11	Training Assistant	Admin	*1; renamed from Trainer
44	11	Office Superintendent	Admin	
45	11	Accountant	Com	
46	11	Audit Superintendent	Admin	
47	11	Revenue Superintendent	Com	
48	13	Data Entry Supervisor	Admin	*2
49	13	Stenographer cum Computer Operator	Admin	
50	13	Computer Operator	Com	
51	13	Head Assistant	Admin	
52	13	Senior Laboratory Assistant	Eng	
53	13	Instrumentation Technician	Eng	*2
54	14	Upper Division Assistant	Admin	
55	14	Bench Assistant	Admin	
56	14	Accounts Assistant	Com	
57	14	Auditor	Admin	
58	14	Laboratory Assistant	Eng	
59	14	Pipeline Supervisor	Eng	
60	14	Foreman	Eng	
61	14	Senior Data Entry Operator	Admin	*2
62	15	Nurse	Admin	
63	15	Head Plumbing Mechanic	Eng	
64	16	Office Assistant cum Computer Typist	Admin	
65	16	Photographer	Admin	*1
66	16	Junior Auditor cum Computer Typist	Admin	
67	16	Junior Accounts Assistant cum Computer Typist	Com	
68	16	Cashier	Com	
69	16	Data Entry Operator	Admin	
70	16	Meter Inspector	Com	
71	16	Electrician	Eng	
72	16	Mechanic	Eng	Proposed to change from Grade 18 to 16.
73	16	Work Assistant	Eng	
74	16	Security Inspector	Admin	
75	16	Store Keeper	Eng	
76	16	Driver	Admin	
77	16	Meter Mechanic	Eng	
78	16	Operator (Pump/Chlorine/Lime/Filter)	Eng	
79	16	Plumbing Mechanic	Eng	
80	16	Surveyor	Admin	
81	17	Care Taker	Admin	
82	18	Photocopy Machine Operator	Admin	
83	18	Record Keeper	Admin	
84	18	Medical Attendant	Admin	
85	18	Assistant Operator (Pump/Chlorine/Lime/Filter/Valve)	Eng	

S/N	Grade	Designation	Wing	Note
86	18	Assistant Plumbing Mechanic	Eng	
87	18	Dispatch Rider	Admin	
88	18	Junior Electrician	Eng	
89	18	Assistant Security Inspector	Admin	
90	18	Junior Mechanic	Eng	
91	18	Chainman	Admin	*2
92	20	Office Assistant	Admin	
93	20	Security Guard	Admin	
94	20	Helper	Admin	
95	20	Cleaner	Admin	

(Note)
*1: Designation newly created in Organogram 2020 but not included in Employees Service Regulations 2020, thus the grade is tentative.
*2: Designation newly created in Organogram 2023, thus the grade is tentative.
*3: Designation existing before Organogram 2020, but not included in Employees Service Regulations 2020.

Note for the Job Descriptions provided below:

- Black means based on the current version of CWASA prepared before 2014.
- Blue means modification made in 2016.
- Green means newly added or modified in 2023.

1. Chief Engineer

1. Review the plans of all CWASA construction projects and get the approval of DMD (Engineering).
2. Review the reports submitted by Additional Chief Engineers and ensure the timely and appropriate fixation of identified problems with projects and operation& maintenance (O&M) works and also with personnel matters of the Engineering Wing.
3. Advise & assist the Managing Director in all matters of technical aspects and nature.
4. Ensure communication and coordination vertically within Engineering Wing and horizontally with other wings among CWASA.
5. Keep communication with related governmental organizations, international donors, and other WASAs.
6. Review annual work program and annual budget & expenditure for projects, O&M, research, development (R&D), and monitoring, and other works.
7. Review specific work manuals and standards.
8. Function as a member from Engineering Wing for evaluation of tenders through the nomination by the Chairman.

2. Commercial Manager

1. Plan, control, supervise, and coordinate all functions of Commercial Wing.
2. Overall supervision and control on the Accounts, Revenue and Sales Divisions of the Authority.
3. Ensure all receipts and payments of the Authority as per Financial Regulations.
4. Exercise such power on payments and receipts, allowing connections for water etc. as delegated to him under Financial Regulations and Authority's Rules.
5. Supervise and ensure timely and proper billing for all connections and ensure collection thereof.
6. Ensure preparation of revenue budget of the Authority in time and to submit it for approval of the Board and the Government.

7. Prepare information and reports on IDA Mission and meet IDA requirements /covenants related to Commercial Department.
8. Ensure proper deposits and transactions of the Authority's fund in authorized scheduled banks
9. Ensure release of funds from the Government.
10. Any other responsibility entrusted to him by the Authority and as empowered in the Financial Regulations and other Rules of the Authority.

3.1 Additional Chief Engineer (Planning, Development, and Monitoring: PDM)

1. Plan and supervise all CWASA projects related to the construction/ rehabilitation/ FSM and maintenance of the facilities under his/her control.
2. Keep close communication with Chief Engineer and other 2 Additional Chief Engineers to screen common engineering issues and challenges in both water supply and sewerage fields and identify the solutions.
3. Prepare annual work program and annual budget for the assigned tasks to the Circles and divisions/sections under his/her control.
4. Organize the preparation of bill of quantity (BOQ) and tender documents to procure design and supervision consultants, contractors, operators, and equipment and materials.
5. Supervise and give proper directions to the development and updating of technical manuals, SOPs, and standards, as well as the implementation of other research & development works.
6. Coordinate with Chief Engineer and other 2 Additional Chief Engineers and arrange the assessment of training needs and the development of training programs within Engineering Wing.
7. Liaise with Training Center of Administration Wing to coordinate, organize, and implement the training programs.
8. Review the plan and determine the organization of internal/ external workshops to disseminate the outputs of the divisions under his/her control, such as technical manuals, standards, SOPs, and training programs.
9. Review the reports submitted by the Superintending Engineers, Deputy Chief (Development), and other officers and give needed directions for the timely fixation of identified problems and personnel matters in the Circles under his/her control.
10. Keep control over expenditure in consultation with and in conformity with the approved budgets &schemes.
11. Perform the given responsibilities at times.

3.2 Additional Chief Engineer (Water Supply)

1. Plan all CWASA projects related to the construction, rehabilitation and operation& maintenance (O&M) of water works in corporation with Chief Engineer and Additional Chief Engineer (Planning, Development, and Monitoring).
2. Organize the preparation of bill of quantity (BOQ) and tender documents to procure consultants, contractors, operators, and equipment and materials.
3. Prepare annual work program and annual budgets for the O&M works.
4. Cooperate with Additional Chief Engineer (Planning, Development, and Monitoring) to develop and update specific work manuals and standards.
5. Ensure liaison with hired consultants, contractors, and operators on key engineering matters.
6. Cooperate with Additional Chief Engineer (Planning, Development, and Monitoring) to develop training plans for the employees of the circles under his control.
7. Review the reports submitted by the Superintending Engineers under his/her control and give needed directions for the timely fixation of identified problems and personnel matters in the Circles under his/her control.

8. Keep control over expenditure in consultation with and in conformity with the approved budgets &schemes.
9. Perform the given responsibilities at times.

3.3 Additional Chief Engineer (Sewerage)

1. Plan all CWASA projects related to the construction and O&M of sewerage works.
2. Organize the preparation of bill of quantity (BOQ) and tender documents to procure design and supervision consultants, contractors, operators, and equipment and materials.
3. Review and compile annual work program and annual budgets for the assigned tasks under his/her control.
4. Cooperate with Additional Chief Engineer (Planning, Development, and Monitoring) to develop and update specific work manuals and standards.
5. Ensure liaison with hired consultants, contractors, and operators on key engineering matters.
6. Cooperate with Additional Chief Engineer (Planning, Development, and Monitoring) to develop training plans for the employees of the circles under his/her control.
7. Review the reports submitted by the Superintending Engineers under his/her control and give needed directions for the timely fixation of identified problems and personnel matters in the circles under his/her control.
8. Monitor the expenditure so as to be in conformity with the approved budgets & schemes.
9. Perform the given responsibilities at times.

4 General Manager

Responsible to the Deputy Managing Director (Administration) for the following matters:

1. All matters related to a) board of the authority and b) boards for selection, recruitment, promotion, etc.
2. All establishment matters including provident fund, gratuity, group insurance, etc.
3. All legal matters.
4. Labor problem and trade union affairs.
5. Medical matters.
6. Development and implementation of training programs.
7. Transportation for CWASA officers and staff.
8. Security matters.
9. Public relations and protocol services including the publication of tender notice to the newspapers.
10. All correspondence with the government, IDA and other international agencies.
11. Land/estate affairs.
12. Fellowship and scholarship.
13. All confidential matters of the chairman of the board.
14. Discipline and disposal of such cases.
15. Personal files, service book of officers, staff, and others of CWASA.
16. Purchase of all stationary and non-engineering and non-project materials.
17. Keep all records related to the appointment of consultants and project documents.
18. Enhance digital processing of document approval and archiving, in cooperation with ICT Circle.
19. Such other functions as may be assigned to him/her from time to time.

5.1 Superintending Engineer (Treatment & Production: T&P)

1. Plan, supervise and implement all works related to water treatment plants (WTP), booster stations, and distribution control center.
2. Examine WTPs, booster stations, and distribution control center and ensure proper

management.
3. Examine water treatment and ensure water quality.
4. Supervise the management work of WTPs, booster stations, and distribution control center.
5. Manage the work of officers and staffs of the circle.
6. Assess the demand of yearly required materials for managing WTPs, booster stations, and distribution control center.
7. Collect and ensure proper use of required materials for WTPs, booster stations, and distribution control center timely.
8. Keep liaison with R&D and Monitoring Circle for the optimized operation of WTPs, booster stations, and distribution control center.
9. Perform the given responsibilities at times.

5.2 Superintending Engineer (Planning & Construction: P&C)

1. Plan, supervise, implement, and record and report all works related to pipeline network expansion, CWASA buildings management, and deep tube well construction, keeping liaison with related projects and their PIUs.
2. Maintain liaison with the hired consultants for smooth progress of the works.
3. Control the procurement of equipment and materials necessary for the works under his/her Circle.
4. Guide, check, and ensure proper management of Store Division.
5. Keep liaison with MOD Circle, MOC Circle, and PIUs of related projects, so that the final version of designs documents and as-built drawings are collected.
6. Monitor and ensure that the collected design documents and as-built drawings are systematically documented, and/or properly registered in the CWASA server in cooperation with ICT Circle.
7. Administer the officer and staff under his/her Circle.
8. Perform the given responsibilities at times.

5.3 Superintending Engineer (Maintenance, Operation, and Distribution: MOD)

1. Plan, supervise and implement all works related to operation and maintenance of water supply system.
2. Check and ensure proper functioning of water supply system.
3. Maintain quality control by (a) chlorination, (b) chemical & bacteriological tests of water samples, (c) checking house reservoir and overhead tanks for ensuring cleanliness.
4. Maintain record of high and low pressure areas to adjust flow of water by valve operation.
5. Organize, supervise, and control meter repair workshop.
6. Overall responsible for operation, maintenance and security of major installations like reservoirs, booster stations, tube-wells and pumping stations.
7. Keep and provide relevant water quality and quantity records.
8. Control the procurement of stores/materials under his/her Circle.
9. Assess yearly requirement of maintenance materials.
10. Administer the officer and staff under his/her Circle.
11. Perform the given responsibilities at times.

5.4 Superintending Engineer (Sewerage Treatment)

1. Plan, supervise and implement all works related to sewage treatment plants (STP) and fecal sludge treatment plants (FSTP).
2. Examine STPs and FSTPs and ensure proper management.
3. Examine wastewater treatment and fecal sludge treatment and ensure the treated water quality.

4. Supervise the management work of STPs and FSTPs.
5. Manage the work of officers and staff of the circle.
6. Assess the demand of yearly required materials for managing the facilities under his/her control.
7. Assess the needs of training for the employees under his/her circle and cooperate with RDM Circle to plan and arrange necessary training programs.
8. Collect and ensure proper use of required materials and equipment for wastewater treatment plants and fecal sludge treatment plants timely.
9. Perform the given responsibilities at times.

5.5 Superintending Engineer (Research, Development, and Monitoring: RDM)

1. Plan and supervise all work related to research, development, monitoring, fecal sludge management (FSM), and projects.
2. Maintain liaison with the consultants and operators for smooth progress of the works under his/ her control.
3. Plan and supervise the development and updating of technical manuals, SOPs, standards, and training programs as well as other research & development works.
4. Plan and supervise internal/ external workshops to disseminate the outputs of the divisions under his/her control, such as technical manuals, standards, SOPs, and training programs.
5. Keep communication with other circles of Engineering Wing to assess the training needs and plan and develop training programs for the employees.
6. Liaise with other WASAs on technical issues and solutions.
7. Review all related reports and outputs and give necessary feedback and directions to his/her subordinate officers.
8. Administer the officers and staff under his/her Circle.
9. Perform the given responsibilities at times.

5.6 Superintending Engineer (Maintenance, Operation, and Connection: MOC)

1. Keep liaison with related construction projects and P&C Circle and plan and monitor the implementation of all works related to property connections.
2. Plan and monitor the status of all works related to operation and maintenance (O&M) of trunk/ branch sewer, service pipes, property connections, and manhole pumps.
3. Coordinate and enhance cooperation among MOC offices for the temporary assignment of necessary staff and equipment.
4. Keep liaison with P&C Circle and supervise his/her subordinate officers so that all application forms and as-built drawings of property connections, and all O&M records are properly uploaded and updated in computer database and GIS/CAD.
5. Keep liaison with Revenue Billing Circle and MOD Revenue Offices to ensure that customers in the service area are properly billed based on the information of property connections.
6. Keep liaison with MOD Circle for the cooperation in emergency and the efficient use of equipment and human resources.
7. Assess the needs of training for the employees under his/her circle and cooperate with RDM Circle to plan and arrange necessary training programs.
8. Provide necessary directions to fix any problems on installation and maintenance of property connections and O&M of sewer network.
9. Control the procurement of stores/materials under his/her circle.
10. Assess yearly requirement of maintenance equipment and materials.
11. Administer the officers and staff under his/her circle.
12. Perform the given responsibilities at times.

6 Deputy Chief (Development)

1. Check, finalize and submit the Annual Development Program and the Five Years Plan to the related government divisions, such as Economic Relation Division (ERD) and the Planning Commission.
2. Check, finalize and submit the regular progress report of each project to the Planning Commission, ERD, Project Implementation Bureau and related ministries.
3. Communicate with related government divisions regarding the above matters.
4. Ensure close coordination and cooperation among the divisions under his/her control, particularly between Research Division and Environment & Monitoring Division on the in-time provision of monitoring data.
5. Monitor the progress and review drafted technical manuals, SOPs, standards, and other research & development works.
6. Review the plan and coordinate with Additional Chief Engineer (PDM) about the internal/ external workshops to disseminate technical manuals, standards, SOPs, and training programs.
7. Establish, update, and maintain database system of all the data of operation, control, and monitoring, in cooperation with ICT Circle and P&C Circle.
8. Participate as the member secretary of the Deep Tube Wells Condemnation Committee.9. Perform such other functions as may be assigned to him/her from time to time.

7 Chief Accounts Officer

Responsible to the Commercial Manager for the following activities:

1. Plan, control, and supervise activities of Accounts (Finance), Accounts (Management), Budget and Revenue Accounts sections.
2. Ensure compliance with rules and regulations in respect of the payment to contractors /suppliers/ salary of the staffs and officers.
3. Ensure proper accounting transaction of fund from the government as provided in the annual development program & foreign loan for the execution of projects.
4. Keep idea of position of funds of CWASA in banks.
5. Ensure the preparation of financial statements i.e., profit/loss statement, balance sheet etc. yearly for audit purpose.
6. Ensure the maintenance of all ledgers properly, including those related to bank book and online banking.
7. Supervise the preparation of annual revenue budget of CWASA.
8. Chief Accounts Officer and Deputy Chief Accounts Officer (Finance) can jointly approve the bill up to 300,000 Taka and Chief Accounts Officer and Deputy Chief Accounts Officer (Finance) can sign the cheque up to 500,000 Taka. If the Deputy Chief Accounts Officer (Finance) and Chief Accounts Officer are the same person, he/she can sign cheque jointly with Commercial Manager up to 700,000 Taka.
9. Approve the bill and sign cheques of salary allowance, festival allowance, electricity bill, arrear salary allowance and earned leave, recreation allowance, deducted tax, deducted VAT, CD VAT of imported materials of any amount more than 500,000 Taka jointly with the Commercial Manager. Besides, Chief Accounts Officer and Commercial Manager can approve the bill together up to 500,000 Taka and can sign the cheque jointly up to 700,000 Taka. If the Chief Accounts Officer and the Commercial Manager are the same person he/she shall jointly sign the cheque of any amount more than 700,000 Taka jointly with the approval of DMD (Finance).
10. Other special instruction by the higher authority entrusted to him.

8 Senior System Analyst

1. Prioritize the areas of improvement in computer network, software, and hardware in CWASA.
2. Evaluate the assignment status and performance of ICT staff in the relevant departments of CWASA and propose necessary increase/ reallocation if any to the Commercial Manager.
3. Keep control over the expenditure of the ICT Circle in conformity with the approved budget.
4. Keep liaison with other relevant government organizations or public companies such as LGD, CCC, CDA, and KGDCL for cooperation in the development and management of ICT system.
5. Keep communication with CWASA Management and Board members to convince the importance and necessity to realize the master plan for ICT development and to secure the necessary budget.
6. Plan, arrange, and implement necessary training in cooperation with the Training Center of CWASA on the usage of computer network, software, and hardware for the employees of CWASA.
7. Timely report to the Commercial Manager on the status, emergency and challenges of the ICT system development and maintenance.
8. Keep accountable for all the activities of ICT Circle to CWASA.
9. Perform such other functions as may be assigned to him/her from time to time.

9 Chief Revenue Officer

Responsible to the Commercial Manager for the following activities:

1. Supervise the Revenue (Billing) section and ensure the monthly billing of all consumers as per the policy or guidelines.
2. Attend all the problems and complaints on the billing from private consumers and government organizations/ departments.
3. Continuously drive for the full realization of outstanding amounts.
4. Ensure the delivery and correct recording of monthly bills to the consumers.
5. Distribute the duties of the Revenue Officers under him/her for the efficient function of the section.
6. Coordinate the sections of Magistrate, Revenue (Accounts), Computer and Sales.
7. Supervise the issuance of deep tube well license.
8. Ensure the renewal of deep tube well license and the collection of renewal fee.
9. Take actions if there is any mismatch of meter reading or the mal-functioning meter or if any consumer wants to change the connection category from nondomestic to domestic or vice versa.
10. Ensure the overall management of the Revenue (Billing) section.
11. Such other functions as may be assigned to him/her from time to time.

10 System Analyst

1. Supervise and control the activities of staff in ICT Circle.
2. Play the key role to develop, establish and improve the computerization in every section of CWASA.
3. Develop/ update the master plan for the ICT development of CWASA.
4. Review and analyze the functional requirements for the computerization in CWASA and develop the technical specification and quantification of necessary components.
5. Ensure that all the computer network, software and hardware in CWASA are working in good condition.

6. Identify the problem of computer network, software and hardware in CWASA if any and develop/ implement the solution options for its fixation and improvement.
7. Perform such other functions as may be assigned to him/her from time to time.

11.1 Executive Engineer (Procurement)

1. Organize the preparation of the procurement budget for non-engineering supplies and materials.
2. Organize the monitoring of market prices.
3. Review the purchase orders from various CWASA departments.
4. Manage all the procurement process, including the preparation of cost estimate and tender documents and the evaluation of the submitted tenders.
5. Review the suppliers' performance.
6. Ensure that the items delivered are in accordance with the purchase order and are distributed to the department that issued the purchase order.
7. Fix any problem of faulty goods in quality and quantity if any, in liaison with suppliers.
8. Perform the given responsibilities at times.

11.2 Executive Engineer (Kalurghat Booster)

1. Ensure proper formation, maintenance and efficient management of Booster Station (KBS) and Meter Repairing Shop (MRS).
2. Give proper direction and coordinate, arrange and supervise the work to fix any problem including emergency repairing work in KBS reported by the Sub-Divisional Engineer.
3. Plan and arrange necessary on-the-job training for the employees of KBS and MRS.
4. Keep contact with PDB (Power Development Board) and other organizations to ensure power supply and on-demand material supply in KBS and MRS.
5. Ensure in-time procurement of required chemicals and materials for proper management of for KBS and MRS.
6. Report to Superintending Engineer (T&P) regularly on the operation status of KBS and MRS, any emergency in KBS and water supply disruption in Kalurghat Deep Tubewell Area.
7. Perform the given responsibilities at times.

11.3 Executive Engineer (WTP)

1. Ensure proper management of the Water Treatment Plant in-charge.
2. Give proper direction and coordinate, arrange and supervise the work to fix any problem in the WTP including the emergency repairing work reported by Sub-Divisional Engineer.
3. Plan and arrange necessary on-the-job training for the employees of the WTP.
4. Ensure in-time procurement of required chemicals and materials for proper management of the WTP.
5. Maintain communication with PDB (Power Development Board) for continuous power supply to the WTP.
6. Analyze the result of water quality test and give feedback to the daily operation of the WTP, taking into account the technical advice/directions given by Environment and Monitoring Division.
7. Report to Superintending Engineer (T&P) regularly on the operation and maintenance status and any emergency in the WTP.
8. Supervise the work of officers and staff of the WTP.
9. Perform the given responsibilities at times.

11.4 Executive Engineer (Pipeline Network Expansion)

1. Plan all CWASA construction projects related to water distribution pipeline network including interconnection, new construction, rehabilitation and extension.
2. Plan all CWASA construction projects related to lateral sewers and property connections including interconnection, new construction, rehabilitation and extension.3. Organize the preparation of BOQ and drat tender documents and submit them to the Procurement Division with work order for tender to procure design and supervision consultants and engineering contractors.
4. Distribute works to subordinate officers and staffs to supervise the work of hired consultants and contractors.
5. Ensure that the quality control systems are adhered to, and the health and safety procedures are complied with by hired consultants and contractors.
6. Compile as-built drawings and their CAD/GIS data files and submit them to Design and GIS Operation Division.
7. Manage the office works in an effective and well-organized way.
8. Manage and use authorized advanced fund (Imprest) allocated to his/her division and record it in its accounts.
9. Timely report to the Superintending Engineer on the progress and challenges if any of each project.
10. Perform other responsibilities and duties as per office order.

11.5 Executive Engineer (Buildings Management and Deep Tube-Well Construction)

1. Plan all CWASA construction projects related to the construction and rehabilitation of building structures, tube-wells, and pump houses.
2. Plan the construction of boundary walls, retaining walls, precast pillars, and fences to protect CWASA land as required.
3. Organize the regular/ emergency maintenance of CWASA building structures.
4. Organize the preparation of BOQ and draft tender documents and submit them to the Procurement Division with work order to procure design and supervision consultants and engineering contractors.
5. Distribute works to subordinate officers and staffs to supervise the work of hired consultants and contractors.
6. Ensure that the quality control systems are adhered to, and the health and safety procedures are complied with by hired consultants and contractors.
7. Compile as-built drawings and their CAD/GIS data files and submit them to Design and GIS Operation Division.
8. Manage the office works in an effective and well-organized way.
9. Manage and use authorized advanced fund (Imprest) allocated to his/her division and record it in its accounts.
10. Timely report to the Superintending Engineer on the progress and challenges if any of each project.
11. Perform other responsibilities and duties as per office order.

11.6 Executive Engineer (Design and GIS Operation)

1. Review, verify and compile the technical data collected from relevant departments of Engineering Wing into the monthly and annual benchmarking and MIS reports.
2. Collect and update market price information, prepare cost estimation and announce work order for tender preparation and implementation.
3. Organize the collection of the final versions of design documents and as-built drawings of all engineering works and projects.
4. Systematically document the collected design documents and as-built drawings, and

register them in CWASA server in a prescribed digital format or GIS/CAD in cooperation with ICT Circle.
5. Ensure that the enlistment of contractors is properly updated.
6. Conduct technical design preparation according to the requirement of other divisions of Engineering Wing from time to time.
7. Distribute works among the officers and staffs as well as supervise their works.
8. Ensure the proper use and bookkeeping of the division's fund (Imprest cash) to bear incidental expenses.
9. Perform the given responsibilities at times.

11.7 Executive Engineer (MOD)

1. Review the application form for water connections submitted by customers and liaise with Design & GIS Operation Section to check the feasibility of the connection.
2. Organize the site inspection of applied water connections and submit the inspection report to Chief Engineer.
3. Organize and supervise the installation, interconnections, replacement, repair, and maintenance of water distribution pipes, valves, valve chambers, and internal connections in cooperation with MOD (Revenue) and submit the completion report of connection work to Chief Engineer and Design & GIS Operation Division.
4. Organize and supervise the regular on-site inspection, operation and maintenance (O&M) of all sorts of water pumps, chlorine pumps, water network and take necessary steps in case of any electricity failure to adjust.
5. Organize the preparation of BOQ for the procurement of contractors, equipment and materials and submit them to the Procurement Division with work order to procure contractors, equipment, and materials.
6. Organize emergency water supply by carriers and emergency repair of pipeline and pumps after receiving complaints.
7. Organize and supervise the maintenance of estate and infrastructure such as quarters, pump houses, offices, water tanks, stores, and store fields.
8. Ensure the proper execution of the office affairs.
9. Plan and arrange necessary on-the-job training for the employees of MOD.
10. Manage and use authorized advanced fund (Imprest) and record accounts.
11. Timely report to the Superintending Engineer on the daily activities done, emergency, and challenges if any in MOD.
12. Perform the given responsibilities at times.

11.8 Executive Engineer (Sales)

1. Review the application form for water/ sewerage connections submitted by customers and liaise with Design Division to check the feasibility of the connection.
2. Liaise with MODs and organize the site inspection of applied water/ sewerage connections.
3. Review and submit the inspection report to Chief Engineer.
4. Review and issue the demand note to customers and monitor the subsequent payment by customers.
5. Organize the provision of water connection up to water meter and chamber and sewerage connection up to final inspection chamber in customer's holding.
6. Review and submit the completion report of connection work to Chief Engineer and Design & GIS Operation Division.
7. Perform the given responsibilities at times.

11.9 Executive Engineer (Nasirabad Water Control and Booster)

1. Ensure regular monitoring and analyze the status of water supply, transmission and storage systems in KSA through a supervisory control and data acquisition (SCADA) system.
2. Control the water flow based on the analysis through transmission and distribution facilities or to take other actions as required.
3. Compile and provide data and cooperate with Research Division for the integrated supervision and control of all water supply system in CWASA.
4. Ensure proper operation, maintenance and efficient management of Nasirabad Booster Station (NBS).
5. Give proper direction and coordinate, arrange and supervise the work to fix any problem including emergency repair work in NBS.
6. Plan and arrange necessary on-the-job training for the employees.
7. Keep contact with PDB (Power Development Board) and other organizations to ensure power supply and on-demand material supply.
8. Report to Superintending Engineer (T&P) regularly on the operation status and any emergency.
9. Ensure routine housekeeping chores inside and outside of facilities.
10. Ensure the guard of the facility, the check of the gate passes and the transport going inside and outside.
11. Perform the given responsibilities at times.

11.10 Executive Engineer (STP)

1. Ensure proper management of the sewage treatment plant (STP) and fecal sludge treatment plant (FSTP) in charge.
2. Give proper direction and coordinate, arrange, and supervise the work to fix any problem in the STP and FSTP including the emergency repairing work reported by Sub-Divisional Engineer.
3. Plan and arrange necessary on-the-job training for the employees of the STP and FSTP.
4. Ensure in-time procurement of required chemicals and materials for proper management of the STP and FSTP.
5. Maintain communication with PDB (Power Development Board) for continuous power supply to the STP and FSTP.
6. Analyze the result of water quality test and give feedback to the daily operation of the STP and FSTP, taking into account the technical advice/directions from Environment and Monitoring Division.
7. Report to Superintending Engineer (Sewerage Treatment) regularly on the operation and maintenance status and any emergency in the STP and FSTP.
8. Supervise the work of officers and staff of the STP and FSTP.
9. Perform the given responsibilities at times.

11.11 Executive Engineer (Research)

1. Communicate with Executive Engineers and other officers of Engineering Wing to prioritize the topics and issues that need the development/ updating of strategic business plan of CWASA, technical manuals, standards, and SOPs.
2. Develop and update strategic business plan and annual business plan of CWASA in coordination and cooperation with relevant departments.
3. Organize the collection and analysis of available reference materials and data for the development and updating of technical manuals, standards, and SOPs.
4. Take initiative to develop and update technical manuals, standards, and SOPs.
5. Plan and facilitate internal/ external workshops to disseminate the outputs of technical manuals, standards, SOPs, etc.

6. As the Central Water Control Center of CWASA, (a) Establish and update a groundwater model to estimate the water quality and withdrawal capacity of wells based on the monitored data of water quality and water level; (b) Provide integrated supervision and control of all water supply system in cooperation with Nasirabad Water Control and Booster, based on the data supplied from SCADA systems; and (c) Provide early warnings on saline water intrusion and give necessary instructions to relevant departments on water diversion.
7. Report to Superintending Engineer (R&D and Monitoring) regularly on the development and updating status.
8. Participate as the member secretary of the Deep Tube Wells Condemnation Committee.
9. Perform the given responsibilities at times.

11.12 Executive Engineer (Environment and Monitoring)

1. Organize the data collection and review daily water production in WTPs and deep tube-wells and send the data to relevant offices.
2. Monitor the water sampling by MODs along distribution and supply pipelines.
3. Supervise the activities of the Central Laboratory of CWASA, namely to (a) collect and test water samples from water taps, deep tube-wells, and along distribution and supply pipelines; (b) collect and test wastewater samples from large-scale (commercial) wastewater dischargers; and (c) collect, compile, and analyze the results of water quality tests sampled and tested in WTPs and STPs and give technical advice/ direction to relevant WTPs and STPs to improve the operation and maintenance.
4. Conduct environmental and safety monitoring of construction sites, WTPs, and STPs so that environment protection and health & safety measures are implemented.
5. Monitor the implementation status of the plans related to environmental and social considerations.
6. Review the reports submitted by Senior Chemist, related projects, WTPs, and STPs and give recommendations if any problems.
7. Perform the given responsibilities at times.

11.13 Executive Engineer (Store)

1. Confirm the received goods and examine the quality of the total supply.
2. Ensure that stock levels are appropriate and the register is properly maintained.
3. Review and approve purchase requisitions to replenish stock.
4. Inspect the sites regularly to ensure that all goods are in the stock and the storage of goods is secured.
5. Review the issuance of goods and the records in bin cards and ledger book.
6. Prepare regular reports, estimate annual expenditure for proper/better storage of goods, and submit them to his/her superiors.
7. Supervise the work of his subordinates.
8. Perform the given responsibilities at times.

11.14 Executive Engineer (Transport)

1. Allocate vehicles and motorbikes for daily work tasks.
2. Inspect the sites regularly to ensure all vehicles and motor bikes are clean and maintained in good order.
3. Manage CWASA's vehicles maintenance facility.
4. Manage vehicle external maintenance contracts.
5. Manage vehicle documentation.
6. Ensure driver licenses are valid.

7. Monitor and analyze fuel consumption data.
8. Set minimum spares stock levels.
9. Driver management and daily task allocation.
10. Conduct practical test of potential new drivers.
11. Perform the given responsibilities at times.

11.15 Executive Engineer (LIC Development and FSM)

1. Prepare and update a business plan for FSM in cooperation with relevant departments (e.g., Sewerage Treatment Circle, MOC Circle, and P&C Circle) and sewerage projects.
2. Prepare and secure budget to implement the business plan.
3. Cooperate with PR Section, CCC, and CDA in awareness-raising programs regarding the disconnection of septic tanks and pits connected to drains, khals, and water bodies.
4. Organize the preparation of BOQ and drat tender documents and submit them to the Procurement Section with work order for tender to procure outsourced contractor for the collection and transfer service of fecal sludge.
5. Ensure that the quality control systems are adhered to, and the health and safety procedures are complied with by hired contractors.
6. Compile customers' data related to FSM, such as location, customer ID, type of holdings, number of occupants, desludging date, and water connection if any, and send it to Design & GIS Operation Section.
7. Review the reports submitted by hired contractors and give solutions if any problems are identified.
8. Perform the given responsibilities at times.

11.16 Executive Engineer (MOC)

1. Organize and supervise the installation and replacement of property connections in cooperation with relevant MOD Office and MOD (Revenue) Office.
2. Organize and supervise regular on-site inspection and operation and maintenance (O&M) of all sorts of sewer network and relevant pumps and take necessary steps in case of any emergency events.
3. Organize the preparation of BOQ for the procurement of contractors, equipment, and materials and submit them to the Procurement Section with work order to procure contractors, equipment, and materials.
4. Ensure the proper execution of the office affairs.
5. Arrange the implementation of necessary training for the employees of the MOC Office under his/her control.
6. Manage and use authorized advanced fund (Imprest) and record accounts.
7. Timely report to the Superintending Engineer on the daily activities done, emergency, and challenges if any in the MOC Office.
8. Perform the given responsibilities at times.

12 Magistrate

Responsible to the Managing Director for the following activities:

1. Manage the mobile court against illegal water connection and deep tube well.
2. Inflict punishment for unlawful assembly in the premises of CWASA.
3. Deal with all the legal matters except those related to Legal Section.
4. Exercise the powers given in the Water Supply and Sewerage Authority Act, 1996.
5. Such other functions as may be assigned to him/her from time to time.

13 Programmer

1. Operate and maintain an appropriate and efficient Management Information System at CWASA.
2. Provide required hardware and software service for operating.
3. Develop manual work methods of CWASA and supervise the computerization work of prepared manual work method including software and hardware components.
4. Supervise and maintain the software and hardware components of computerized method.
5. Arrange the way to keep the prepared database in good condition.
6. Plan the work of the section under his/her control and to perform the work as per plan properly and efficiently.
7. Distribute the work among staff at times.
8. Review the result of section works and if necessary, develop the work method.
9. Check networking at times and supervise software upgrade.
10. Review the work of staff at times.
11. Perform the given responsibilities at times.

14.1 Deputy Chief Accounts Officer (Finance)

Responsible to the Chief Accounts Officer for the following activities:

1. Maintain all the bank books, the Accounts Payable Journal (APJ), the Accounts Payable Ledger (APL) and other ledgers related to Accounts (Finance) division.
2. Ensure all payments of CWASA as per rules and regulations.
3. Deal with administrative issues of the staff of Accounts divisions from grade 17 to 20.
4. Receive the bills from contractors and suppliers, the pay-bills for officers and staffs, the utility bills, the bills of holding tax, land tax and vehicle fitness tax and other bills and arrange them payment.
5. Make correspondence with relevant departments in case of the irregularity observed in bills.
6. Check the transactions of the foreign loan & GOB loan prepared by Accounts section.
7. Look after all books and transactions of provident fund.
8. Arrange the investment of all CWASA fund.
9. Approve the bill of salary allowance, festival allowance, arrear salary allowance and electricity bill of various vouchers in CWASA up to 100,000 Taka and for other payments shall approve the bill up to 25,000 Taka.
10. Sign the cheques of salary allowance, festival allowance, arrear salary allowance and electricity bill of various installments in CWASA, up to 200,000 Taka jointly with the Accounts Officer (Finance) and up to 500,000 Taka jointly with the Chief Accounts Officer. If the Chief Accounts Officer and the Deputy Chief Accounts Officer are the same persons shall jointly sign the cheque with the Commercial Manager.
11. Correspond with different banks for the release/transfer of fund.
12. Other special instruction by the higher authority entrusted to him.

14.2 Deputy Chief Accounts Officer (Management)

Responsible to the Chief Accounts Officer for the following activities:

1. Supervise the work of officers and staff of (a) Accounts (Management) Division, (b) Budget Division and (c) Revenue (Accounts) Division.
2. Assist/ provide documents to prepare miscellaneous IDA and Government reports as and when required.
3. Look after administrative matters of class 4 employees (granting of casual leave for one day to class 3 employees and recommending administrative matters of officers and class 3 employees of the Section to senior officers).
4. Supervise proper accounting method applied by Accounts (Management) Division in preparation of yearly financial statements.

5. Monitor external audit team for yearly audit report of the organization in time.
6. Supervise to prepare, review yearly revenue budget & development budget of the Authority in collaboration with officer and staff of Division.
7. Attend revenue & development budget meeting and convention as arranged by the ministry.
8. Supervise revenue accounts for monthly /quarterly/yearly collection from banks in collaboration with employees of the divisions under his/her control.
9. Meet IDA team, external audit team, Government audit team from time to time for clarification of points etc.
10. Any other job specifically entrusted by the Authority.
11. Look after the functions of DCA (Finance) in his absence.

14.3 Deputy Chief Accounts Officer (Pension & GPF)

1. Implement regular payment of salary and allowances through EFT.
2. Manage the payment transactions of gratuity and pension.
3. Manage the fund and investment of FDR.
4. Ensure the automatic transfer GPF and pension by maintaining proper software in collaboration with ICT Circle.
5. Provide relevant information to stakeholders.
6. Prepare monthly report for the stakeholders.
7. Communicate with the Budget Officer to prepare a central pension budget.
8. Coordinate with the Secretariat regarding pension-related matters.
9. Fulfill such other functions as may be assigned to him/her from time to time.

15 Deputy Chief Revenue Officer

Responsible to the Chief Revenue Officer for the following activities:

1. Regularly check that the records of customer account information are updated in time and with accuracy.
2. Ensure timely cooperation with Sales Division/ MODs/ MOCs to issue demand notes and collect connection fee and other fees from new accounts.
3. Monitor the progress of data entry of water consumption and check the in-time preparation and issuance of bills.
4. Review and finalize water consumption reports.
5. Investigate and analyze customer queries, verify customer complaints, prepare reports, and submit them to the Chief Revenue Officer.
6. Monitor and check the issuance/ renewal of deep tube-well license and the collection of renewal fee.
7. Fulfill such other functions as may be assigned to him/her from time to time.

16.1 Deputy General Manager (Ad-1)

Responsible to General Manager for the following tasks:

1. Develop, maintain, and implement a human resources development plan.
2. Arrange the meeting of boards for selection, recruitment, promotion, etc.
3. Develop, maintain, update, and digitalize each staff's Personnel File, Service Book, and personal database.
4. Review and draft the updated CWASA's employee rules and regulations.
5. Monitor attendance and leave credits of the employees.
6. Determine salary scales and allowances including time scale adjustments.
7. Monitor employee overtime.
8. Coordinate employee recruitment, promotion, and transfer.
9. Coordinate the annual evaluation process of officers and staff to be recorded in Annual

Confidential Report.
10. Manage staff leaving and retirement procedures including end of service gratuity.
11. Distribute work of the above tasks among his/her subordinates and monitor the progress of their work.

12. Fulfill such other functions as may be assigned to him/her from time to time.

16.2 Deputy General Manager (Ad-2)

Responsible to General Manager for the following tasks:
1. Receive and distribute incoming mail.
2. Receive, disseminate, and respond to Government orders.
3. Distribute internal notices.
4. Operate CWASA's dispatch service.
5. Operate and maintain the traditional/ digitalized central filing system, and enhance its digitalization.
6. Secretarial support to the Board of Directors.
7. Allocate office accommodation and maintain and review office layout plans as needed in CWASA buildings.
8. Manage insurance policies, provident fund, and related matters.
9. Coordinate meeting rooms.
10. Manage the employee discipline procedures.
11. Manage labor disputes and trade union issues.
12. Procurement of all stationary and non-engineering and non-project materials.
13. Manage the allocated imprest cash.
14. Organize CWASA events and functions.
15. Ensure the proper functioning of Security Section.
16. Distribute works of the above tasks among his/her subordinates and monitor the progress of their work.
17. Fulfill such other functions as may be assigned to him/her from time to time.

17 Senior Assistant Chief (Development)

Responsible to the Deputy Chief (Development) for the following activities:
1. Supervise the preparation/revision of and review the Annual Development Program and the Five Years Plan.
2. Supervise the preparation/revision of and review the regular progress report of each project.
3. Work as the Deputy Chief (Development) in the absence of him/her.
4. Distribute and supervise the works of the staff in the Development division.
5. Such other functions as may be assigned to him/her from time to time.

18.1 Sub-Divisional Engineer (Kalurghat Booster)

1. Visit the sites of Booster Station (KBS) regularly including the period when the office is closed to ensure proper management.
2. Visit Meter Repairing Shop (MRS) at least three days a week and ensure the work progress and quality.
3. Assist the Executive Engineer in implementing the planned on-the-job training for the employees of KBS and MRS.
4. Assess the demand of chemicals for KBS and MRS.
5. Regularly compile records of operation and maintenance of KBS and MRS and report it to the Executive Engineer.

6. Immediately report any emergency in KBS and water supply disruption in Kalurghat Deep Tube-well Area to the Executive Engineer.
7. Organize and perform emergency repair work of KBS as per the direction of the Executive Engineer.
8. Support the Executive Engineer to give proper directions to the subordinate staff and supervise the security system of the Station.
9. Perform the given responsibilities at times.

18.2 Sub-Divisional Engineer (WTP)

1. Visit the sites of the Water Treatment Plant in-charge to ensure proper management.
2. Assess required chemicals and demand of materials for proper management of the WTP.
3. Supervise regular water quality test.
4. Regularly compile record of operation and maintenance, water quality test and supplied water volume related work and submit it to the Executive Engineer.
5. Immediately report any emergency in the WTP to the Executive Engineer.
6. Organize and perform the emergency repairing work in the WTP as per the direction of the Executive Engineer.
7. Support the Executive Engineer for supervising the work of subordinate officers and staffs.
8. Assist the Executive Engineer in implementing the planned on-the-job training to the employees of the WTP.
9. Perform the given responsibilities at times.

18.3 Sub-Divisional Engineer (Pipeline Network Expansion)

1. Assist the Executive Engineer in planning all CWASA construction projects related to water distribution network and branch sewer, service pipes, and lateral sewer.
2. Assist the Executive Engineer in preparing BOQ and tender documents to procure consultants and contractors.
3. Supervise the field work of hired contractors with his/her subordinate officers and staffs.
4. Manage the office works in an effective and well-organized way.
5. Timely report to the Executive Engineer on the progress, emergency, and challenges if any of each project.
6. Perform other responsibilities and duties as per office order.

18.4 Sub-Divisional Engineer (Buildings and Deep Tube-Wells Management)

1. Assist the Executive Engineer in planning all CWASA construction projects related to CWASA buildings, deep tube-wells and pump houses, boundary/ retaining walls, precast pillars, fences to protect CWASA land.
2. Assist the Executive Engineer in planning the regular/ emergency maintenance work of CWASA buildings.
3. Assist the Executive Engineer in preparing BOQ and tender documents to procure consultants and contractors.
4. Supervise the field work of hired contractors with his/her subordinate officers and staffs.
5. Manage the office works in an effective and well-organized way.
6. Timely report to the Executive Engineer on the progress, emergency and challenges if any of each project.
7. Perform other responsibilities and duties as per office order.

18.5 Sub-Divisional Engineer (Design & GIS Operation)

1. Assist the Executive Engineer (Design and GIS Operation) in organizing and implementing the following activities:

- Collection of technical data from relevant departments of Engineering Wing and verify the data for the monthly and annual benchmarking, MIS report and daily water production.
- Collection and updating of market price information.

2. Follow up the status of on-going and completed engineering projects and organize the collection of finalized version of design documents and as-built drawings.
3. Organize the document and digital archiving and registration on GIS of collected design documents and as-built drawings in cooperation with ICT Circle from time to time.
4. Organize the updating of enlistment of contractors.
5. Perform the given responsibilities at times.

18.6 Sub-Divisional Engineer (MOD)

1. Assist the Executive Engineer in organizing and supervising the following activities:
   - Regular maintenance of all sorts of water pumps, chlorine pumps and taking necessary steps in case of any electricity failure to adjust.
   - Installation, interconnection, replacement, repair and maintenance of water distribution pipes, valves, valve chambers, sewer and internal connections, in cooperation with Sales Division and MOD (Revenue).
   - Emergency water supply to carrier and emergency repair of pipeline and pumps after receiving complaints.
   - Maintenance of estate and infrastructure such as quarters, pump houses, offices, water tanks, stores and store fields.
2. Draft the BOQ for the procurement of contractors, equipment and materials and submit them to the Executive Engineer.
3. Timely report to the Executive Engineer on the daily activities done, emergency, and challenges if any.
4. Perform the given responsibilities at times.

18.7 Sub-Divisional Engineer (Sales)

1. Assist the Executive Engineer (Sales) in reviewing the water/ sewerage application form submitted by customers.
2. Supervise the site inspection of applied water/ sewerage connections.
3. Prepare the site inspection report and submit it to the Executive Engineer (Sales).
4. Supervise the site work to provide water/ sewerage connections.
5. Prepare the completion report of connection work and submit it to the Executive Engineer (Sales).
6. Perform the given responsibilities at times.

18.8 Sub-Divisional Engineer (Nasirabad Water Control and Booster)

1. Regularly monitor and assist the Executive Engineer (Nasirabad Water Control and Booster) in analyzing the water supply, transmission and storage system in KSA through SCADA system.
2. Assist and act as the deputy of Executive Engineer (Nasirabad Water Management) in cased of his absence to control the water flow through transmission and distribution facilities or to take other actions as required.
3. Supervise the operation and maintenance of Nasirabad Booster Station and the fixing work of any problem and emergency repair.
4. Timely report to Executive Engineer (Nasirabad Water Control and Booster) on the operation and maintenance status and any emergency.
5. Perform the given responsibilities at times.

18.9 Sub-Divisional Engineer (STP)

1. Visit the site of the Sewage Treatment Plant (STP) and Fecal Sludge Treatment Plant (FSTP) in-charge to ensure proper management.
2. Assess required chemicals and demand of materials for proper management of the STP and FSTP.
3. Supervise regular water quality tests.
4. Regularly compile record of operation and maintenance, water quality test and treated wastewater volume related work and submit it to the Executive Engineer.
5. Immediately report any emergency in the STP and FSTP to the Executive Engineer.
6. Organize and perform the emergency repair work in the STP and FSTP as per the direction of the Executive Engineer.
7. Support the Executive Engineer for supervising the work of subordinate officers and staff.
8. Assist the Executive Engineer in implementing the planned on-the-job training for the employees of the in-charge STP and FSTP.
9. Perform the given responsibilities at times.

18.10 Sub-Divisional Engineer (Training)

1. Communicate with officers and staff of Engineering Wing to assess the capacity and training needs of each employee.
2. Update employees' database of Engineering Wing including the incorporation of the data of career history of each employee, in cooperation with Administration-1 Division and ICT Circle.
3. Develop mid-term and annual training programs within Engineering Wing and estimate necessary costs.
4. Keep communication with Training Center of Administration Wing for the available training opportunities, methods, and funds.
5. Perform the given responsibilities at times.

18.11 Sub-Divisional Engineer (Research)

1. Assist the Executive Engineer in implementing the following activities:
   - Collect and analyze available reference materials and data for the development and updating of technical manuals, standards, and SOPs.
   - Develop the draft and update technical manuals, standards, and SOPs.
   - Organize internal/ external workshops to disseminate the outputs of technical manuals, standards, SOPs, etc.
   - Establish and update a groundwater model to estimate the water quality and withdrawal capacity of wells based on the monitored data of water quality and water level.
   - Provide integrated supervision and control of all water supply system in cooperation with Nasirabad Water Control and Booster, based on the data supplied from SCADA systems.
   - Provide early warnings on saline water intrusion and give necessary instructions to relevant departments on water diversion.
2. Distribute work to subordinate officers and staffs to supervise the performance.
3. Perform the given responsibilities at times.

18.12 Sub-Divisional Engineer (Environment and Monitoring)

1. Assist the Executive Engineer in implementing the following activities:
   - Collect data of daily water production in WTPs and deep tube-wells.
   - Collect data of water sampling by MODs along distribution and supply pipelines.
   - Regularly check on-site the activities of the Central Laboratory of CWASA, namely to (a) collect and test water samples from water taps, deep tube-wells, and along distribution and

supply pipelines; (b) collect and test wastewater samples from large-scale (commercial) wastewater dischargers.
- Review and validate the technical advice/ direction given to relevant WTPs and STPs to improve the operation and maintenance.
- Conduct environmental and safety monitoring of construction sites, WTPs, and STPs so that environment protection and health & safety measures are implemented.
- Monitor the implementation status of the plans related to environmental and social considerations.

2. Distribute work to subordinate officers and staff to supervise performance.
3. Perform the given responsibilities at times.

18.13 Sub-Divisional Engineer (Transport)

1. Assist the Executive Engineer in implementing the following activities:
- Allocate vehicles and motorbikes for daily work tasks.
- Inspect the sites and check the conditions of all vehicles, motor bikes, and CWASA's vehicles maintenance facility.
- Manage vehicle external maintenance contracts, and vehicle documentation.
- Ensure driver's licenses are valid.
- Monitor and analyze fuel consumption data.
- Check the status of stocked spare parts.
- Manage drivers' daily task allocation.
- Conduct practical tests of potential new drivers.

2. Distribute work to subordinate officers and staff to supervise performance.
3. Perform the given responsibilities at times.

18.14 Sub-Divisional Engineer (LIC Development and FSM)

1. Assist the Executive Engineer in implementing the following activities:
- Prepare and update a business plan for FSM.
- Organize awareness-raising programs regarding the disconnection of septic tanks and pits connected to drains, khals, and water bodies.
- Prepare BOQ and drat tender documents to procure outsourced contractor for the collection and transfer service of fecal sludge.
- Check on-site from time to time that the quality control systems are adhered to, and the health and safety procedures are complied with by hired contractors.
- Organize the collection of customers' data related to FSM, such as location, customer ID, type of holdings, number of occupants, desludging date, and water connection.

2.Distribute work to subordinate officers and staffs to supervise the work of hired contractors.
3. Perform the given responsibilities at times.

18.15 Sub-Divisional Engineer (MOC)

1. Assist the Executive Engineer in organizing and supervising the following activities:
- Installation and replacement of property connections.
- Inspection and O&M of all sorts of sewer network and relevant pumps and proper response to fix any emergency events.

2. Draft the BOQ for the procurement of contractors, equipment and materials and submit them to the Executive Engineer.
3. Timely report to the Executive Engineer on the daily activities done, emergency, and challenges if any.
4. Perform the given responsibilities at times.

19 Senior Chemist

1. Supervise and control the work of staff in the Environment and Monitoring Division.
2. Supervise the physical, chemical, biological, and biochemical testing of the water and wastewater samples collected from different points such as WTPs, STPs, and CWASA service area.
3. Analyze the result of water quality tests and timely propose to the concerned departments about the critical parameters, the expected reasons and the recommended countermeasures to fix and improve them.
4. Review and approve the order note to purchase necessary chemicals and other materials for further procurement process.
5. Review and verify the accuracy of water quality tests conducted in all CWASA facilities and give necessary guidance and assistance if necessary to the concerned department.
6. Compile and submit to his/her superiors regularly the water quality test and analysis report conducted in all CWASA facilities.
7. Fulfill such other functions as may be assigned to him/her from time to time.

20 Senior Estate Officer

1. Ensure that all land and estate affairs are looked after, such as acquiring new land, facilitating the payment of land taxes and lease fees and protecting land from encroachment.
2. Look after all legal matters related to estate.
3. Maintain the CWASA rest house.
4. Provide the house allotment to CWASA officers and staff.
5. Maintain the duplicate key box in the CWASA head office.
6. Supervise the work of cleaners in the CWASA head office building.
7. Fulfill such other functions as may be assigned to him/her from time to time.

21 Senior Medical Officer

1. Evaluate a patient's symptoms and determine the most appropriate course of treatment to address them, together with Medical Officer.
2. Timely report to General Manager the medical treatment activities, updated trends, and healthcare concerns, as well as liaise between administrative and medical staff.
3. Supervise and evaluate the work of Medical Officer, Nurse, and Medical Attendant to ensure that the current care program is as effective as possible.
4. Manage allocated budgets and identify areas of improvement in medical care.
5. Perform the given responsibilities at times.

22 Senior Public Relations Officer

1. Maintain liaison and communication with media, Board, Directors, and relevant departments of CWASA, and relevant organizations such as LGD, DOE, CCC, and CDA.
2. Develop annual PR programs and secure corresponding budget regarding various meetings and events with media, customers, citizens, donors, and other stakeholders to announce and disseminate activities and achievements of CWASA.
3. Review and approve the publication of important CWASA notices and advertisements.
4. Give directions to coordinate and organize internal and external programs for awareness raising, campaigning, and advertising according to the annual PR programs.
5. Plan and work with ICT Circle to create and update various announcement and communication channels such as CWASA website and Facebook site.
6. Develop and implement efficient and effective means to enhance communication within CWASA.
7. Fulfill such other functions as may be assigned to him/her from time to time.

23 Law Officer

1. Collect and analyze requisite legal information, data, or appeals that would need legal actions such as standing court cases, claims, and contracts and agreements between CWASA and stakeholders.
2. Plan and arrange the implementation of prioritized legal actions such as encroachment of estate, standing court cases, claims, entering into contracts and agreements between CWASA and stakeholders, prior to the consideration and approval of MD.
3. Review, develop, and recommend rules and regulations that will upgrade CWASA's performance, internal governance, customer service and relations, etc.
4. Cooperate with PR Section to create awareness among the larger public and staff through various media like radio, TV, publications regarding the winning of court cases on all legal matters of CWASA.
5. Appear for defense or prosecution in the courts of law and arbitration bodies on behalf of CWASA to keep the interests of the Authority against public, individuals or corporate bodies.
6. Review and finalize the contracts, agreements, memorandum of understandings and any other legal transaction to minimize losses in cash or deed emanating from poor contract obligations.
7. Prepare and/or submit periodic and timely reports to General Manager with a view to appraise management status of legal affairs in the Authority and highlight challenges that require immediate attention either by the Board or Management to decide for onward smooth performance.
8. Fulfill such other functions as may be assigned to him/her from time to time.

24 Senior Audit Officer

Responsible to the Managing Director for the following activities:

1. Review and submit audit observations report from various departments/sections from time to time.
2. Direct the special audit and the investigation on any specific matters by the order of the chairman.
3. Review and submit the answer of respective sections for the raised audit objections/observations to the ministry for disposal.
4. Direct the examination of different issues getting directions from the Managing Director.
5. Communicate regarding audit issues with the ministry and the concerned division /section of CWASA.
6. Make sure that contacts with the external/Government auditors is maintained.
7. Supervise the work of his/her subordinates.
8. Ensure the overall management of Audit section.
9. Fulfill such other functions as may be assigned to him/her from time to time.

25.1 Assistant General Manager (Ad-1)

Responsible to the Deputy General Manager (Ad-1) for assisting in the following activities and for managing related files:

1. Arrange the meeting of boards for selection, recruitment, promotion, etc.
2. Develop, maintain, update, and digitalize each staff's Personnel File, Service Book, and personal database.
3. Review and draft the updated CWASA's employee rules and regulations.
4. Monitor attendance and leave credits of the employees.
5. Determine salary scales and allowances including time scale adjustments.

6. Check the record of employee overtime.
7. Coordinate employee recruitment, promotion, and transfer.
8. Compile annual evaluation of officers and staff to be recorded in Annual Confidential Report.
9. Manage staff leaving and retirement procedures including end of service gratuity.
10. Fulfill such other duties as to be given to him from time to time.

25.2 Assistant General Manager (Training Center)

Responsible to the Deputy General Manager (Ad-1) for the following activities and for managing related files:

1. Develop, maintain, and implement a human resources development plan.
2. Arrange with the Assistant General Manager (Ad-1) the meeting of boards for selection, recruitment, promotion, etc.
3. Cooperate with Assistant General Manager (Ad-1) in developing, maintaining, updating, and digitalizing each staff's Personnel File, Service Book, and personal database, based on the results of implemented training programs.
4. Cooperate with Assistant General Manager (Ad-1) in coordinating employee recruitment, promotion, and transfer based on the results of implemented training.
5. Fulfill such other duties as to be given to him from time to time.

25.3 Assistant General Manager (Ad-2)

Responsible to the Deputy General Manager (Ad-2) for assisting in the following activities and for managing related files:

1. Receive and distribute incoming mail.
2. Receive, disseminate, and respond to Government orders.
3. Distribute internal notices.
4. Operate CWASA's dispatch service.
5. Operate and maintain the traditional/ digitalized central filing system.
6. Provide secretarial support to the Board of Directors.
7. Allocate office accommodation and maintain and review office layout plans as necessary in CWASA buildings.
8. Manage insurance policies, provident fund, and related matters.
9. Coordinate meeting room.
10. Manage the employee discipline procedures.
11. File labor disputes and trade union issues.
12. Manage the inventory of stationaries and imprest cash.
13. Organize CWASA events and functions.
14. Fulfill such other duties as to be given to him from time to time.

26 Assistant Chief (Development)

Responsible to the Senior Assistant Chief (Development), for the following activities:

1. Participate in preparing and revising, if necessary, the Annual Development Program and the Five Years Plan from technical and engineering aspects.
2. Review and analyze the relevant study and evaluate the feasibility of a project at its development stage, in terms of technical and engineering aspects.
3. Monitor, analyze and prepare regularly the report on the physical progress of a project and match it with the physical progress.
4. Maintain liaison and coordination with the CWASA project directors and deputy project directors, as well as with the sections of Accounts (Management) and Accounts (Finance) if necessary, regarding the above activities.

5. Such other functions as may be assigned to him/her from time to time.

27 Research Officer

1. Participate in preparing and revising, if necessary, the Annual Development Program and the Five Years Plan.
2. Review and analyze the relevant study and evaluate the feasibility of a project at its development stage, by calculating IRR (internal rate of return), BCR (benefit cost ratio), etc.
3. Monitor, analyze and prepare regularly the report on the financial progress of a project, and match it with the physical progress.
4. Maintain liaison and coordination with the sections of Accounts (Management) and Accounts (Finance), as well as CWASA director and deputy director of a project if necessary, related to the above activities.
5. Fulfill such other functions as may be assigned to him/her from time to time.

28.1 Assistant Engineer (Civil)

1. Assist the immediate supervising officer (Sub Divisional Engineer or Executive Engineer) in the execution of his/her work.
2. Supervise the work of his/her subordinates, such as SAE, work assistants and other site supervisors
2. Supervise daily works in progress and issue instructions to the site supervisor.
3. Report on progress of work to his/her immediate supervising officer daily.
4. Check indent for materials to be issued to contractors.
5. Prepare revised estimate and supplementary bill.
6. Check contractors' bill and materials statement, etc.
7. Any other job as may be assigned to him/her from time to time.

28.2 Assistant Engineer (Mechanical/ Operation)

1. Operation and day-to-day maintenance of pumps starter and chlorination of tube wells in the jurisdiction of his/her department, and other facilities.
2. Record water production or wastewater treatment and submit the same to the immediate supervising officer.
3. Check estimate and bills prepared by SAE and recommend the same to the immediate supervising officer.
4. Keep materials accounts needed in maintenance and repair of pumps, starter, and other facilities.
5. Take action on any mechanical breakdown of pumps and other facilities.
6. Report to his/her immediate supervising officer after breakdown and also after restoration.
7. Overall supervision of all maintenance repair and operation works.
8. Ensure proper execution of operational and maintenance works as may be assigned by his/her immediate supervising officer.
9. Ensure safety and security of pumps and machineries under him.
10. Act according to the instructions of his/her immediate supervising officer of the concerned division.
11. Keep records of daily water production /wastewater inflow figures and submit report to his immediate supervising officer regularly.
12. Ensure chlorination of water produced by the pumps when in MOD.
13. Any other job as may be required by the competent authority.

28.3 Assistant Engineer (Electrical)

1. Assist the immediate supervising officer (Executive Engineer or Sub Divisional Engineer) in the execution of his/her works.

2. Ensure proper repair, maintenance of machineries, pumps, etc. as far as these are related to the electrical side.
3. Attend and ensure repair of all electrical defects/problems.
4. Supervise works of his/her subordinates.
5. Report on progress of works as and when required.
6. Any other job as may be assigned to him/her.

28.4 Assistant Engineer (Others)

1. Assist the immediate controlling officer (Sub Divisional Engineer or Executive Engineer) in the execution of his/her work.
2. Supervise the work of his/her subordinates particularly for on-site tasks, and issue in time instructions.
3. Regularly report on progress of work and in case of emergency check the status and immediately report the event to his/her immediate controlling officer.
4. Any other job as may be assigned to him/her from time to time.

29 Microbiologist

1. Conduct biological and biochemical tests of the water and wastewater samples collected from different points of WTPs, WWTPs and CWASA service area.
2. Determine the proper chemical dosage for purification and disinfection based on the analysis of necessary parameters for the purified water to be supplied or treated wastewater to be discharged to public water bodies to meet the water quality standard.
3. Ensure that the laboratory instruments and chemicals are kept in good condition.
4. Prepare and submit regularly to the Senior Chemist the biological/ biochemical water quality analysis report.
5. Fulfill such other functions as may be assigned to him/her from time to time.

30.1 Chemist (Mohara)

1. Supervise and control the work of staff in the laboratory.
2. Supervise the analysis of the water samples collected from different points, namely from Mohara Water Treatment Plant (MWTP) and Kalurghat Iron Removal Plant.
3. Determine the proper chemical dosage for purification based on the analysis on necessary parameters at MWTP and ensure the appropriate method of water purification in MWTP and that the supplied water meets the water quality standard.
4. Assess the quality of chemicals to be used for the purification by laboratory test and ensure its proper usage.
5. Ensure to keep the laboratory instruments and chemicals in good condition.
6. Compile and submit regularly the water quality analysis report.
7. Fulfill such other functions as may be assigned to him/her from time to time.

30.2 Chemist (Environment and Monitoring)

Responsible to the Senior Chemist for the following activities:

1. Organize and conduct the physical, chemical, biological and biochemical analysis of the water samples collected from different points such as WTPs, STPs, PSs, and CWASA service area.
2. Regularly report to the Senior Chemist on the result of water quality test.
3. Assist the Senior Chemist in analyzing the result of water quality tests and preparing recommended countermeasures to fix any problems.
4. Ensure that the laboratory instruments and equipment are kept in good condition.
5. Prepare order note to keep appropriate stock of chemicals and other materials according to

the internal procurement procedure, for the approval of Senior Chemist.
6. Fulfill such other functions as may be assigned to him/her from time to time.

30.3 Chemist (Other WTPs and STPs)

1. Supervise and control the work of staff in the laboratory.
2. Supervise the analysis of the water collected from different points of the water treatment plant (WTP)/ sewage treatment plant (STP).
3. Determine the proper chemical dosage for water/ wastewater/ sludge treatment based on the analysis on necessary parameters at WTP/ STP to ensure the appropriate water/ wastewater/ sludge treatment in WTP/ STP and that the supplied water/ discharged wastewater/ treated sludge meets the quality standard.
4. Assess the quality of chemicals to be used for the treatment by laboratory test and ensure its proper usage.
5. Ensure to keep the laboratory instruments and chemicals in good condition.
6. Compile and submit regularly the water/sludge quality analysis report.
7. Fulfill such other functions as may be assigned to him/her from time to time.

31.1 Accounts Officer (Finance)

1. Directly supervise and distribute the work of his/her subordinates.
2. Arrange the payment of staff salary, allowance bill and travelling allowance bill.
3. Maintain the provident fund and the credit from it.
4. Fix the payment of all types of maintained arrear bill register.
5. Receive the bill of contractors and suppliers and ensure the observance of rules and regulations regarding the payment of bill.
6. Maintain the records and files relating to foreign exchange disbursement.
7. Supervise & ensure the preparation and timely submission of required software entry to the Accounts (Finance) at the end of financial year.
8. Correspond with the relevant departments regarding the irregularity observed in the bill submitted by them for the payment.
9. Sign the cheques as per office order for the payment of all types of bills.
10. Supervise the register credit disbursement and bring it into the book of account.
11. Check the data entered into the accounting software concerning the related accounts.
12. Fulfill such other functions as may be assigned to him/her from time to time.

31.2 Accounts Officer (Management)

1. Directly supervise and distribute the work of his/her subordinates.
2. Prepare a draft financial report of previous financial year in order to audit as soon as possible & solve dispute and discrepancy among general ledger, sub-ledger, book of account and journal.
3. Correspond with respective department, division/section and reconcile the discrepancy among the accounts of store, fixed assets and work-in-progress and the corresponding book of account/journal.
4. Make sure proper reconcile Store assets, SIR of fixed assets, MRS journal by the staff.
5. Prepare various periodical reports on accounting matters as per the request by the government and external auditor.
6. Do all the necessary paperwork to appoint chartered accountant firms for auditing purpose, meet and reply to the queries from the external and internal auditor and the relevant authorities.
7. Sign all the official letters, statements and reports under his/her jurisdiction after proper verification.

8. Check and make pass all the journal vouchers as required.
9. Be ready to answer sheet of IDA and internal & external audit objection.
10. Check the data entered into the accounting software concerning the related accounts.
11. Scrutinize & examine all the prepared statement of store, fixed assets, work in progress and make correspondent to related section if necessary.
12. Fulfill such other functions as may be assigned to him/her from time to time.

32.1 Revenue Officer (Accounts)

1. Directly supervise and distribute the work of his/her subordinates.
2. Keep liaison with various banks and revenue collecting online company whether they send the collecting revenue in CWASA STD accounts.
3. Keep liaison with computer section of the authority for reconcile – collecting data accuracy.
4. Examine consolidated statement of monthly revenue collection report and take necessary step to deliver monthly income position to Ministry, Managing director and other stakeholders.
5. Supervise subordinates whether they maintain monthly software input correctly, register and accounting effect properly.
6. Yearly collection of the organization and supervise in maintain schedule to give proper accounting effect.
7. Prepare statements and reports as demand of Government and others when required
8. Fulfill such other functions as may be assigned to him/her from time to time.

32.2 Revenue Officer (Billing)

1. Visit mohollas according to the schedule to check the tube well without license, the meter reading, the accuracy of license number and the user category (domestic or non-domestic) of water connection or deep tube well.
2. Correspond with consumers (government institutions and private) in connection with billing dispute, meter testing, meter replacement, change of title, etc.
3. Inspect the deep tube well, issue its license and make sure the proper collection of license fee.
4. Cooperate with the Magistrate on mobile court from time to time.
5. Control the overall works of the staff of his/her section.
6. Fulfill such other functions as may be assigned to him/her from time to time.

33 Budget Officer

1. Prepare budget estimate for the consideration and approval by the board and onward submission to the government.
2. Keep liaison with various departments of the authority for their financial requirement and reflection of the same in the budget.
3. Take action to inform departments and the Managing Director regarding the budget provisions.
4. Give sufficient warning regarding existing expenditure beyond the budget provision and if necessary initiate action to get approval of the competent authority when required.
5. Keep check on the expenditure and inform the Commercial Manager and the Chief Accounts Officer of the expenditure side.
6. Prepare mid-term budget for all respective project.
7. Communicate and give data to the respective ministry according to their demand.
8. Fulfill such other functions as may be assigned to him/her from time to time.

34 Audit Officer

Responsible to the Senior Audit Officer for the following activities:

1. Assist the Senior Audit Officer in the following activities, and act as the Senior Audit Officer during his/her absence:
   (a) Review and submit the internal audit report from time to time.
   (b) Communicate regarding audit issues with the ministry, the external auditors and the concerned departments of CWASA.
2. Organize and supervise the special audit and the investigation on any specific matters by the order of the chairman.
3. Organize and supervise the examination of different issues getting directions from the Managing Director.
4. Organize and properly distribute the work of his/her subordinates.
5. Ensure that the documents in the Audit Division are well organized and maintained.
6. Perform the given responsibilities at times.

35 Medical Officer

1. Evaluate a patient's symptoms and determine the most appropriate course of treatment to address them.
2. Prescribe medications in compliance with national standard.
3. Supervise the work of Nurse and Medical Attendant.
4. Consult patients on topics such as proper nutrition, fitness and hygiene to assist them in taking good care of their health.
5. Perform the given responsibilities at times.

36 Public Relations Officer

1. Prepare and arrange the publication of important CWASA notice and advertisement, like that of tender, recruitment, and event program, by utilizing the media such as newspaper, radio, television, internet and intranet.
2. Check and send the bill from the newspaper to the Accounts (Finance) section for the payment transaction.
3. Maintain liaison and coordination with the media and the relevant division/section of CWASA.
4. Receive and manage all media enquiries.
5. Distribute the newspapers for the CWASA officers as per the office order and keep them for 6 months as a reference.
6. Check and review the media articles relevant to CWASA and report them to the MD.
7. Act as the Information Officer in line with the requirement of the Right to Information Act, 2009.
8. Develop and implement both the internal and external programs for awareness raising, campaigning, and advertising on the key topics selected from time to time.
9. Manage the transaction with the BTCL on all the official telephone connection issues within CWASA.
10. Distribute works among his/her subordinates concerning the above.
11. Analyze and report in time the result of the above.
12. Fulfill such other functions as may be assigned to him/her from time to time.

37 Procurement Officer

Responsible to the Executive Engineer (Procurement) for the following activities:

1. Receive indents for purchase of all common service items.
2. Purchase of stationeries, office equipment, and other common items as urgently as possible.

3. Prepare tender notice for newspapers and forward the same to the competent officer for publication.
4. Process and prepare estimates, tender documents etc. to issue supply orders on approval.
5. Purchase and distribute liveries and uniforms of the staff.
6. Purchase emergency articles through imprest system, spot quotations, etc. on approval and confirm their quantity and quality.
7. Finalize and certify all bills of the suppliers for payments.
8. Fulfill such other functions as may be assigned to him/her from time to time.

38 Estate Officer

Responsible to the Senior Estate Officer for the following activities:

1. Look after all land and estate affairs, such as acquiring new land, facilitating the payment of land taxes and lease fees, and protecting land from encroachment.
2. Maintain the CWASA rest house.
3. Provide the house allotment to CWASA officers and staffs.
4. Maintain the duplicate key box in CWASA head office.
5. Supervise the work of cleaners in CWASA head office building.
6. Fulfill such other functions as may be assigned to him/her from time to time.

39 Assistant Programmer

1. Maintain, compile and keep updated all the database related to GIS, billing, customer complaint, distribution network, water meter etc.
2. Provide technical assistance in installing, operating and maintaining computer networking, hardware and software, in response to the requests from other divisions/sections.
3. Liaise with other relevant divisions/sections on developing computer networking, hardware, software and database.
4. Control the work of the Computer Operator and the Data Entry Operator at times.
5. Perform such other functions as may be assigned to him/her from time to time.

40 Assistant Maintenance Engineer

1. Ensure that computers, printers, cartridges, and other equipment for all CWASA departments are properly stocked and ready for use.
2. Ensure that software updates are installed in all related computers in CWASA.
3. Troubleshoot and fix software, hardware and network problems that are reported, in cooperation with the Computer Operator and other in-charge personnel in the department that reported the problems.
4. Report any problems or malfunctions of software, hardware and network to the Programmer.
5. Visit various CWASA offices as needed for the purpose of checking the status and fixing the problems of software, hardware and network.
6. Fulfill other duties given to him/her from time to time.

41 Kanungo

1. Assist the Estate Officer in all land and legal matters.
2. Keep up to date the records, survey reports, etc. on land and estate of the Authority.
3. Ensure payment and receipts on land property of the Authority such as land tax, rents, etc.
4. Such other jobs as may be assigned to him from time to time.

42.1 Sub Assistant Engineer (Civil)

1. Supervise works as per schedule.

2. Keep daily progress report.
3. Prepare bill of contractor in M.B. and bill form.
4. Take joints measurement of work after completion.
5. Prepare as built drawing as per joint measurement.
6. Prepare material statement.
7. Prepare supplementary bill and revised estimate if required.
8. Prepare estimate of the work with sketch.
9. Any other work as assigned to him/her.

42.2 Sub Assistant Engineer (Mechanical/ Operation)

1. Supervise the operation and maintenance of water pumps and other machinery of the Authority as and when required.
2. Ensure and report on failure of pumps or mechanical breakdown to superiors.
3. Ensure repair of breakdown, in time, if any, by maintenance contractor /departmental squad.
4. Check regularly and keep record on the water production or wastewater/ fecal sludge treatment and submit monthly report on production/ treatment.
5. Supervise work of contractors for repair and maintenance.
6. Prepare estimate /revised estimate with sketch and drawings, etc.
7. Keep register of materials.
8. Any other work as assigned to him/her.

42.3 Sub Assistant Engineer (Water Works)

1. Maintain record on completion and see that action is being taken to attend to the complaints including record of repair with consumption of materials and return of salvage materials.
2. Inspect repair work within his/her jurisdiction.
3. Report status of complaints and actions taken for repair and completion to S.W.W.
4. Arrange road cutting permission for a particular repair work.
5. Prepare estimate for general maintenance or repair works where works are to be taken up by contractors.
6. Any other work as assigned to him/her.

42.4 Sub Assistant Engineer (Electrical)

1. Supervise all electrical works of the Authority as and when required.
2. Continue electric supply immediately in case of power failure for restoration of the same.
3. If placed in Booster Station keep vigilance and care for proper functioning of the same by ensuring normal electric supply.
4. Ensure immediate repair and maintenance of electrical devices including pump houses as far as these are related to the electrical defects.
5. Prepare estimate /revised estimate with drawings and sketch etc. for electrical works.
6. Check bills of contractors for electrical works.
7. Any other jobs as may be assigned to him by superiors.

42.5 Sub Assistant Engineer (Others)

1. Assist his/her controlling officers in the execution of their works as per their direction.
2. Regularly report the progress of his/her work and in case of emergency immediately report the events to his/her immediate controlling officer.
3. Any other work as assigned to him/her.

43 Training Assistant

1. Regularly assess the capacity of officers and staffs and the needs of training for each employee.
2. Develop and update the mid-term training policy of CWASA and annual training program and get the approval of CWASA management.
3. Prepare a list of trainees for each training opportunity.
4. Organize and facilitate internal training opportunities.
5. Analyze and evaluate the effectiveness of provided training and regularly prepare reports to his/her superiors.
6. Fulfill such other functions as may be assigned to him/her from time to time.

44 Office Superintendent

1. Present all matters of 1st class officers.
2. Keep all files regarding the acquired leave and casual leave of the officers.
3. Keep the secret files of officers.
4. Keep files regarding discipline and transfer.
5. Keep the office order of all divisions/sections.
6. Supervise the works of Secretariat.
7. Make coordination with other departments under the Authority.
8. Assist the Assistant General Manager in administration.
9. Prepare draft and provide guidance.
10. Maintain office discipline.
11. Supervise the work of Upper Division and Office Assistant cum Computer Typist.
12. Fulfill such other functions as may be assigned to him/her from time to time.

45.1 Accountant (Cash and Bank)

Responsible to the Accounts Officer (Finance) for the following activities:

1. Prepare bank reconciliation with the bank statement & accounting software.
2. Enter the data of payments and received vouchers into the accounting software.
3. Calculate the tax deducted at source of STD.
4. Maintain various FDR of depreciation & general fund.
5. Calculate the accrued interest of STD and post into accounting software.
6. Fulfill such other functions as may be assigned to him/her from time to time.

45.2 Accountant (Accounts Payable)

Responsible to the Accounts Officer (Finance) for the following activities:

1. Assist the Accounts Officer (Finance).
2. Supervise works of assistants of the Section and to ensure observance of rules and regulations in connection with payment of bills of contractors and suppliers and other inward bills
3. Process foreign exchange transaction and maintain necessary registers thereof.
4. Supervise all the related files and prepare necessary statements and drafts.
5. Supervise whether ledgers, subsidiary ledger and relevant registers maintained by assistants of payable section for all type of expenditures.
6. Ensure the entry of data into the accounting software concerning APJ (Accounts Payable Journal) and other related journals.
7. Provide data for MIS to Design & GIS Operation Division and other departments /projects as well.
8. Fulfill such other functions as may be assigned to him/her from time to time.

45.3 Accountant (Salary)

Responsible to the Accounts Officer (Finance) for the following activities:

1. Assist the Accounts Officer (Finance).
2. Supervising the work of the assistants in the salary and wages department and ensuring that all rules and regulations are being followed in this regard.
3. Maintain the accounting software register of officers and staff concerning the entire amount received and deducted according to the name, designation of respective division/ section.
4. Examine the loan against salary for house building, motorcycles, and computer and supervise whether the schedule is maintained properly.
5. Provide the Design & GIS Operation Division and related requested data with the data of basic salary and allowances for MIS and other department when requested.
6. Fulfill such other functions as may be assigned to him/her from time to time.

45.4 Accountant (Revenue Accounts)

1. Assist the concerning Revenue Officer and supervise section's official work.
2. Make consolidated statements of revenue collection monthly, quarterly and yearly, also give accounting entries.
3. Maintain cancellation register and to give accounting effect, maintain/ prepare schedule for various collection, cross check data with computer section.
4. Prepare statements and reports as per requirement.
5. Properly input monthly revenue collection into accounting software.
6. Fulfill such functions as may be assigned to him/her from time to time.

46 Audit Superintendent

Responsible to Audit Officer for the following activities:

1. Prepare the audit observations report from various sections/departments from time to time.
2. Conduct the special audit and the investigation on particular affair as per the direction of the Senior Audit Officer.
3. Review and submit answers from respective sections/departments for the raised audit objections/ observations to the ministry for disposal.
4. Examine different issues as per the direction of the Senior Audit Officer.
5. Maintain the liaison with the external auditors.
6. Pre-audit the payment exceeding Tk. 500 of any payments/bills except revenue salary bills.
7. Distribute and supervise the work of his/her subordinates.
8. Fulfill such other functions as may be assigned to him/her from time to time.

47 Revenue Superintendent

Responsible to the Revenue Officer for the following activities:

1. Inspect water meters and water bills prepared by the Meter Inspector.
2. Submit report in connection with the meter replacement, theft, etc.
3. Attend complaints by letter from consumers and communicate the correspondences to relevant consumers after giving report of their respective mohalla.
4. Enter and record bills in the Sales Journal and control overall activities of meter inspectors, etc.
5. Fulfill such other functions as may be assigned to him/her from time to time.

48 Data Entry Supervisor

1. Analyze and provide necessary outputs based on the entered data using relevant computer software applications as per the request from relevant departments.
2. Regularly monitor and evaluate the performance of Data Entry Operators and Senior Data Entry Operators related to his/her assigned department and report the result to his/her

manager.
3. Monitor the status of hardware, software, working and archiving space for files and documents, and human resources for everyday data entry operation and give recommendations/ requests for the improvement to his/her superiors.
4. Perform the given responsibilities at times.

49 Stenographer cum Computer Operator

1. Prepare notes, letters, etc. as per the direction of related divisional chief/upper level officer for exchanging letters.
2. Coordinate and reserve the confidential issues of related divisional chief and officers.
3. Control the visitors.
4. Be present when divisional chief or officers personally need.
5. Control the telephone call if necessary.
6. Perform the work whenever it is ordered.
7. Perform given responsibilities at times.

50 Computer Operator

1. Perform light maintenance on equipment and systems in order to prevent problems or errors.
2. Install software updates to the computers in his/her department.
3. Assist the troubleshooting and fixing software and hardware problems that are reported, in cooperation with ICT Circle.
4. Check that internet is functioning properly and fix or repair any problem, in cooperation with ICT Circle.
5. Report any problems or malfunctions of software, hardware and network to ICT Circle.
6. Perform given responsibilities from time to time.

51 Head Assistant

1. Assist the concerning Office Superintendent and/or Revenue Superintendent in distributing all sorts of files and letters.
2. Control the work of concerning Upper Division Assistant and/or Office Assistant cum Computer Typist.
3. Update regularly all the files in office/ section and ensure their proper registering and noting.
4. Execute the corresponding work given by his/her senior officers.
5. Fulfill such other functions as may be assigned to him/her from time to time.

52.1 Senior Lab Assistant (Mohara)

1. Control and distribute the work of his subordinates in the laboratory.
2. Organize the collection of water samples from different points, namely from Mohara Water Treatment Plant, Kalurghat Iron Removal Plant, and CWASA service area.
3. Analyze all the necessary parameters of the water samples collected.
4. Check the quality of chemicals to be used for the purification by laboratory test.
5. Keep the laboratory instruments and chemicals in good condition.
6. Prepare regularly the water quality analysis report.
7. Fulfill such other functions as may be assigned to him/her from time to time.

52.2 Senior Lab Assistant (Other WTPs and STPs)

1. Control and distribute the work of his subordinates in the laboratory.
2. Collect the water samples from different points of the WTP.

3. Analyze all the necessary parameters of the water samples collected.
4. Check the quality of chemicals to be used for the purification by laboratory test.
5. Keep the laboratory instruments and chemicals in good condition.
6. Prepare regularly the water quality analysis report.
7. Fulfill such other functions as may be assigned to him/her from time to time.

53 Instrumentation Technician

1. Install, calibrate, and maintain mechanical and electronic devices and equipment including programmable logic controller (PLC) regularly.
2. Coordinate with other engineers and technicians to inspect, diagnose faults, and troubleshoot the devices and equipment for issues, by adjusting system components and programming language and testing functionalities.
3. Repair or replace defective parts of the devices and equipment as needed.
4. Analyze data provided by sensors to provide feedback to other applications or equipment.
5. Perform the given responsibilities at times.

54 Upper Division Assistant

1. Carry out following general tasks: (a) instructions and records associated with the present document notes; (b) preserving the documents in an appropriate way; (c) ensuring proper receipt and transmission of all letters and records; (d) supervision and regulation of the activities of Office Assistant cum Computer Typist.
2. Carry out any responsibilities bestowed by senior officers and perform activities determined by related divisions.
3. Perform the given responsibilities at times.

55 Bench Assistant

1. Perform the following general tasks: (a) following instructions and records associated with the present document notes; (b) preserving the documents in a right way; (c) ensuring proper receipt and transmission of all letters and records; and (d) supervising and regulating the activity of Office Assistant cum Typist if any.
2. Carry out any responsibilities bestowed by the senior officer(s) and perform activities determined by the related division.
3. Perform the given responsibilities at times.

56.1 Accounts Assistant (Accounts Payable)

1. Pay the contractor and supplier bill and others internal bill
2. Process foreign money transaction and maintain related necessary Register Book
3. File documents of related section and furnish all necessary work
4. Maintain Project Cost Ledger and other related ledger.
5. Maintain schedule of advance of contractors, suppliers, and staff.
6. Prepare letters for custom duty of various projects.
7. Prepare letters for contractors' bills.
8. Fulfill such functions as may be assigned to him/her from time to time.

56.2 Accounts Assistant (Salary)

1. Enter officer's/staff's salary and allowances separately in the Register Book and Payable Journal Book including classification with balance
2. Ensure provident fund subscription and contribution from the Authority and transfer and investment
3. Pay provident fund, gratuity, and group insurance claim

4. Maintain contributory provident fund registrar and provident fund loan register
5. Prepare various reconciliation and journal voucher
6. Perform given responsibilities at times.

56.3 Accounts Assistant (Cash & Bank)

1. Prepare bank reconciliation with the bank statement & accounting software as per given instruction.
2. Enter the data of payments and received vouchers into the accounting software.
3. Calculate the tax deducted at source of STD.
4. Prepare schedule of various FDR of depreciation & general fund and also process related files of cash & bank section.
5. Calculate the accrued interest of STD and post into accounting software.
6. Write cheques in the absence of the Cashier.
7. Fulfill such other functions as may be assigned to him/her from time to time.

56.4 Accounts Assistant (Revenue)

1. Assist the concerning Revenue accountant and supervise section officials work.
2. Prepare consolidated statement of revenue collection monthly, quarterly and yearly, also give accounting entries.
3. Maintain cancellation register and to give accounting effect, maintain/ prepare schedule for various collection, cross check data with computer section.
4. Prepare statements and reports as per requirement.
5. Properly input monthly revenue collection into accounting software.
6. Fulfill such functions as may be assigned to him/her from time to time.

57 Auditor

1. Assist the Audit Superintendent in audit clearance of any bills/ payments.
2. Conduct the activity related to bills and other repayable issue.
3. Prepare and examine the logbook (fuel, generators, vehicles, motorcycle, loose water sales report, and other reports), etc.
4. Such other functions as may be assigned to him/her from time to time.

58 Lab Assistant

1. Collect water samples at the specified points and day & time.
2. Assist the analysis of all necessary parameters of the water samples collected.
3. Keep clean and in good condition the laboratory instruments, equipment, and chemicals.
4. Fulfill such other functions as may be assigned to him/her from time to time.

59 Pipeline Supervisor

1. Inspect leakage and wastage through water main, hydrant, service connection within the jurisdiction and enter the data in the complaint register for repair /record.
2. Prepare the demand note of road cutting for the approval of the responsible Executive Engineer, prepare the sketch of the site, and keep a copy in the register.
3. Assess and requisition necessary materials for repair and take them from the Store Division.
4. Deploy squad for repair work and supervise the work.
5. Supervise the work of the Plumbing Mechanic.
6. Prepare and submit the progress report.
7. Fulfill such other functions as may be assigned to him/her from time to time.

60.1 Foreman (Transport)

1. Responsible for supervision, operation, and control of drives of the vehicles.
2. Regularly inspect vehicles and observe their road performance.
3. Organize repair and maintenance of vehicles.
4. See vehicles are parked at designated places.
5. Make thorough check of vehicles on receipt of report from driver or controlling officer and put up proposal to the member-secretary for repair. During repair, to see that repair and replacement work has been done properly and after repair test the vehicle for his satisfaction and recommend the bill for payment.
6. Keep material account of repaired vehicle including supply of replaced materials. The material account should be kept in a register maintained for each vehicle.
7. For emergency repair, will ascertain items required and obtain quotation from reasonable workshop and arrange repair after approval.
8. Distribute duties/responsibilities of the drivers.

60.2 Foreman (Tube well/ Meter) (assigned in MOD)

1. Supervise proper functioning of tube wells and water meters in the in-charge MOD.
2. Take emergency/ necessary steps in case of breakdown of any tube wells and malfunctioning of water meters.
3. Regularly report the functioning status and emergency steps taken to the controlling Executive Engineer.
4. Do all other jobs as may be required by the superiors.

60.3 Foreman (Mechanical) (assigned in STP)

1. Supervise, maintain, and operate machineries of sewage pumping stations and wastewater treatment plants and ensure their proper functioning.
2. Report to the superiors on functioning of machinery in the in-charge facilities.
3. Plan, organize, and allocate staff /operators under him.
4. Check the state of water in various tanks and the condition of valves, pumps, and clear-well cleanliness.
5. Do all other jobs as may be required by the superiors.

61 Senior Data Entry Operator

1. Regularly check the deficiencies and errors of and if necessary, modify the entered data related to his/her assigned department (e.g., customers, meter reading, billing and collection, pay-roll, fixed assets such as pipelines and fittings, property connections, and water meters) by means of random sampling, site visits, cross-checking, or other efficient and effective methodology.
2. Review all reports and submit them to high level of Authority.
3. Ensure that all original files and documents used for the data entry are kept in an organized way and give necessary directions for corrective actions to the personnel engaged in the data entry if needed.
4. Perform the given responsibilities at times.

62 Nurse

1. Provide health care (treatment service) according to Medical Officer.
2. Provide officers and staffs with official support regarding treatment service.
3. Provide first aid service in the absence of Medical Officer.
4. Supervise the works of medical attendant.
5. Assist/help seriously injured patients in full time care.
6. Assist officer/staff to inject injection or to implement the other tests if necessary.

7. Perform the given responsibilities at times.

63 Head Plumbing Mechanic

1. Supervise the work of Plumbing Mechanic/ Assistant Plumbing Mechanic.
2. Provide official requests for necessary equipment after identifying leakages.
3. Eradicate all wastages by street hydrants and different leakages along with fittings and take necessary steps to eliminate other obstacles.
4. Involve repairers from complaint center and supervise repair work.
5. Take road cutting permission for repairing supply pipelines and then register.
6. Prepare daily reports and presentation.
7. Fulfill such other functions as may be assigned to him/her from time to time.

64 Office Assistant cum Computer Typist

1. Type and record documents properly.
2. Record with the notes and documenting sources.
3. Assist Upper Division Assistants and senior officers in documenting and presenting notes.
4. Perform given responsibilities at times.

65 Photographer

1. Take professional pictures/ videos in formal occasions such as official visits of leading figures, public meetings, seminars, celebrations, press releases, etc.
2. Work closely with Public Relations Officer and other colleagues concerning public relations to produce high-quality and appealing photographic images.
3. Operate various photographic equipment such as video/ still image cameras and lighting.
4. Use photo manipulation software and artistic knowledge to compose desired photos/ videos.
5. Review sets of photographs and select the best results.
6. Fulfill such other functions as may be assigned to him/her from time to time.

66 Junior Auditor cum Computer Typist

1. Assist the Auditor.
2. Coordinate the works of Office Assistant cum Computer Typist.
3. Bill and other payable matters related work.
4. Audit fuel bills, log books, etc.
5. Perform given responsibilities at times.

67 Junior Accounts Assistant cum Computer Typist

1. Perform the following general tasks as per the requirements of the assigned department: (a) keeping accounts; (b) settlement of payment claims; (c) internal check of the transactions which include receipts and expenditures; (d) managing budget as per the finance regulations of CWASA and coordinating with other departments for proper budgetary control monitoring; (e) providing accounts reports, inventory management, and keeping other data records; (f) checking for any financial irregularities.
2. Carry out any responsibilities bestowed by the senior officers and perform activities determined by the related division.
3. Perform the given responsibilities at times.

68 Cashier

1. Prepare cheques of salary, allowances & other bills of the officers/staffs and hand over to respective officer/staff.

2. Prepare cheques of all kinds of bill of the contractor and hand over the cheque to the concerned contractor after checking his file.
3. Prepare cheques of all kinds of payable bill and hand over them.
4. Encash the pay order of the contractor and other organizations related to CWASA and deposit the money to the accounts of CWASA.
5. Fulfill such other functions as may be assigned to him/her from time to time.

69 Data Entry Operator

1. Enter data of billing, pay-roll, or fixed assets regularly and work as related data entry of GIS and CAD as per the requirements of the assigned department.
2. Conduct preliminary check of the accuracy of entered data.
3. Prepare necessary reports related to entered data.
4. Keep all original files and documents used for the data entry in an organized way.
5. Perform the given responsibilities at times.

70 Revenue Inspector

1. Regularly check meters, take monthly meter reading, prepare bills on the spot, and submit bill to consumer in different holdings of their respective mohalla (as per allocation of duty).
2. Ensure consumers are billed regularly.
3. Report all irregularities in water connection and other discrepancies in supply system.
4. Enter data of billing regularly.

71 Electrician

1. Operate, maintain, and repair all electrical items or installations.
2. Repair all electrical defects of pump stations and electrical machineries.
3. Make frequent visit to Pump House to check and submit report for repair to Sub-Assistant Engineer.
4. Improve damage, decay, etc.
5. Fulfill such other functions as may be assigned to him/her from time to time.

72.1 Mechanic (WTP/WWTP)

1. Work for installation, fixing, etc. of pumps and mechanical equipment.
2. Maintain the pumps and mechanical equipment regularly.
3. Distribute duties to Junior Mechanic.
4. Fulfill other duties given to him by higher authority from time to time.

72.2 Mechanic (Transport)

1. Install spare parts of CWASA vehicles.
2. Maintain and repair CWASA vehicles.
3. Fulfill other duties given to him/her by the higher authority from time to time.

73 Work Assistant

1. Supervise the construction and the pipeline maintenance work under his jurisdiction and prepare daily progress report.
2. Measure jointly with SAE.
3. Assess the necessary equipment and materials by discussing with SAE.
4. Assist SAE in preparing estimation.
5. Prepare the completion report on accomplished work.
6. Fulfill such other functions as may be assigned to him/her from time to time.

74 Security Inspector

1. Plan and coordinate the assignment of Security Guards and the allocation of their responsibilities.
2. Monitor and control security related matters of WASA property.
3. Keep an eye so that any sabotage and anti-social activities do not occur.
4. Prepare reports on anything related to security that is observed while on duty and submit them to the controlling officer of Security Section.
5. Fulfill such other functions as may be assigned to him/her from time to time.

75 Store Keeper

1. Receive materials
2. Keep record in bin cards
3. Ensure proper maintenance of goods
4. Inspect regularly goods/materials kept in the stores
5. Prepare statement of materials
6. Prepare inventory of stores
7. Ensure security of materials and store houses
8. Check contractor's material statement with bin card and ledgers
9. Maintain bin card register in order
10. Proper stocking to ensure against wastage/damage and fixing of material (name) tag
11. Separate unserviceable materials from serviceable ones
12. Keep checking on Security Guards.
13. Check the work of Store Clerk for proper recording etc.

76 Driver

1. Drive vehicle assigned to him.
2. Clean and maintain vehicles every day and wash occasionally.
3. Keep vehicles properly in garage every day after duty.
4. Check defects of vehicles, repair minor ones, and report major ones to controlling officer/ foreman for immediate repair.
5. Go into the workshop and check repair work when vehicles are in workshop and test the same after repair.
6. Ensure document available in vehicles, like (a) log book, (b) driver's license, (c) POL issue slip, (d) blue book, (e) party insurance cover, (f) approval for using the vehicle on payment, and (g) accident report form.

77 Meter Mechanic

1. Receive, open, clean, repair, assemble, and test meters deposited for repair.
2. Keep record of daily work undertaken.
3. Improvise and modernize repair works.

78 Operator (Pump/Chlorine/Lime/Filter)

1. Operate booster pumps, chlorine machine, lime mixture machine, etc., in Kalurghat Booster Station.
2. Operate water pumps in other stations.
3. Ensure proper operation, particularly starting and closing of pumps.
4. Ensure fabrication cooling etc.
5. Repair minor defects.
6. Record hourly water production.
7. Take electric meter and pressure gauge readings.

8. Maintain pump houses.
9. Maintain and improve garden and plant within pump premises.
10. Report as and when possible power failure and mechanical breakdown of pump immediately to Assistant Engineer/Sub Assistant Engineer.
11. Maintain log books, etc.

79 Plumbing Mechanic

1. Supervise the work of the Assistant Plumbing Mechanic.
2. Assess the leak and prepare and submit the list of necessary material.
3. Repair leak using proper equipment and material.
4. Wash and clean the service line if needed.
5. Maintain the street hydrant and eliminate the obstacle if any.
6. Wash and clean the overhead/underground water tank of CWASA and the underground water supply line.
7. Submit the list of used materials to the controlling Pipe Line Supervisor or Head Plumbing Mechanic after finishing the repair work.
8. Fulfill such other functions as may be assigned to him/her from time to time.

80 Surveyor

1. All sorts of survey work, supervision of construction work, preparation of contractor's bill & c.s. estimate, drafting, drawing and design of project stock register, etc.
2. Any other jobs as may be assigned to him from time to time

81 Care Taker

1. Take proper care of the Authority's rest house.
2. Ensure its cleanliness, security and maintenance of all furniture and fixtures.
3. Keep records on visitors and realization of charges from them.
4. Ensure gardening of the rest house.
5. Such other jobs as may be required from time to time.

82 Photocopy Machine Operator

1. Work as duplicating machine operator.
2. Bundle the reports of board meeting.
3. Fulfill other duties given to him by the higher authority from time to time.

83 Record Keeper

1. Reserve all records in appropriate shape and method.
2. Reserve and keep clean the record keeping branch/room.
3. Keep safe all records from all kinds of danger, insect damage, and destroy.
4. Supply related records as per requirement to officers.
5. Perform the given responsibilities at times.

84 Medical Attendant

1. Perform responsibilities as per the instruction of Medical Officer.
2. Assist nurse to provide health service.
3. Assist when patients are examined health.
4. Enter name and assist the patients who come to Medical Officer.
5. Perform the given responsibilities at times.

85.1 Assistant Operator (Pump/ Chlorine/ Lime/ Filter)

1. Assist Operator to keep water pumps functioning at various sites.
2. Manage booster pumps, chlorine machines, lime mixer machines in booster station.
3. For proper management especially ensure pump opening and closing.
4. Ensure lubrication and cooling.
5. Repair minor errors.
6. Record water production per hour.
7. Register reading from electric meters and pressure meters.
8. Look after pump houses.
9. Take care and develop garden, plants in pump house yard.
10. Inform immediately Assistant Engineer/ Sub Assistant Engineer in case of electricity failure and mechanical stalemate.
11. Keep logbook etc.
12. Perform the given responsibilities at times.

85.2 Assistant Operator (Valve)

1. Open and close valves when needed.
2. Look after valves and inform about the faults.
3. Check misuse by general public.
4. Perform the given responsibilities at times.

86 Assistant Plumbing Mechanic

1. Assist the controlling Plumbing Mechanic.
2. Dig and prepare the trench for filling and repairing.
3. Carry materials and instruments according to the instruction of the controlling Plumbing Mechanic to the work site and install them properly.
4. Wash and clean the distribution line whenever needed.
5. Examine the water related complaints, clean strainers if needed, and submit reports.
6. Take effective measures if meters become malfunctioned.
7. Report to take necessary steps for supply line's leakage and street water tap's wastage.
8. Replace repair cork and to work as helper to prevent street water tap’s wastage in any other method.
9. Clean overhead and underground tank for keeping normal water supply according to definite schedule
10. Assist senior officers such as Plumbing Mechanic in all repairs and maintenance works.

87 Dispatch Rider

1. Distribute all the Authority’s incoming and outgoing letters (inter-divisional).
2. Ensure receipts of all exchanged letters (inside department).
3. Perform the given responsibilities at times.

88 Junior Electrician

1. Operate, maintain, and repair electrical items or installations.
2. Repair electrical defects of pump stations and electrical machinery.
3. Make frequent visit to Pump House to check and submit report for repair to Sub-Assistant Engineer.
4. Improve damage and decay etc.
5. Fulfill other duties given to him by higher authority from time to time.

89 Assistant Security Inspector

1. Assist the Security Inspector to plan and coordinate the assignment of Security Guards and the allocation of their responsibilities.
2. Compile daily reports on activities of Security Guards and submit to Security Inspector.
3. Give regular/ irregular visits to sites to check the working status of Security Guards and to screen security-related issues.
4. Timely report to the Security Inspector on anything related to security that is observed on sites.
5. Fulfill other duties given to him from time to time.

90 Junior Mechanic

1. Work for installation, fixing, etc., of pumps and mechanical equipment.
2. Maintain the pumps and mechanical equipment regularly.
3. Fulfill other duties given to him by higher authority from time to time.

91 Chainman

1. Assist Surveyor and other superiors in all sorts of field survey work, such as land boundary and topographic surveys using surveying tools.
2. Record required data, prepare survey hand-drawings, and conduct calculations using basic computer software applications.
3. Any other tasks as may be assigned to him from time to time.

92 Office Assistant

1. Conduct official work according to the instruction from officers and staffs.
2. Distribute official letters.
3. Keep office rooms, tables, and furniture neat and clean.
4. Ensure security and cleanliness of department's all fittings and furniture.
5. Perform given responsibilities at times.

93 Security Guard

1. Guard WASA properties.
2. Check the gate passes for authorized issue of materials.
3. Check the transport going inside and outside.
4. Work as store helper in handling materials as and when required.
5. Detain any violators in any sabotage and antisocial activities.
6. Perform given responsibilities at times.

94 Helper

1. Clean pumps, filters, basins, towers, etc. as per the instruction of Sub Assistant Engineer and Foreman.

95 Cleaner

1. Clean and sweep WASA premises including doors, windows, furniture, and other fixtures.
2. Upkeep the gardens as and when required.
3. Perform given responsibilities at times.

付属資料-2.6：CWASA の各部署の業務分掌

Assigned Tasks of Each Department

August 2023

Chattogram Water and Sewerage Authority

Advisor on Urban Sanitation Improvement, JICA

Table of Contents

Chapter 1 Engineering Wing

1. P&C (Planning and Construction) Circle

(1) Pipeline Network Expansion (ex-CD-1)

- Organize and manage all CWASA construction projects related to pipeline network including interconnection, new construction, and extension of distribution pipelines and branch sewers.
- Procure and manage engineering/ construction contractors.
- Procure and manage supervision consultants.
- Ensure quality control systems are adhered to.
- Ensure health and safety procedures are complied with.
- Prepare as-built drawing and share them with Design & GIS Operation.
- Supervise construction work of pipeline network.

(2) Buildings Management and Deep Tube-Well Construction (ex-CD-2)

- Organize and manage all CWASA construction projects including deep tube wells (DTWs) and assigned construction works such as test boring.
- Procure and manage engineering and construction contractors.
- Procure and manage supervision consultants.
- Supervise construction work of test boring, pump house, DTWs, and other related works.
- Ensure quality control systems are adhered to and health and safety procedures are complied with.
- Prepare as-built drawings and share them with Design & GIS Operation Division.
- Approve application for deep tube well licenses.
- Prepare bore log of test tube wells and deep tube wells.
- Organize the construction, maintenance, and management of boundary walls/ retaining walls/ reinforced cement concrete (RCC) signboard/ pre-cast pillars/ fences to protect CWASA land/ building structures in CWASA land as required.

(3) Store

- Receive goods and examine the quality of the total supply.
- Monitor stock levels and maintain the register.
- Initiate purchase requisitions to replenish stock.
- Control all goods in the stock and ensure secure storage of goods.
- Issue goods and maintain records in bin cards and ledger book.
- Identify slow moving stock, spoilt stock and obsolete stock and action as necessary.
- Clean the store and nearby areas.
- Inspect newly collected goods and returned goods.
- Collect machinery and ensure maintenance and repair.

(4) Design & GIS Operation

- Prepare MIS and benchmarking reports.
- Preserve as-built drawings of all types of construction and installation (such as civil/ architectural/ mechanical/ electrical works of WTPs, STPs, reservoirs, PSs, transmission/ distribution pipelines and fittings, trunk/ branch sewers, manholes and public inspection chambers, house/ property connections, and CWASA buildings), and systematically record/ trace/ transfer and continually update them in CAD and GIS.
- Provide base maps, technical drawings, and data (such as pipelines and fittings, manholes, house/ property connections, and water meters) which are customized as per the request of relevant departments.
- Function as the Technical Digitalization Center of CWASA, to (a) provide technical assistance in installing, operating, and maintaining computer networking, hardware, and software including CAD and GIS, in response to the requests from relevant departments; and (b) liaise with other relevant departments in developing computer networking, hardware, software, and database.
- Enlist domestic and international contractors and regularly evaluate and grade their qualification and performance.

2. RDM (Research & Development and Monitoring) Circle

(1) Project Development

- Assess feasibility of planned project through cost/benefit analysis study.
- Project preparation and coordination with various institutions.
- Prepare revised Annual Development Plan (ADP).
- Prepare five years plan.
- Communicate with various institutions regarding the project development.
- Statistical data processing, analyzing and keeping its record, regular report preparation for various related organizations.
- Prepare project performance report.
- Communicate with various institutions regarding the project implementation, quality control, and monitoring.

(2) Research

- Develop, disseminate, monitor the implementation, and update technical guidelines/ standards and SOPs (standard operation procedures).
- Develop and update strategic business plans and annual business plans of CWASA, in coordination and cooperation with relevant departments.
- Function as the Central Water Control Center of CWASA, to (a) establish and update a groundwater model to estimate the water quality and withdrawal capacity

of wells based on the monitored data of water quality and water level; (b) provide integrated supervision and control of all water supply system in cooperation with Nasirabad Water Control and Booster, based on the data supplied from SCADA systems; and (c) provide early warnings on saline water intrusion and give necessary instructions to relevant departments on water diversion.

- Work as the member secretary of the Deep Tube Wells Condemnation Committee.

(3) Environment and Monitoring (ex-Quality Control)

- Collect and preserve daily water production in WTPs and DTWs and send the data to relevant offices.
- Ensure the water sampling by MODs along distribution and supply pipelines.
- Function as the Central Laboratory of CWASA, to (a) collect and test water samples from water taps, deep tube-wells, and along distribution and supply pipelines; (b) collect and test wastewater samples from large-scale (commercial) wastewater dischargers; and (c) collect, compile, and analyze the results of water quality tests sampled and tested in WTPs and STPs and give technical advice/ direction to relevant WTPs and STPs to improve the operation and maintenance.
- Conduct environmental and safety monitoring of construction sites, WTPs, and STPs so that environment protection and health & safety measures are implemented.
- Monitor the implementation status of the plans related to environmental and social considerations.

(4) Training

- Assess the capacity and training needs within Engineering Wing.
- Develop training programs for technical employees.
- Request to Training Center of Administration Wing to coordinate and arrange the implementation of the training programs.

(5) LIC Development and FSM

- Manage the outsourced services of collection and transfer service of fecal sludge (that will start operation after STP-1 starts operation presumably in 2026).

3. MOD (Maintenance, Operation and Distribution) Circle

(1) MODs (Common)

(a) New connections

- Prepare customer information documents regarding connection.
- Process applications for new connections.
- Check connection feasibility.
- Investigate when the customers apply for connection (e.g., checking the ownership of land and road and the land documents and the address).

- Visit the site to check the diameter of mainline and the user category of connection and to measure the road cutting.
- Provide connection to the new customers.
- Test sample meter before purchasing.
- Install new meter after collecting it from Store.
- Ensure the appropriate user category is applied.
- Monitor progress and follow-up the new connection if necessary.
- Convert illegal connections to legal customers.
- Send the completion report to Revenue Billing and Design & GIS Operation.

(b) Plumbing

- Operate and maintain treated water transmission mains, service reservoirs, primary /secondary /tertiary distribution mains, valves and bulk water meters, and customer connections.
- Procure spare materials and consumer meters.
- Procure and manage system maintenance contractors.
- Maintain and update O&M manuals.
- Keep maintenance records.
- Ensure the equitable distribution of water.
- Ensure water is supplied to the LICs.
- Identify and address system bottlenecks.
- Oversee water rationing measures.
- Respond to emergency events.
- Monitor and reduce NRW, such as flow measurement, investigation of service connection, and leak detection.
- Surveillance of supply condition at the end of distribution network.
- Replace faulty meters.
- Remove/ replace meters for testing in response to requests from customers.
- Disconnect/ reconnect customers.
- Compile and record in GIS as-built data of installed pipes and meters.

(c) Pump O&M

- Operate and maintain tube wells and booster pumping stations.
- Monitor tube well performance.
- Prepare water production reports.
- Procure spare materials.
- Procure and manage system maintenance contractors.
- Keep maintenance records.
- Approve application for deep tube well licenses.
- Prepare data for the MIS.

(d) Customer Helpdesk

- Receive and manage customer queries.
- Receive, verify, and manage customer service requests and complaints.
- Maintain a log of all service requests and complaints and record action taken up to file closure.
- Give feedbacks to customers.
- Conduct customer satisfaction surveys.

(2) Water Works (MOD-2)

- Receive and manage customer queries and customer service complaints.
- Maintain a log of all service requests and complaints and record taken actions up to file closure.
- Give feedback to customers.
- Operate and maintain treated water transmission mains, service reservoirs, primary/ secondary/ tertiary distribution mains, valves and bulk water meters, and customer connections.
- Procure spare materials.
- Procure and manage system maintenance contractors.
- Prepare and keep maintenance and as-built record.
- Ensure the equitable distribution of water.
- Ensure water is supplied to the LICs.
- Identify and address vulnerable points of water supply system to be improved.
- Oversee water rationing measures.
- Respond to emergency events.
- Monitor and reduce NRW, such as flow measurement, investigation of service connection, and leak detection.
- Surveillance of supply condition at the end of distribution network.
- Remove/ replace meters for testing.
- Prepare as-built record of emergency events.
- Receive customer service complaints/ requests on water supply shortage, via Customer Help Desk in MODs.

(3) Water Tanker (MOD-2)

- Receive customer service complaints/ requests on water supply shortage, via Customer Help Desk in MODs.
- Develop the scheduling of operation of water carriers and concerned Drivers, Helpers, and Cleaners to assure adequate water supply.
- Deliver water based on customer's demand, upon the payment of prescribed fee by the customer for urgent/ non-urgent case.

(4) Meter Repair

- Test sample meters before purchasing and meters which are newly purchased.
- Test meters and conduct minor repair of meters in response to requests from MODs.
- Arrange the outsourcing of major repair of meters.
- Update and maintain meter management database.

4. MOC (Maintenance, Operation, and Connection) Circle

(a) New connections

- Prepare customer information documents regarding property connection.
- Process applications for new property connections.
- Check the feasibility of property connection.
- Investigate when the customers apply for connection (e.g., referring to water account information in case of CWASA water customers; checking the ownership of land and road and the land documents and the address in case of non-CWASA water customers).
- Check as-built drawings and visit the site to check the diameter of branch sewer/ service pipe and the user category of property connection and to measure the road cutting.
- Install property connection, conduct replumbing work, and clean up the septic tanks for the new customers.
- Ensure the appropriate user category is applied.
- Monitor progress and follow-up the new property connection if necessary.
- Convert illegal connections if any to legal customers.
- Compile and record in GIS as-built data of installed property connections.
- Send the completion report to Revenue Billing and Design & GIS Operation.

(b) Plumbing

- Investigate the site, identify the reason, flush the interior of sewer if needed, and clean the site when a clogging of sewer and/or overflow of sewage is reported.
- Procure and maintain spare parts, materials, and tools.
- Maintain flushing vehicles.
- Procure and manage sewer maintenance contractors.
- Maintain and update O&M manuals.
- Identify and address system bottlenecks.
- Respond to emergency events.
- Monitor and reduce the intrusion of rainwater into sewer network, such as flow measurement and investigation of misconnection of property connection.
- Keep and record in GIS the conducted maintenance works.

(c) Pump O&M

- Operate and maintain manhole pumps.
- Procure spare materials for the pumps.
- Procure and manage system maintenance contractors.
- Keep and record in GIS the conducted maintenance works.

(d) Customer Helpdesk

- Receive and manage customer queries.
- Receive, verify, and manage customer service requests and complaints.
- Maintain a log of all service requests and complaints and record action taken up to file closure.
- Give feedbacks to customers.
- Conduct customer satisfaction surveys.

5. T&P (Treatment and Production) Circle

(1) Water Treatment Plants (Common)

(a) Management Office

- Keep records that maintain a log of plant operations, test results, maintenance work performed and failure or unusual operating conditions.
- Analyze the data of O&M.
- Prepare daily/monthly/yearly reports covering all management aspects of the plant and submit them to the SE (T&P) Office.
- Develop the scheduling of operation staff to assure adequate coverage of shifts.
- Conduct regular site safety inspections.
- Instruct trainees and new operators.
- Conduct tours for individuals or groups, as requested.
- Order operating supplies and chemicals as needed.
- Perform routine housekeeping chores inside and outside facilities.
- Guard the facility, check the gate passes and the transport going inside and outside.

(b) Control Room

- Monitor and control the facilities through the panel board of supervisory control and data acquisition (SCADA) system, seeking the advice from Research Division when needed.
- Direct the operation of all the plant necessary to treat and regulate the flow of water through water treatment plant, seeking the advice from Environment and Monitoring Division when needed.
- Keep records and prepare reports of the plant operation and submit them to the Management Office.
- Make periodic site inspections.

(c) Laboratory

- Take samples regularly for water quality analysis.
- Perform laboratory tests to determine the plant process performance and compliance with water quality regulations, in cooperation with Environment and Monitoring Division.
- Maintain laboratory equipment in clean, orderly, and workable condition.
- Keep records and make written reports of work performed.

(d) Raw Water Intake

- Make equipment adjustments, lubrications and minor repairs.
- Participate in major plant repairs.
- Maintain equipment and facilities in a clean and orderly condition.
- Keep records and make written reports of work performed.

(e) O&M (Filter)

- Plan, operate and supervise the backwash of filters.
- Wash and clean the channels of clarifier tank.
- Maintain facilities in a clean, orderly, and workable condition.
- Keep records and make written reports of work performed.

(f) O&M (Chemical)

- Assist the safe unloading and storage of chemicals.
- Carry and put chemicals from storage container to feeders.
- Compute chemical doses and adjust chemical feeders.
- Control and monitor the mixture process of chemicals.
- Check regularly the inventory of chemicals used during the operation and report it to the Management Office.
- Maintain equipment in a clean and orderly condition.
- Keep records and make written reports of work performed.

(g) O&M (Chlorine)

- Assist the safe unloading and storage of chemicals.
- Compute chemical doses and adjust chemical feeders.
- Control and monitor the mixture process of chemicals.
- Check regularly the inventory of chemicals used during the operation and report it to the Management Office.
- Every time check and ensure no leakage of Chlorine.
- Maintain equipment in a clean and orderly condition.
- Keep records and make written reports of work performed.

(h) O&M (High-Lift PS)

- Operate pumps.
- Monitor the panel board showing the operation status of pumps.

- Make equipment adjustments, lubrications, and minor repairs.
- Maintain pumps and equipment in a clean and orderly condition.
- Keep records and make written reports of work performed.

(i) O&M (Electrical)

- Inspect, test, repair, install and troubleshoot equipment and electrical devices for proper operation, control, and safety.
- Determine needed repairs or modifications.
- Keep records and make written reports of work performed.

(2) Mohara Treatment Plant

(a) Management Office

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Management Office.
- Develop the preventive maintenance program of equipment and ensure its implementation.
- Coordinate with PDB (Power Development Board) to ensure sufficient power supply.
- Coordinate and participate in major plant repairs.
- Organize and implement occasional demonstration on safety measure and emergency care for the staff.

(b) Control Room

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Control Room.

(c) Laboratory

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Laboratory.
- Ensure water sampling by MODs along distribution and supply pipelines.
- Determine the necessity of injecting intermittent chlorine based on the laboratory tests performed.
- Analyze the tested results and give technical advice/direction to relevant departments, in cooperation with Environment and Monitoring Division.

(d) O&M (Raw Water and Intake)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Raw Water Intake.

(e) O&M (Filter)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Filter).
- Determine the necessity of pre-chlorination and compute and inject necessary doses according to the advice of the Environment and Monitoring Section.
- Implement preventive maintenance program.

(f) O&M (Chemical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chemical).

(g) O&M (Chlorine)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chlorine).
- Every time check and ensure no leakage of Chlorine.
- Implement preventive maintenance program.

(h) O&M (High-Lift PS)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (High-Lift PS).

(i) O&M (Electrical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Electrical).
- Maintain smooth power supply by switching existing two electricity lines and power generator.

(3) Kalurghat Iron Removal Plant and Booster

(a) Management Office

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Management Office.
- Take samples regularly for water quality analysis and send them to the Mohara Water Treatment plant.
- Keep records of work performed.

(b) Control Room

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Control Room.

(c) O&M (Filter)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Filter).

(d) O&M (Chemical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chemical).

(e) O&M (Chlorine)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chlorine).

(f) O&M (High-Lift PS)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (High-Lift PS).

(g) O&M (Electrical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Electrical).

(4) Sheikh Hasina Water Treatment Plant-1 and -2

(a) Management Office

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Management Office.

(b) Control Room

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Control Room.

(c) Laboratory

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Laboratory.

(d) O&M (Raw Water Intake)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Raw Water Intake.

(e) O&M (Filter)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Filter).

(f) O&M (Chemical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chemical).

(g) O&M (Chlorine)

- Tasks stated in Chapter 1 3. (1) Water Treatment Plants (Common), O&M (Chlorine).

(h) O&M (High-Lift PS)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (High-Lift PS).

(i) O&M (Electrical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Electrical).

(5) Bhandaljury Water Treatment Plant

(a) Management Office

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Management Office.

(b) Control Room

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Control Room.

(c) Laboratory

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Laboratory.

(d) O&M (Raw Water Intake)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), Raw Water Intake.

(e) O&M (Filter)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Filter).

(f) O&M (Chemical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Chemical).

(g) O&M (Chlorine)

- Tasks stated in Chapter 1 3. (1) Water Treatment Plants (Common), O&M (Chlorine).

(h) O&M (High-Lift PS)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (High-Lift PS).

(i) O&M (Electrical)

- Tasks stated in Chapter 1 5. (1) Water Treatment Plants (Common), O&M (Electrical).

(6) Nasirabad Water Control & Booster

(a) Nasirabad Water Control

- Monitor and control water supply, transmission and storage systems through a supervisory control and data acquisition (SCADA) system, and analyze and act accordingly to control flow through transmission and distribution facilities or to take other actions as required.
- Perform routine housekeeping inside and outside facilities.
- Guard the facility, check the gate passes and the transport going inside and outside.

(b) Nasirabad Booster

- Operate pumps.
- Monitor the panel board showing the operation status of pumps.
- Make equipment adjustments, lubrications, and minor repairs.
- Maintain pumps and equipment in a clean and orderly condition.
- Maintain and operate Nasirabad Elevated Water Tank.
- Guard the water reservoir facility and check the gate passes and transport going inside and outside.
- Keep records and make written reports of work performed.
- Maintain and operate the Batali Hill reservoir tank.
- Guard the Batali Hill water reservoir facility and check the gate passes and transport going inside and outside.

6. Sewerage Treatment Circle

(1) Sewerage Treatment Plants (Common)

(a) Management Office

- Keep records that maintain a log of plant operations, test results, maintenance work performed, and failure or unusual operating conditions.
- Analyze the data of O&M.
- Prepare daily/monthly/yearly reports covering all management aspects of the plant and submit them to SE (Sewerage Treatment).
- Develop and implement the scheduling of operation staff to assure adequate coverage of shifts.
- Conduct regular site safety inspections.
- Instruct trainees and new operators.
- Conduct tours for individuals or groups, as requested.
- Order operating supplies and chemicals as needed.
- Perform routine housekeeping chores inside and outside facilities.
- Guard the facility and check the gate passes and the transport going inside and outside.

(b) Control Room

- Monitor and control the facilities through the panel board of supervisory control and data acquisition (SCADA) system.
- Direct the operation of all the plant necessary to treat and regulate the flow of wastewater, fecal sludge, and return/ excess sludge through the treatment plant, seeking the advice from Environment and Monitoring Division when needed.
- Keep records and prepare reports of the plant operation and submit them to the Management Office.
- Make periodic site inspections.

(c) Laboratory

- Take samples regularly for the quality analysis of raw wastewater, treated wastewater, and sludge.
- Perform laboratory tests to determine the plant process performance and compliance with water quality regulations, seeking advice from Environment and Monitoring Division when needed.
- Maintain laboratory equipment in clean, orderly, and workable condition.
- Keep records and make written reports of work performed.

(d) O&M (Common)

- Plan, operate, and supervise each component of wastewater/ sludge/ fecal sludge treatment process.

- Wash/ clean scrubbers, screens, channels, etc. and remove debris and scums.
- Maintain facilities in a clean, orderly, and workable condition.
- Unload, safely store, carry, and put chemicals to feeders, and compute chemical doses and adjust and monitor the feeding.
- Check regularly the inventory of chemicals used during the operation and report it to the Management Office.
- Keep records and make written reports of work performed and submit them to Management Office.

(e) O&M (Electrical)

- Inspect, test, repair, install, and troubleshoot equipment and electrical devices for proper operation, control, and safety.
- Adjust the sequence of each treatment process through PLC upon the direction of Control Room.
- Determine needed repairs or modifications on equipment and electrical devices.
- Keep records and make written reports of work performed and submit them to Management Office.

Chapter 2 Commercial Wing

1. ICT Circle

(1) System Development

- Plan, design, develop/ procure, install, maintain, and update software applications in the computers of related departments/ offices.
- Procure, maintain, and if necessary, replace hardware such as computers, displays, modems, printers, plotters, standby UPS, etc.

(2) System Maintenance

- Troubleshoot and fix software and hardware problems in CWASA.
- Ensure the protection of computer systems and data in CWASA from harm, attack, theft, and unauthorized use.
- Maintain CWASA server.
- Establish and maintain internet connection in the head office and other CWASA offices and sites.
- Manage GIS and all other database on CWASA server.

2. Revenue Billing Circle

(1) Revenue

- Maintain customer account information.
- Maintain customer account records.
- Add new accounts in cooperation with MODs and MOCs.
- Check and compile water consumption data entered at MODs.

- Prepare, issue, and deliver bills to respective MOD (Revenue).
- Record payments and adjust accounts.
- Prepare "No Demand Certificates" upon request.
- Prepare water consumption reports.
- Investigate and analyze customer queries and complaints on meter reading and billing.
- Receive and manage customer service requests and fix them in cooperation with in-charge MOD or MOC.
- Prepare data for MIS.

(2) MOD (Revenue)

(a) Related to MOD/ MOC

- Add new accounts into billing system in cooperation with MOD and MOC.
- Identify and report unlicensed tube-wells to MOD.
- Report any problems with house connections (such as illegal connections, water leakage, misconnection with rainwater line, overflow of sewage, and empty houses) and water meters (such as malfunctioning, hard-to-read, and tampering).
- Receive customers' requests and complaints and report them to MOD/ MOC if they are technical issues.

(b) Related to Revenue Billing

- Maintain and update customer account information and records.
- Note and report changes in user category.
- Visit customers' holdings, read meters, and maintain field registers.
- Maintain meter reading books.
- Record consumption data and enter the data into billing system.
- Visit customers' holdings, deliver the bills, and request/ receive payments.
- Enter the data of delivered bills into billing system.
- Deposit received cash and checks to the bank.
- Record payments and adjust customer accounts.
- Prepare accounts aging statements.
- Issue official notices to customers who have arrears.
- Prepare "No Demand Certificates" upon request.
- Collect connection fee, security deposit, and other fees.
- Receive customers' requests and complaints and manage them if they are related to meter reading and billing.

3. Accounts Circle

(1) Accounts (Finance)

- Update the accounting policies and procedures manual.

- Prepare the daily journal for advances and adjustments.
- Maintain the cash disbursement book and maintain registers related to salary, allowance, budget, APJ, advance, section-wise personal register, travel allowance, etc.
- Manage provident fund, i.e., provide loan from provident fund and maintain the contribution manually.
- Pay utility bills, especially electricity bills.
- Provide advances and travel allowance to the officers and staff.
- Pay contractor's bills, paper advertisement bills, and telephone bills.
- Provide payments of all projects.
- Pay salary and overtime to all officers and staff.
- Pay house building loan, advances for motorcycles and computers and also maintain manual register and file for providing loan.
- Cheque disbursement and also cheque register and maintain bank book both through Tally and manually.
- Bank reconciliation, transferring fund and investment in various banks as fixed deposit register (FDR).
- Collect statements from various banks for CWASA and projects.
- Record keeping for maintaining journal vouchers, contractor's files, staff's files, etc.
- Miscellaneous works like pay orders, journals, etc.

(2) Accounts (Management)

- Prepare trial balance, financial reports, and other various periodical reports on accounts matter.
- Calculate depreciations.
- Prepare balance sheet.
- Maintain assets ledger and store ledger.
- Tag all movable property.
- Liaise with external auditing accountants.
- Prepare general and subsidiary ledgers.
- Maintain the work in progress ledger.
- Prepare necessary journals.
- Enter/ post data in accounting software.

(3) Accounts (Pension & GPF)

- Implement regular payment of salary and allowances through electronic fund transfer (EFT).
- Arrange and conduct payment transactions of gratuity and pension.
- Manage the fund and investment of fixed deposit register (FDR).

- Ensure the automatic transfer of government pension fund (GPF) and pension by maintaining proper software in collaboration with ICT Circle.
- Provide relevant information to stakeholders.
- Prepare monthly report for the stakeholders.
- Prepare central pension budget in cooperation with Budget Division.
- Coordinate with Secretariat regarding matters related to pension.

(4) Budget

- Prepare revenue budget of CWASA.
- Prepare development budget of CWASA and update quarterly.
- Prepare consolidated annual budget.
- Prepare mid-term budget framework of CWASA.
- Monitor actual financial results against the budget and prepare a variance analysis.
- Respond the queries from the LGRD Ministry.

(5) Revenue (Accounts)

- Manage collection account of the bank.
- Prepare monthly revenue collection report through Secretariat for the LGRD Ministry.
- Coordinate with banks regarding transfer of deposited money to Janata Bank, WASA Branch.
- Monitor collection for other services.
- Prepare collection reports.
- Maintain bank book of all revenues received.
- Monitor interest on deposits.

Chapter 3 Administration Wing

1. Administration-1

- Develop and maintain human resources development plan.
- Maintain and update each staff's personal file.
- Develop and maintain personal database.
- Maintain and update each staff's service book.
- Review and update CWASA's Employee Service Regulations.
- Monitor attendance and leave credits.
- Determine salary scales and allowances including time scale adjustments.
- Monitor employee overtime.
- Coordinate employee recruitment, promotion, and transfer.
- Coordinate the annual evaluation process of officers and staff to be recorded in annual confidential report.
- Manage staff leaving and retirement procedures including end of service gratuity.

2. Training Center

- Regularly conduct training needs analysis of employees.
- Develop, maintain, and implement a comprehensive employee training program.
- Maintain training records.
- Conduct new employee induction program.
- Organize in-house training sessions.
- Identify and facilitate appropriate national and international training.
- Monitor and evaluate training programs.

3. Administration-2

- Receive and distribute incoming mails.
- Receive and disseminate Government orders.
- Respond to Government orders.
- Distribute internal notices.
- Operate CWASA's dispatch service.
- Maintain central filing system.
- Secretarial support to the Board of Directors.
- Allocate office accommodations in CWASA building.
- Manage insurance policies.
- Maintain office layout plan and review it as necessary.
- Coordinate meeting rooms.
- Manage employees' discipline procedure.
- Organize CWASA events and functions.

4. Pension

- Submit file of pension based on the demand of employees.
- Take accounts of the pension from Accounts (Pension& GPF) Division.
- Take approval of MD in the pension file.
- Order Accounts Division (Pension& GPF) Division by official letter to pay the pension.

5. Security

- Monitor and control any security-related matter of CWASA property.
- Plan and coordinate the assignment and allocate and monitor the responsibilities of Security Guards.
- Ensure that any sabotage and anti-social activities do not occur in CWASA premises and buildings.
- Prepare reports on anything related to security and submit them to Administration-2 Division.

6. Public Relations

- Manage the placement of CWASA notices and advertisements in newspapers.
- Manage the process of issuing CWASA notices and advertisements via radio, television, and other media such as internet.
- Arrange press coverage of key CWASA events and developments.
- Receive and manage all media enquiries.
- Maintain an overview of the customer complaints and grievance process and intervene as necessary.
- Act as Information Officer in line with the requirements of the Right to Information Act.
- Review all newspaper articles and media reports and advise CWASA as required.
- Develop and implement programs to promote CWASA's image, public information, water conservation, health campaigns, school information, and other campaigns.
- Develop and implement CWASA's corporate social responsibility activities.
- Manage the provision of telephone services.
- Provide inputs to CWASA's website and intranet.

7. Estate

- Manage all CWASA land.
- Acquire new land.
- Facilitate the payment of land taxes and lease fees.
- Allocate houses to officers and staff.
- Sweep and upkeep CWASA head office.
- Protect land from encroachment.
- Update and maintain all documentation.
- Inflict punishment for unlawful assemblies in the premises of CWASA.
- Empowered for legal encroachment under the Government and Local Authority Lands and Buildings (Recovery of Possession) Ordinance, 1970.

8. Medical

- Provide first aid as required.
- Provide general medical support for CWASA staff and their families.
- Prepare sick notes for staff who are unable to attend work due to illness.
- Undertake annual health check of all employees.
- Manage health awareness programs.
- Prepare prescriptions and effect referrals as required.
- Maintain appropriate supplies of first aid material.

9. Transport

- Allocate vehicles and motorbikes for daily work tasks.
- Keep all vehicles and motorbikes clean and maintained in good order.
- Manage CWASA's maintenance facility.
- Manage vehicle external maintenance contracts.
- Manage vehicle documentation.
- Ensure that driver licenses are valid.
- Monitor and analyze fuel consumption data.
- Set up and keep minimum spare parts stock level.
- Manage drivers and daily task allocation.
- Conduct practical test of potential new drivers.

10. Procurement

- Prepare and implement procurement budget for all non-project supplies and materials.
- Monitor market prices.
- Receive and assess purchase orders from CWASA business units.
- Manage the procurement process, such as preparing estimate of all works, preparing tender document, and inviting and evaluating tender.
- Monitor supplier's performance.
- Ensure items delivered are in accordance with the purchase order.
- Distribute goods received.
- Liaise with suppliers regarding faulty goods.

11. Legal

- Collect requisite legal information, data, or appeals and plan and arrange prioritized legal actions.
- Review, develop, and recommend rules and regulations that CWASA needs.
- Defend or prosecute in the courts of law and arbitration bodies on behalf of CWASA.
- Review and finalize the contracts, agreements, memorandum of understandings and any other legal transaction contract obligations.
- Appraise management status of legal affairs in the Authority and highlight challenges that require immediate attention either by the Board or Management.
- Look after all legal matters related to estate.

Chapter 4 Others

1. Office of Magistrate

- Manage the mobile court against illegal water connection and deep tube well.

- Inflict punishment for unlawful assemblies in the premises of CWASA.
- Deal with all legal matters except those related to Legal Section.
- Exercise the powers given in the Water Supply and Sewerage Authority Act, 1996.

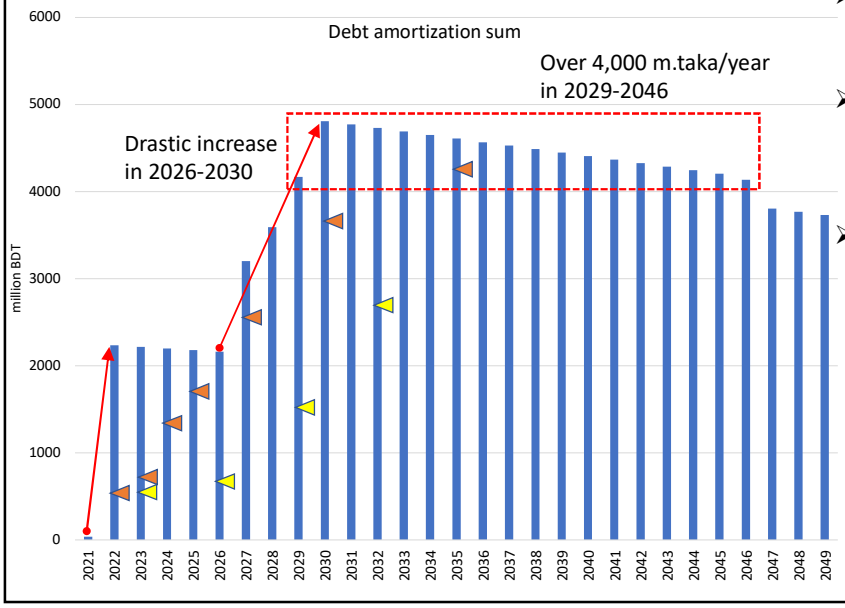
2. Audit

- Pre-audit the payment of bills.
- Implement special audit, investigation, or examination on any specific matters.
- Prepare audit observations report regarding various departments/ sections.
- Communicate regarding audit issues with the ministry and the concerned divisions /sections of CWASA.
- Liaise with the external/ Government auditors.

付属資料 3：活動 1-3 の成果

財務体制の課題整理支援

Financial Estimation Highlight by JICA 2&4 F/S team and WB



- Net profit before tax and depreciation as of 2016, 2017, and 2018 was only 22, 85, and -10 m.taka.
- Net profit before tax and depreciation estimated by JICA (◁) and by WB (◀) is far less/ less than the debt amortization sum.
- Even rather optimistic estimation by WB cannot cover debt amortization cost for years; there is a risk of running out of cash.

Note:
1. Debt amortization for KWSP-1&2, CWSISP-1&2, Bhandaljury, IWSRP-1&3, and Catchment 2,3,4,5,&6.
2. Annual tariff increase: 9.8% for JICA and 8% for WB.
3. STP is presumed to start operation in 2023 (WB) and 2026 (JICA).

Recommendations

- Accelerate property connection to sewer.

  Property connection is to be done by the contractor in PESSCM-1.
- Expand smart billing system to reduce the increase of meter inspectors.

  Model smart billing system is to be tested for 3,000 HHs.
- Introduce prepaid water meter system in model areas.
- Expand digitalization through E-Nothi or other ICT systems for effective business processing to reduce the increase of personnel.
- Enhance collection of arrears.
- Take out a short-term loan from banks to avoid running out of cash.
- Negotiate with LGD and MOF for postponing repayment or debt write-off.

付属資料-4：活動 1-4 の成果

新たな下水道整備事業計画の作成支援

（第 2・4 処理区プレ F/S 報告書）

Kalurghat-Bakalia Sewerage Project (KBSP)
Pre-feasibility Study for Land Acquisition of STP

1. Summary of the Project

Sanitation Master Plan (hereinafter called as "M/P") have been prepared under the Chattogram Water Supply Improvement and Sewerage Project (CWSISP) to develop sewerage system to the entire city. In the said M/P, Chattogram city has been divided into 6 (six) catchment areas, and CWASA has started or will start sewerage development in four catchments collaborating with GoB, other donors, and private company. Considering the urgency of the sewerage development in Chattogram, CWASA is planning to implement the sewerage development in the remaining two catchments, namely Catchment-2 and the Catchment-4 shown in Figure-1, in this project. The outline of Catchment-2 and 4 is as shown in Table-1.

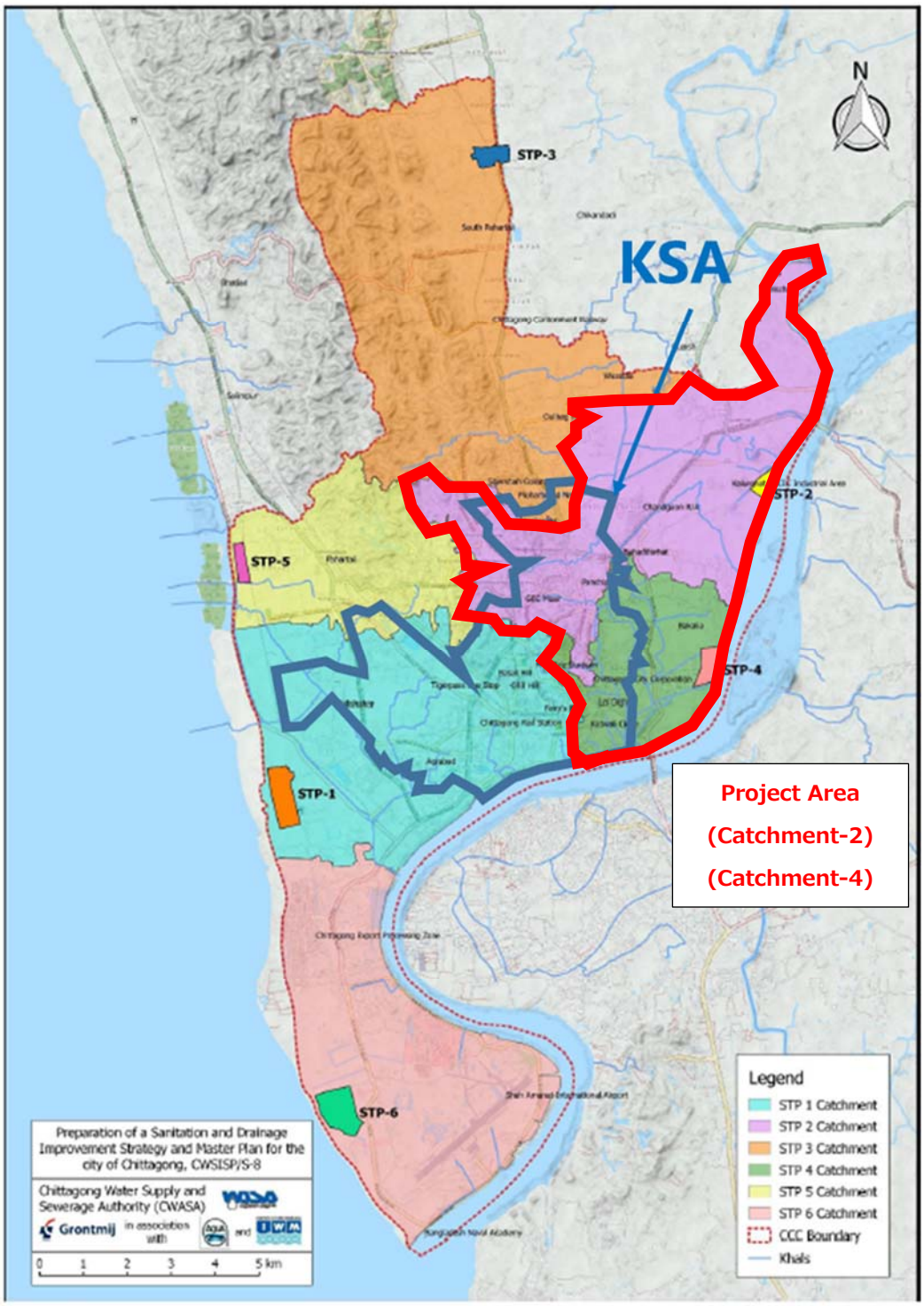
Table-1 Summary of the Target Catchment Areas

Catchment	Catchment-2	Catchment-4	Total
Name of Catchment	Kalurghat Catchment	Bakalia Catchment	
Name of Ward	3 Panchlaish 4 Chandgaon 5 Mohra 6 East Sholashahar 7 West Sholashahar 8 Sholokbahar 16 Chawkbazar (7 wards)	6 East Sholashahar 8 Sholokbahar 16 Chawkbazar 17 West Bakalia 18 East Bakalia 19 South Bakalia 20 Dewan Bazar 21 Jamal khan 22 Enayet Bazar 32 Anderkilla 33 Firinghee Bazar 34 Patharghata 35 Boxirhat (13 wards)	(17 wards in total)
Population	736,000 (2021) 1,278,000 (2050) 1,708,000 (2070)	491,000 (2021) 851,000 (2050) 1,138,000 (2070)	1,227,000 (2021) 2,129,000 (2050) 2,846,000 (2070)
Area	30.51 km^2	16.19 km^2	46.70 km^2

Source: Sanitation Masterplan

Sewage Treatment Plant-2 (STP-2) in Kalurghat and Sewage Treatment Plant-4 (STP-4) in Bakalia are planned to be constructed jointly in Kalurghat area as per the study in the "Advisor on Urban Sanitation Improvement" sent by JICA to Chattogram WASA. A total of approx. 30 hectares of land will be tentatively required for construction of STP -2 and STP-4 jointly and approximately 5 hectares (12.36 acres) for Boosting Pump Station at Bakalia area. All other

utility Services (like electricity, gas etc.) will be taken from government authorized department of Bangladesh as per their rules & regulations.



Source: M/P

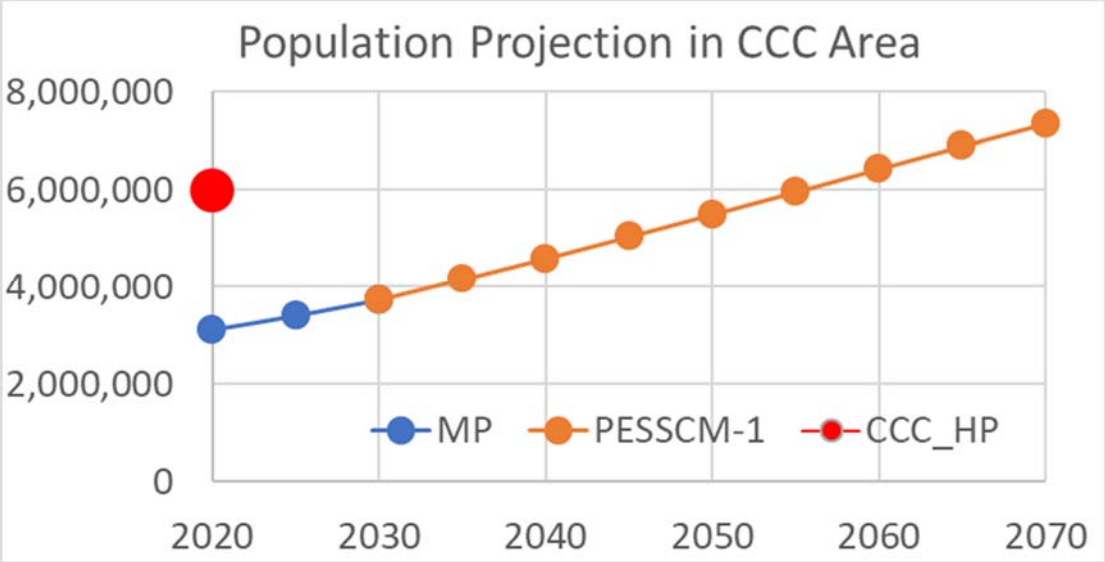
Figure-1 Project Area

2. Population Projection

(1) Total Population in CCC area

The target year of M/P is 2030, but that of PESSCM-1 is 2070 considering the life of civil structures. In the case of developing countries, it is not easy to forecast its future situation due to its rapid economic growth and city development. Therefore, 30 years from base year is normally applied for the target year of sewerage development plan. In this pre-F/S, tentatively 2070 was applied same as PESSCM-1.

The latest CENSUS was published in 2011 and CENSUS 2021 is under preparation as of March 2022. In the M/P, population up to 2030 was projected based on the CENSUS 2011 and the population up to 2070 was proposed in the PESSCM-1. Now that 10 years has passed since the CENSUS 2011, there is seemed to be huge gap between actual population and projected population based on CENSUS 2011. The population excluding floating population in 2020 in entire CCC area was projected at 3million, but CCC estimates its population approximately at 6 million in 2020 due to huge migration. In this way, the population in CCC area is not clear especially due to lack of reliable statistic data. Therefore, the future population in CCC area will be estimated after receiving reliable population data: the CENSUS 2021 is published.



Population in CCC area											(Unit: million)
	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
MP	3.11	3.40	3.73								
PESSCM-1			3.73	4.16	4.59	5.04	5.50	5.96	6.43	6.89	7.35
CCC_HP	6.00										
Growth rate (%/year)		1.8%	1.9%	2.2%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%

Source: M/P, PESSCM-1, and Website of CCC

Figure-2 Population Projection in CCC based on CENSUS 2011 and Population Estimated by CCC

(2) Population in Catchment-2 and Catchment-4

Population in Catchment-2 and Catchment-4 in 2011 were 316,868 and 405,483 respectively, which were estimated based on CENSUS 2011 in the M/P. The population up to 2070 in Catchment-2 and Catchment-4 were estimated based on the average population growth ratio in CCC area shown in Figure -2. The projected population in 2050 and 2070 were as shown in Table-2.

Table-2 Projected Population

Catchment	Catchment-2	Catchment-4	Total
Population	736,000 (2021)	491,000 (2021)	1,227,000 (2021)
	1,278,000 (2050)	851,000 (2050)	2,129,000 (2050)
	1,708,000 (2070)	1,138,000 (2070)	2,846,000 (2070)

Source: CWASA and JET

In the M/P, served population who can access to sewer system was proposed for each catchment area considering the difficulty of construction of house connections to the households where is apart from main road. In this pre-F/S, the total population in the catchments was tentatively considered as a potential served population to the sewerage service considering the uncertainty of collection process and the population projection until the publishment of CENSUS 2021.

3. Sewage Generation

Sewage generation is estimated based on the design parameters shown in Table-3.

Table-3 Design Parameters

Item	Domestic			Non domestic	WW Generation	Industrial	Inflow/ Infiltration
	Unit Water Consumption	WW return Rate	WW generation	Unit Consumption			
Unit	lpcd	%	Lpcd	lpcd	lpcd	M3/day	%
Figure	120	80	96	11.5 (12%)	107.5	7,858 (Catchment-2) 2,245 (Catchment-4)	10% of daily max WW in 2070
Source	KWSP-2 (2030)	MP	-	MP and KWSP-2	-	MP	Design guideline in Japan

Source: CWASA and JET

The Unit water consumption in the M/P is 115 lpcd and the water consumption in KWSP-II is 120 lpcd, which are nearly equivalent. The Catchment-2 and Catchment-4 include KSA (water supply area by KWSP) and target year of this project is more than 20 years later than the target year of M/P and KWSP-II. Considering the increase of unit water consumption according to economic growth, the unit water consumption in the pre-F/S was proposed at 120 lpcd based on KWSP.

Sewage return rate was proposed at 80% according to the M/P, which is assumed to be

reasonable because it is within the range of applied ratio (60%-90%) for the sewerage planning.

Regarding non-domestic sewage volume such as commercial, small industrial sewage, it is proposed at 12% of domestic water consumption both in M/P and KWSP, therefore same rate was applied in this pre-F/S. In addition, industrial sewage from large industrial zones (IZs) shall be estimated separately. In the M/P, the sewage volume from each IZ was estimated by the CWASA's registration of tube well considering the groundwater consumption for industrial use. In this pre-F/S, industrial sewage volume proposed in the M/P was applied since there is no available water consumption data at this moment. In the F/S stage, it shall be well assessed whether to collect the sewage from the IZs including the treated water from ETPs of each industry which treat industrial sewage.

In teams of stormwater inflow and groundwater infiltration (I/I), I/I proposed in the M/P was 20.8% of peak sewage flow, which was seemed to be higher and huge impact to determine the capacity of STP. Therefore, 10% of daily maximum flow in 2070 was tentatively proposed for this pre-F/S based on Japanese design standard.

4. Setting the Capacity of STP

Capacity of STP is determined based on the daily maximum sewage flow, which is the maximum sewage inflow in 24 hours in the target year. The ratio of daily maximum flow per daily average flow is 1.1 in the pre-F/S tentatively, but it is highly depend on the area and population of sewered area and it shall be studied in the coming F/S. Sewage flow in 2030, 2050, 2070 were estimated as shown in Table-4 and the capacity of STP was tentatively proposed at 400,000 m^3/day.

Table-4 Capacity of STP

Daily Average (including SW inflow)						
	STP-2		STP-4		STP-2+4	
2030	121,320	122,000	77,828	78,000	**199,148**	**200,000**
2050	165,475	166,000	107,241	108,000	**272,716**	**273,000**
2070	211,726	212,000	138,051	139,000	**349,777**	**350,000**
⇓ F=1.1 to convert from Daily Ave. to Daily Max						
Daily Maximum (including SW inflow)						
	STP-2		STP-4		STP-2+4	
2030	133,452	134,000	85,611	86,000	219,063	220,000
2050	182,022	183,000	117,965	118,000	299,988	300,000
2070	232,899	233,000	151,856	152,000	384,755	**385,000**

Source: CWASA and JET

5. Selection of Treatment Process

(1) Discharge Standard (Effluent Quality Standard)

Currently discharge standard, the effluent quality standard of STP, in the Environment

Conservation Rules (1997) is applied in Bangladesh. The discharge standard is planned to be updated in 2022, however the required level of sewage treatment is not so much changed as shown in Table-5.

Table-5 Discharge Standard (Effluent Quality Standard of STP)

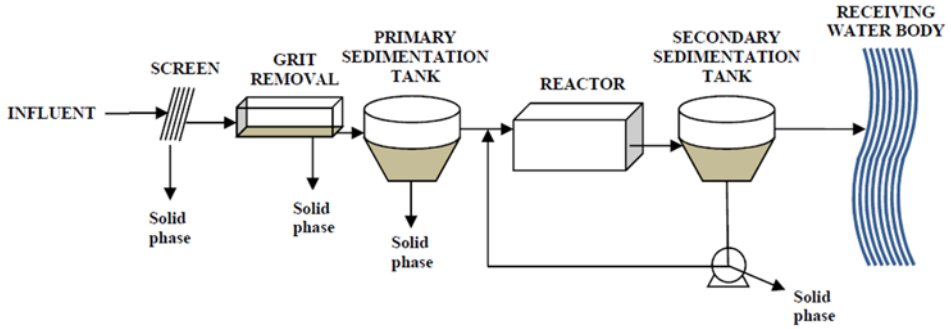
Parameters	Standard of Sewage Discharge in The Environment Conservation Rules, 1997	Standard of Sewage Discharge to be updated in 2022 (draft)
Temperature	30 ℃	30 ℃
pH	-	6-9
BOD	40 mg/L	30 mg/L
COD	-	125 mg/L
SS	100 mg/L	100 mg/L
Oil & Grease	-	10 mg/L
NO_3^-	-	250 mg/L
PO_4^{3-}	-	35 mg/L
Nitrate	250 mg/L	-
Phosphate	35 mg/L	-
Coliform	1000 MPN/100mL	1000 MPN/100mL

Source: MoE, Bangladesh

(2) Selection of Treatment Process

Considering the requirement in emission standard for NO_3^- and PO_4^{3-}, nitrate and phosphate treatment is not required at the STP considering the inflow quality. However, PESSCM-1 applied advanced treatment including nitrate and phosphate treatment considering the risk of unstable operation.

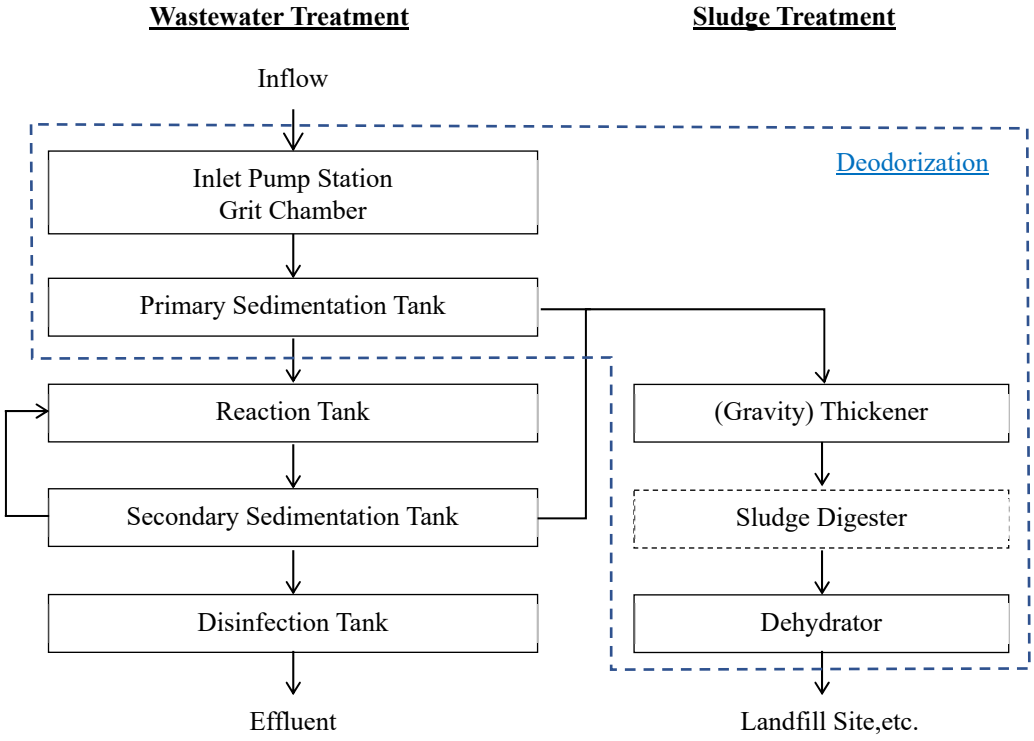
The treatment process will be determined in the coming F/S after the enactment of updated emission standard shown in Table-5. At this moment, the CAS (Conventional activated sludge) was proposed. It is the treatment process commonly used all over the world and there is variety of its modified treatment process. The operation of CAS plant is not easy as oxidation ditch (OD) process or a kind of lagoon process, but the know-how to operate CAS plant can be shared by Japanese municipalities. Even if the effluent quality standard upgraded to require nitrogen and phosphorus treatment in the future, this treatment process is easily upgraded compared with other treatment processes such as A_2O (Anaerobic-anoxic-aerobic) process in future.



Source: M/P

Figure-3 Proposed Treatment Process (CAS Process)

This flowchart of CAS process is as shown in Figure-4.



Source: CWASA and JET

Figure-4 Flow Chart of CAS Process

6. Layout of STP

(1) Site of STP

The site of STP is located at Kalurghat area as shown in Figure-5. The proposed STP area for Catchment -2 and 4 was selected after checking the availability of land with CDA. In the M/P, the site for STP-2 was beside the Karnaphuli River, behind the site of the proposed combined government office. For selecting the site of STP-2 and -4, CWASA and JET had several meetings with the CDA. And as a result of the discussion with CDA in charge of ongoing Chattogram Metropolitan Master Plan Project, the area of 71.44 acre (30 hector) was found available in the west side of the Ring Road where is reserved for education and research purposes in the Detailed Area Plan (DAP) of CDA. It was decided that, as Bangabandhu Maritime University is being constructed in the proposed area of STP-2 in the M/P, the site for the university mentioned in the DAP can be utilized for STP construction. Later after site visit of the ministry the Deputy Secretary (Water Supply-2) of the Local Government Division issued letter no 46.00.0000.085.14.007.2018-26 dated January 13, 2022 directing the administrative approval to acquire the proposed land.

Source: CWASA and JET

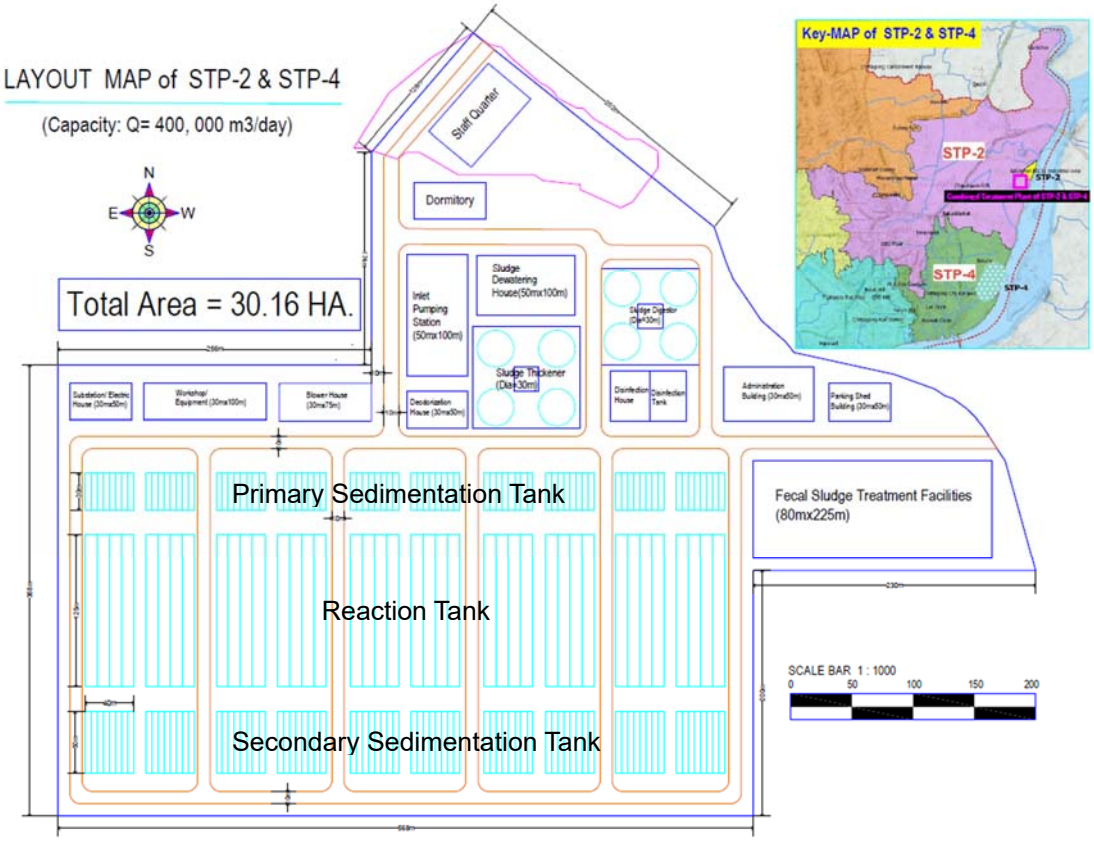
Figure-5 Proposed Site of STP-2 and 4

(2) Layout of STP

STP- 2 and STP-4 will be constructed at the site of STP in Kalurghat. The layout plan of STP was prepared to determine the necessary area for STP-2 and 4. The STP is composed of following facilities:

i) Sewage treatment facilities including inlet pumping station, disinfection, and blower house,
ii) Sludge treatment facilities including sludge thickener, sludge digester, and sludge dewatering,
iii) Deodorization facility,
iv) Power supply including substation,
v) Administration building,
vi) Staff Quarter and Dormitory, and
vii) Fecal sludge treatment facility.

The layout plan is as shown in Figure-6 and its necessary area is estimated at 30.16ha.



Source: CWASA and JET

Figure-6 Proposed Layout of STP-2 and 4

7. Note for Feasibility Study

This pre-F/S was prepared without reliable population data to start the land acquisition for the STP of Catchment-2 and 4. In the coming F/S, target year, total and served population in Catchment-2 and -4, and all technical parameters shall be well assessed and updated.

In addition, Japan International Cooperation Agency (JICA) is keen on the procedure of land acquisition, resettlement and compensation activities are well implemented according to both related laws and regulations in Bangladesh and "JICA Guidelines for Environmental and Social Considerations (January 2022)" as a potential donor for this project. JICA commented as follows in 2021:

- The acquired land will be utilized for the construction of STP. JICA is the potential donor for the development, but not yet determined officially. The M/D will be after F/S.
- To provide the ODA loan for sewerage development, JICA will confirm the procedure and action for land acquisition for STP, its resettlement, and compensation for Project Affected Persons (PAPs) taken by relevant authorities of Bangladesh.
- The said procedure shall be implemented based on related laws and regulation of Bangladesh, and the environmental and social safeguard policies of World Bank. As a

result, the process will satisfy “Guidelines for Environmental and Social Considerations”.

- It is necessary to facilitate DC office to implement necessary compensation for illegal dwellers including costs for housing, relocation, and land registration tax, etc. (Note: There is no critical issue in previous projects in Bangladesh.), and
- JICA will check the “resettlement action plan” in the appraisal mission in F/S stage to confirm whether residents and illegal dwellers accept the procedures and actions taken for the involuntary resettlement.

付属資料-5：活動 2-1 と 2-2 の成果

進行中の下水道事業の計画を基に
設計・建設時に想定される課題の整理

上記課題の解決策を通じた
CWASA の設計・施工監理能力向上支援

PEOPLE'S REPUBLIC OF BANGLADESH
CHATTOGRAM WATER SUPPY AND SEWERAGE AUTHORITY (CWASA)

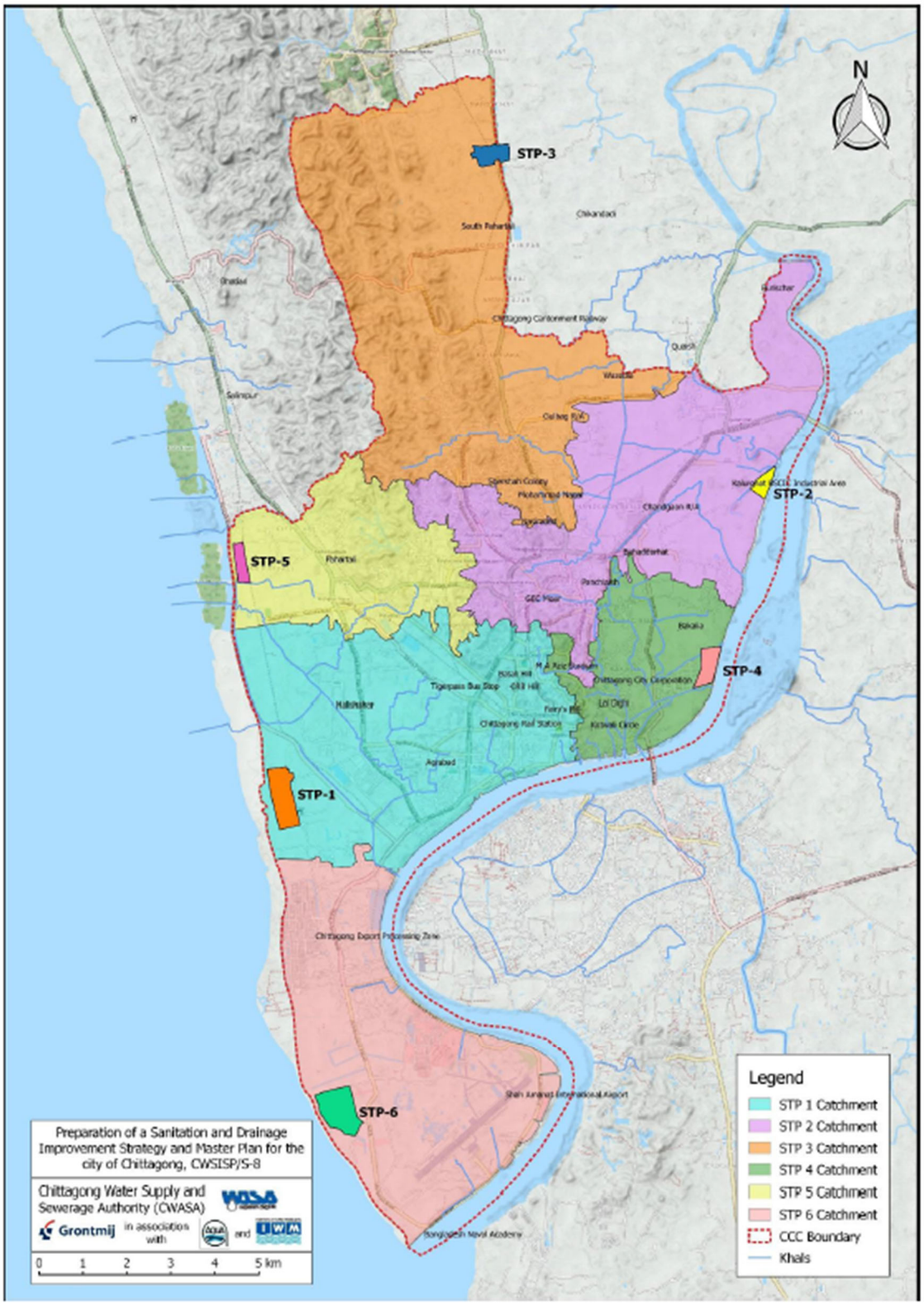
Advisor on Urban Sanitation Improvement

Summary Report of Activity 2-1 and 2-2

Conceivable Challenges and Proposed Solutions in On-going Sewerage Project

October 2022

JICA Expert Team
(Nippon Koei Co., Ltd.)



Source: Sanitation Master Plan (2017)

Sewerage Master Plan Area

Advisor on Urban Sanitation Improvement

Conceivable Challenges and Proposed Solutions in On-going Sewerage Project

Table of Contents

1. Outline of On-going Sewerage Project (Catchment-1 Project)

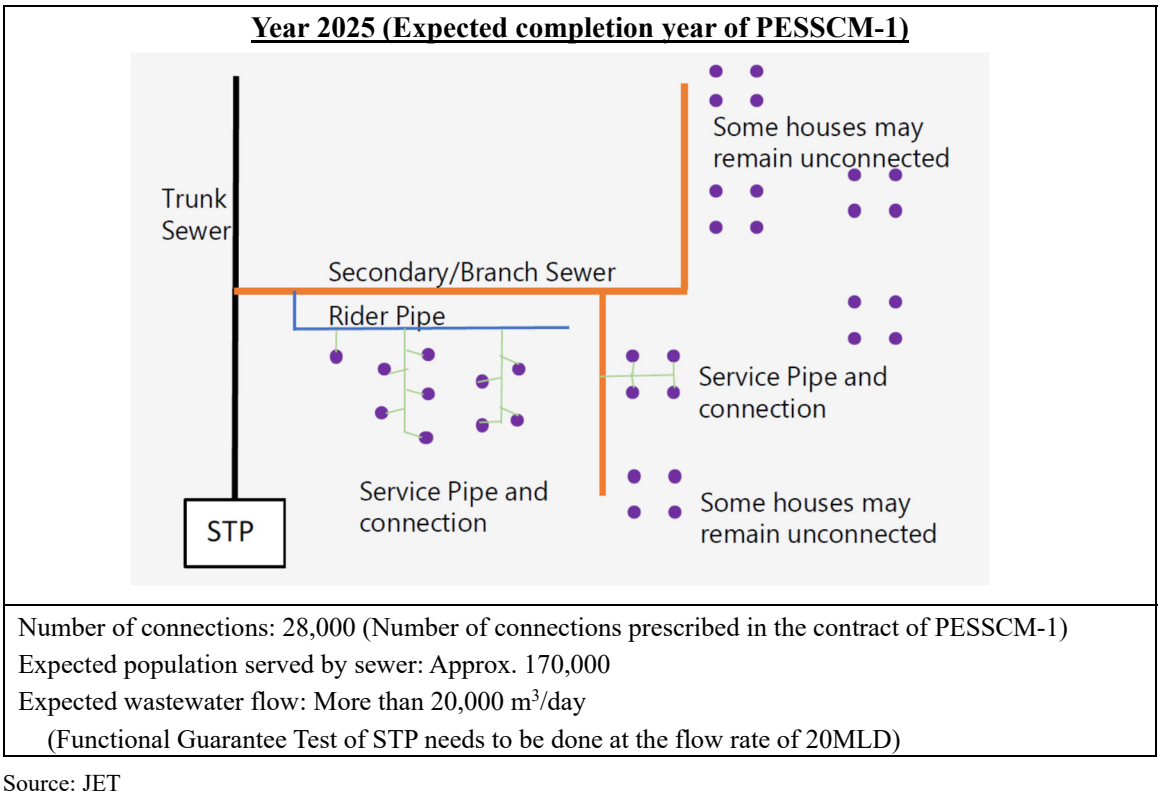
1.1 Planning Framework

Chattogram Water and Sewerage Authority (hereinafter "CWASA") has developed a Sanitation Master Plan (hereinafter "the M/P") in 2017. The master plan divided the CCC area into six sewerage catchment areas. The conceptual design of Catchment-1 sewerage system was completed in June 2020. The planning framework of Catchment-1 sewerage system is as follows:

- Target Area: Catchment-1 (3,562 ha)
- Target year: 2070
  - Step wise construction for STP (Phase-1: 100 MLD)
  - Sewerage network is designed for 2070
- Planned Population: 897,083 (2011 census)
  2,609,175 (projected for 2070)
- Type of sewerage system: Separate sewerage system
- Location of STP: Near the coast in Halshahar

1.2 Concept of Sewage Collection

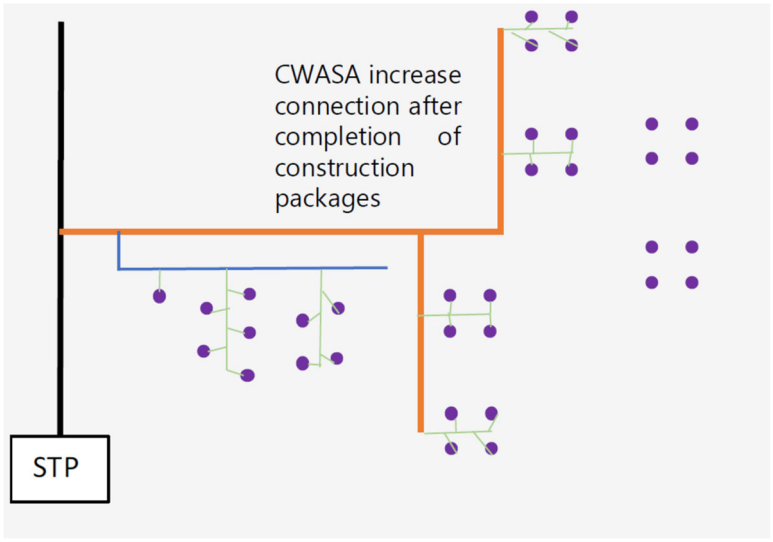
Figure 1.1 shows the concept of sewage collection.



Source: JET

Figure 1.1(1) Image of Sewage Collection (Year 2025)

Year 2030 (5 years after completion of PESSCM-1)

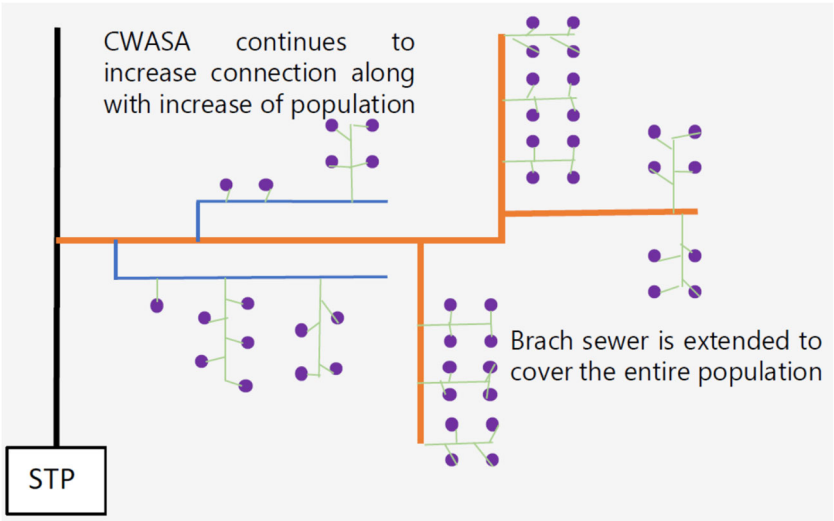


Planned number of connections: Approx. 134,000
(Expansion of sewer network and property connection work needs to be continued after PESSCM-1)
Planned population served by sewer (2030): 800,000
Planned wastewater flow: 96,000 m3/day (Capacity of STP is 100 MLD)

Source: JET

Figure 1.1(2) Image of Sewage Collection (Year 2030)

Year 2070 (Target Year of Catchment-1 Project)



Trunk Sewer and Secondary Sewer is designed for 2070 flow (312,000 m^3/day).
(End of Trunk Sewer: D2000, I= 1/2000)

Planned number of connections: 437,000
(Expansion of sewer network and property connection work needs to be continued)
Planned population served by sewer (2070): 2,600,000 (100 % of population in 2070 in Target area)
Planned wastewater flow: 312,000 m^3/day

Source: JET

Figure 1.1(3) Image of Sewage Collection (Year 2070)

1.3 Key Factor in Achieving the Objectives of the Project

As presented above, the expansion of sewer network and property connection need to be continued after completion of PESSCM-1. Approximately 9,000 nos. of property connection need to be installed per year in order to attain 100 % of sewerage coverage ratio in Target area in 2070.

(437,000 connections – 28,000 connections) / (2070 – 2025) = 9,000 connections / year

Thus, the continued extension work of sewer network and increase of property connection is one of the key factors in achieving the objectives of the project.

2. Site Visit and Interview with the KWSP-2 Consultant and PESSCM-1 Contractor

In order to identify the conceivable challenges in design and construction of PESSCM-1, JET conducted the following.

2.1 Site Visit of KWSP-2 and Interview with the Consultant

JET looked into on-going water supply project KWSP-2, since the nature of construction work is similar to PESSCM-1. Most of the construction work of KWSP-2 had been completed except for service connection work (replacing and new connection). JET visited the site of service connection work together with CWASA staff and observed the construction work process as well as the applied design. JET also had an interview with the consultant of KWSP-2 (NJS CO.). In the interview, JET asked about difficulties during the pipeline construction and important points when constructing sewer in the city of Chattogram. The interview record is shown in Attachment-2.1.

2.2 Interview with PESSCM-1 Contractor

JET had an interview with the Contractor (Taeyoung E&C). At present, PESSCM-1 is in detailed design stage. The construction work has not yet been commenced. In the interview, JET asked about i) design condition and reference information for detailed design, ii) outline of the detailed design of property connection, and iii) construction plan of trunk sewer. The interview record is shown in Attachment-2.2.

2.3 Site Visit of Water Supply Service Connection

Regarding the property connection, JET also looked into the present routine work for service connection work of CWASA. JET visited the construction site of service connection. JET also confirmed the handling procedure of the application for new service connection with the staff of sales division of CWASA.

3. Lesson Learnt from KWSP-2 and Routine Service Connection Work of CWASA

JET's findings from the site visit and the interview as mentioned in Section 2 are described hereunder. The findings are classified into two categories:

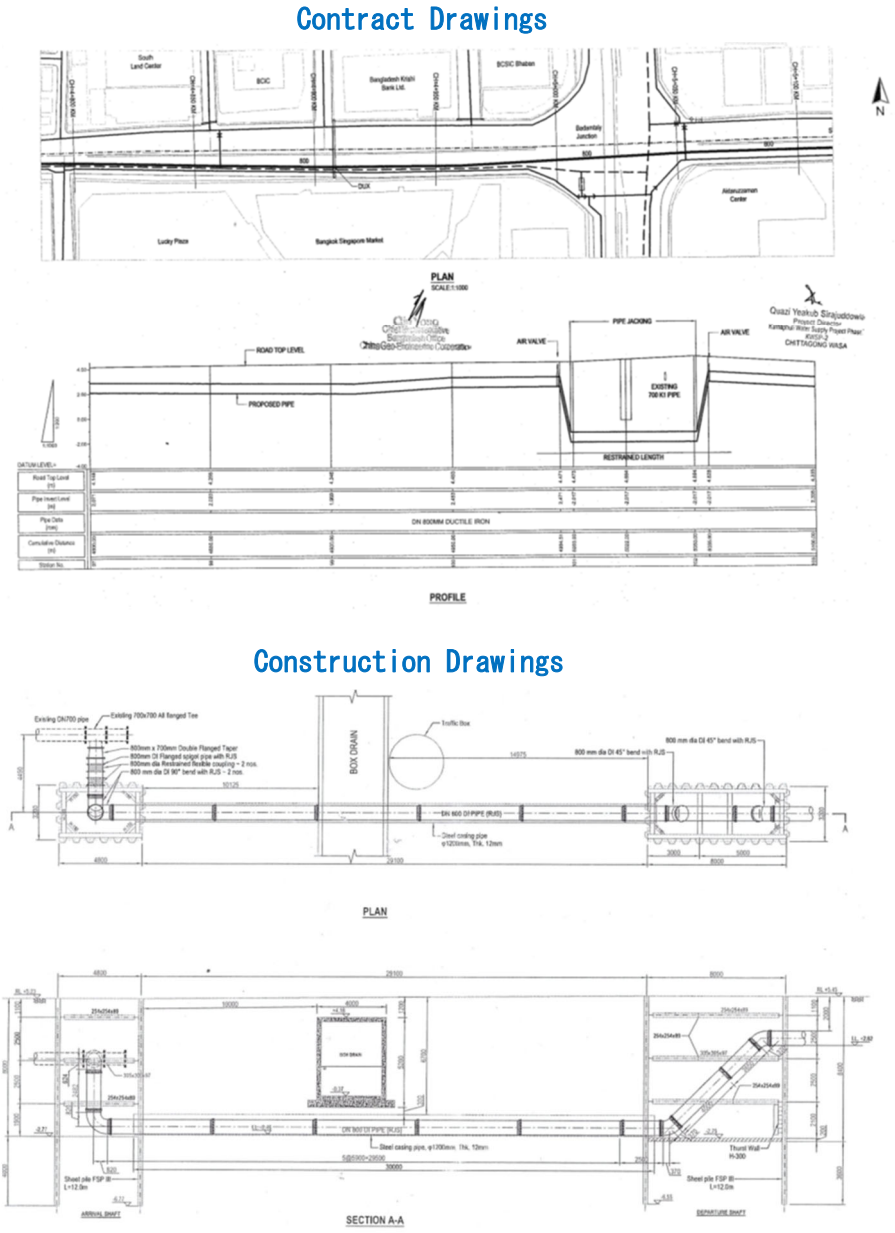
- Keep: Effective matters/activities
- Problem: Matters hindering the work / to be noted / to be improved

3.1 Lesson Learnt from KWSP-2

3.1.1 Installation of large diameter pipeline

(1) Keep: Effective matters/activities

As shown below, the detailed construction drawings for trenchless section including temporary facilities were prepared before construction work. It is effective for efficient and safe construction work.

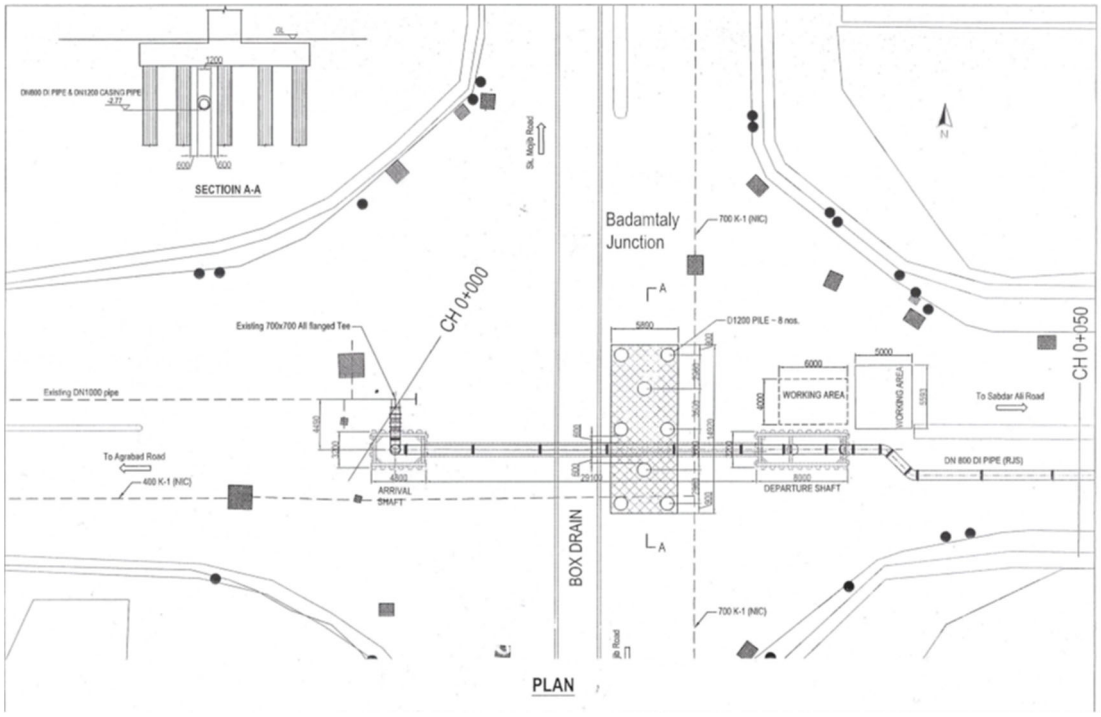


Source: CWASA

Figure 3.1 Contract Drawing and Construction Drawing of Trenchless Section

(2) Problem: Matters hindering the work / to be noted / to be improved

In the above trenchless section, it was necessary to avoid the foundation piles of overhead road, as shown below.



Source: CWASA

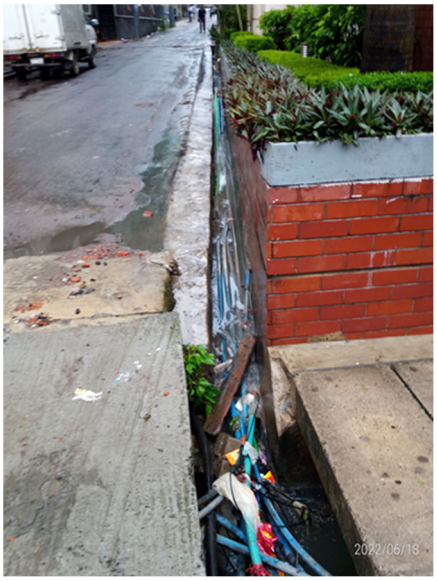
Figure 3.2 Positions of Foundation Pile and Pipeline

It should be noted that the existing underground facilities located on the pipeline route affects the pipeline profile. Information of existing facilities and future plan should be shared by CCC, CDA and CWASA. Moreover, it is desirable that the information be stored in a GIS format.

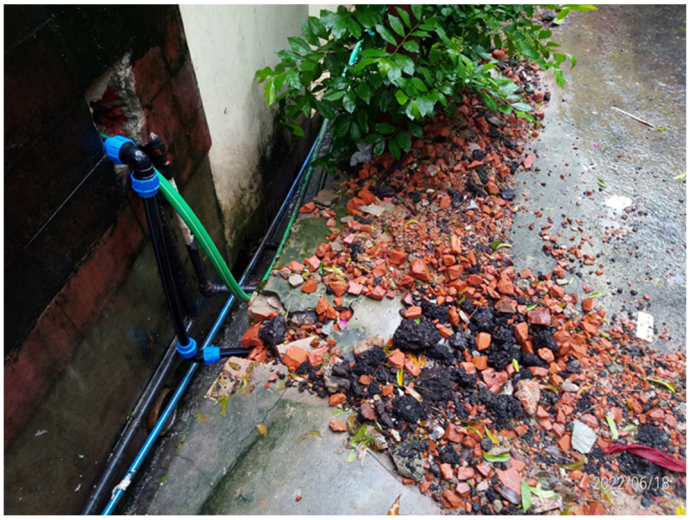
3.1.2 Installation of new house connection for replacement of existing house connection

(1) Keep: Effective matters/activities

As shown below, existing service pipe is sometimes very long and not properly installed. This will reduce the residual head at the tap and may lead to contamination of the water. On the contrary, new service pipeline of KWSP-2 has been installed along the lane facing each customer.



Existing service pipe is sometimes installed in the side drain.



Green: Existing service pipe
Black: New service pipe from new distribution pipeline

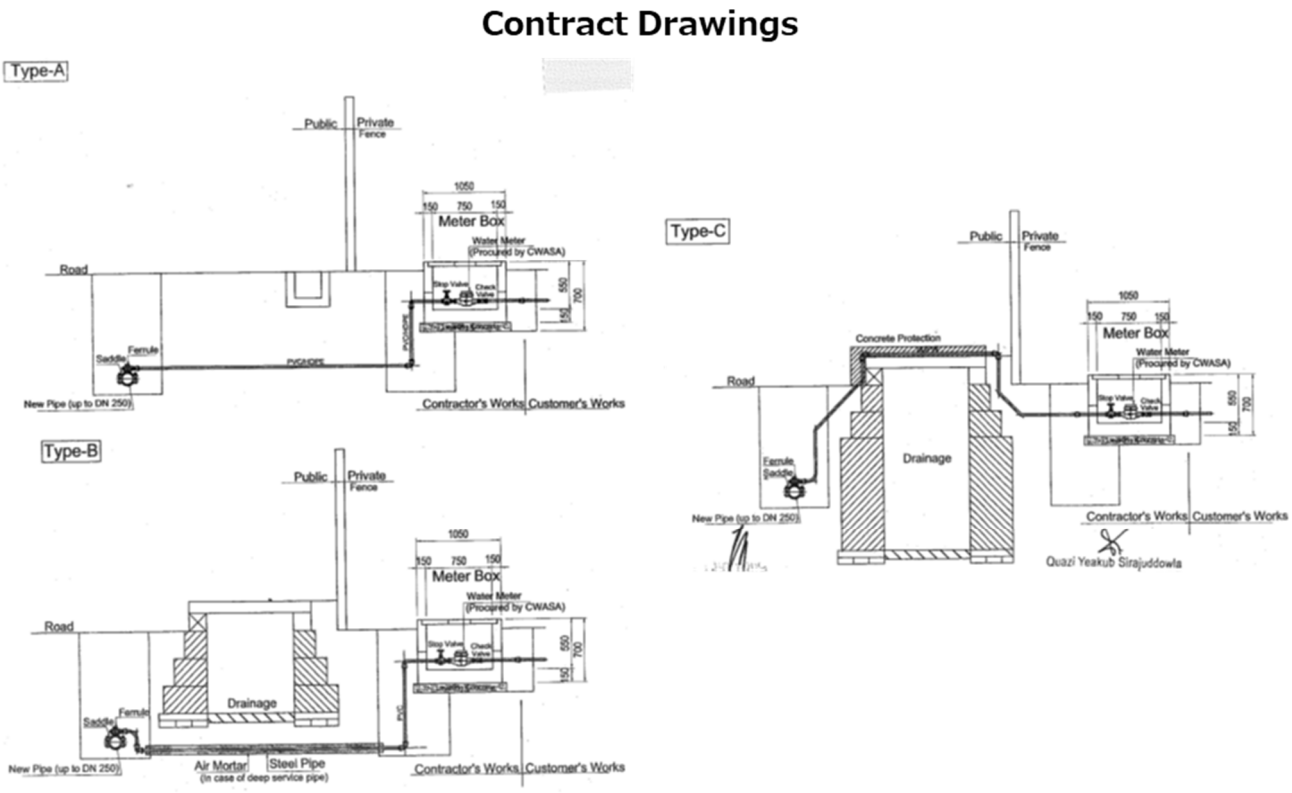
Source: JET

Figure 3.3 Existing Service Pipe and New Service Pipe by KWSP-2

(2) Problem: Matters hindering the work / to be noted / to be improved

As shown in the below picture, the house connection is not necessarily executed according to the contract drawings.

Completion Status (Sample)



Source: KWSP contract drawings

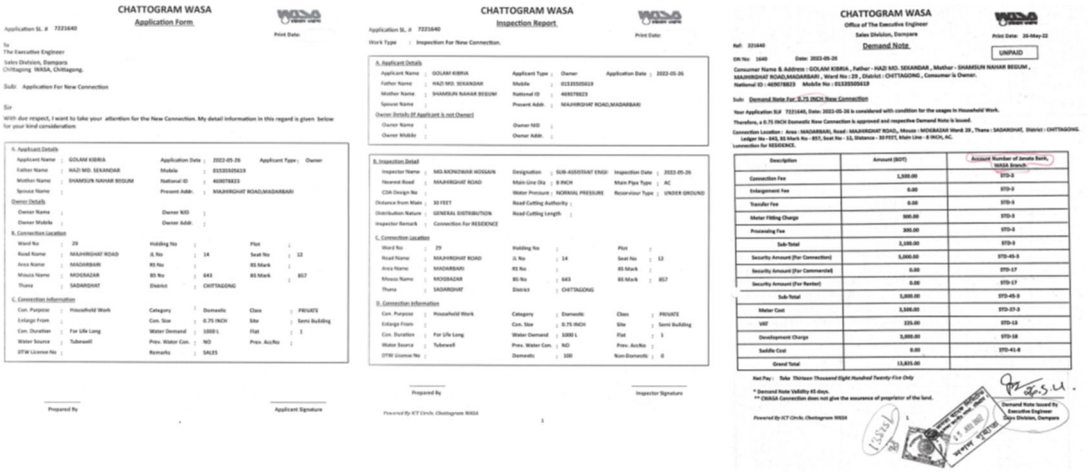
Figure 3.4 Completion Status and Contract Drawings of New House Connection

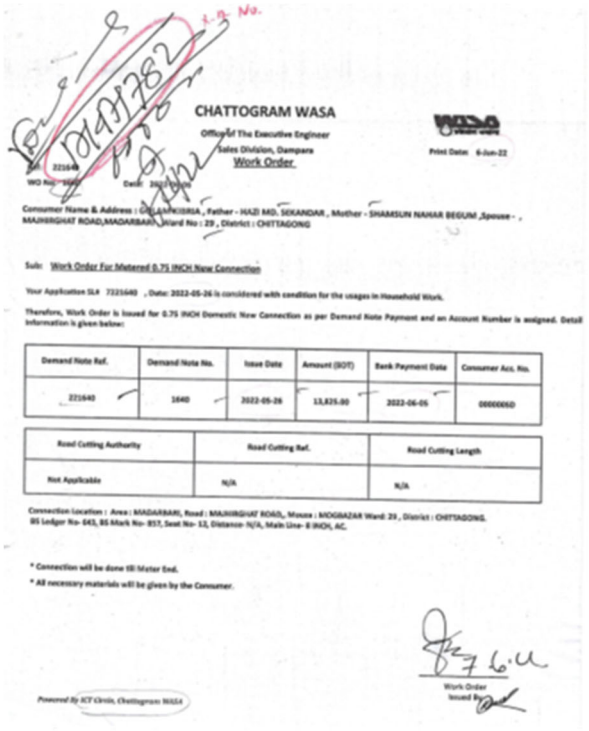
Additional standard drawings should be prepared for proper supervision of the work.

3.2 Lesson Learnt from Routine Work of Sales Division (Installation of New House Connection)

(1) Keep: Effective matters/activities

Application Form, Inspection Report, Demand Note, Work Order is recorded in the On-line information management system (MIS). This helps to ensure better customer service.





CHATTOGRAM WASA

Office of The Executive Engineer
Sales Division, Dampara
Work Order

Print Date: 6-Jun-22

Consumer Name & Address : [illegible], Father - HAZI MD. SEKANDAR , Mother - SHAMSUN NAHAR BEGUM ,Spouse - ,
MAHBUBHAT ROAD,MADARBARI, Ward No : 29 , District : CHITTAGONG

Sub: Work Order For Metered 0.75 INCH New Connection

Your Application SL# 7221640 , Date: 2022-05-26 is considered with condition for the usages in Household Work.

Therefore, Work Order is issued for 0.75 INCH Domestic New Connection as per Demand Note Payment and an Account Number is assigned. Detail information is given below:

Demand Note Ref.	Demand Note No.	Issue Date	Amount (BDT)	Bank Payment Date	Consumer Acc. No.
221640	1640	2022-05-26	13,825.00	2022-06-05	[illegible]

Road Cutting Authority	Road Cutting Ref.	Road Cutting Length
Not Applicable	N/A	N/A

Connection Location : Area : MADARBARI, Road : MAHBUBHAT ROAD,, Mouza : MOGBAZAR Ward: 29 , District : CHITTAGONG.
BS Ledger No- 643, BS Mark No- 857, Seat No- 13, Distance- N/A, Main Line- 8 INCH, AC.

* Connection will be done till Meter End.
* All necessary materials will be given by the Consumer.

Work Order Issued By

Powered By ICT Circle, Chattogram WASA

Work Order

Water meter
(No. 171471782)

Source: Sales Division of CWASA

Figure 3.5 A Series of Documents for New House Connection

(2) Problem: Matters hindering the work / to be noted / to be improved

Sometimes, the distribution pipe is installed in very deep depth due to existing facilities (telecommunication, gas supply, etc.). Currently such information is held in the memory of a particular person.

The location and depth of distribution pipeline should be recorded on the database and shared by CWASA staffs, so that the house connection work can be conducted by other persons also.

Source: JET

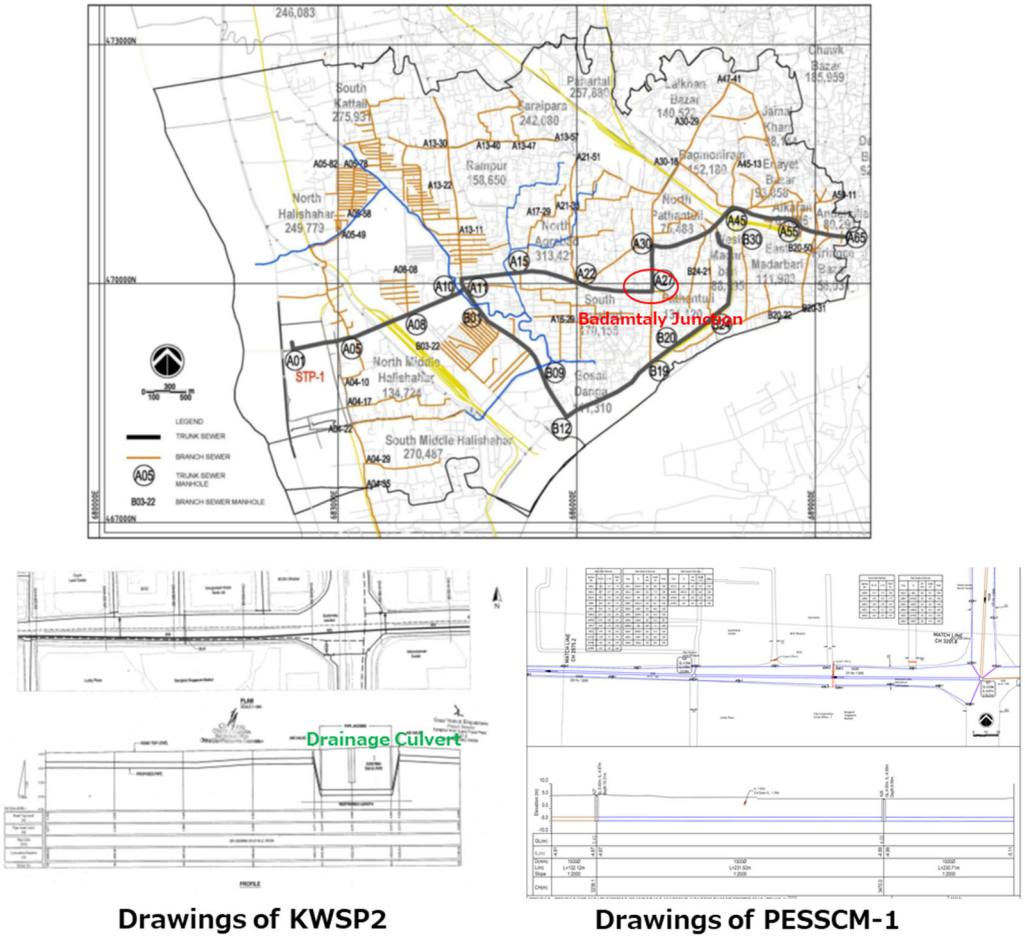
Figure 3.6 Deeply Installed Distribution Pipeline

4. Conceivable Challenges in On-going Sewerage Project

Based on the abovementioned findings as well as an interview with KWSP-2 Consultant and PESSCM-1 Contractor, following challenges are conceived in on-going sewerage project.

4.1 Challenges in Sewer Construction

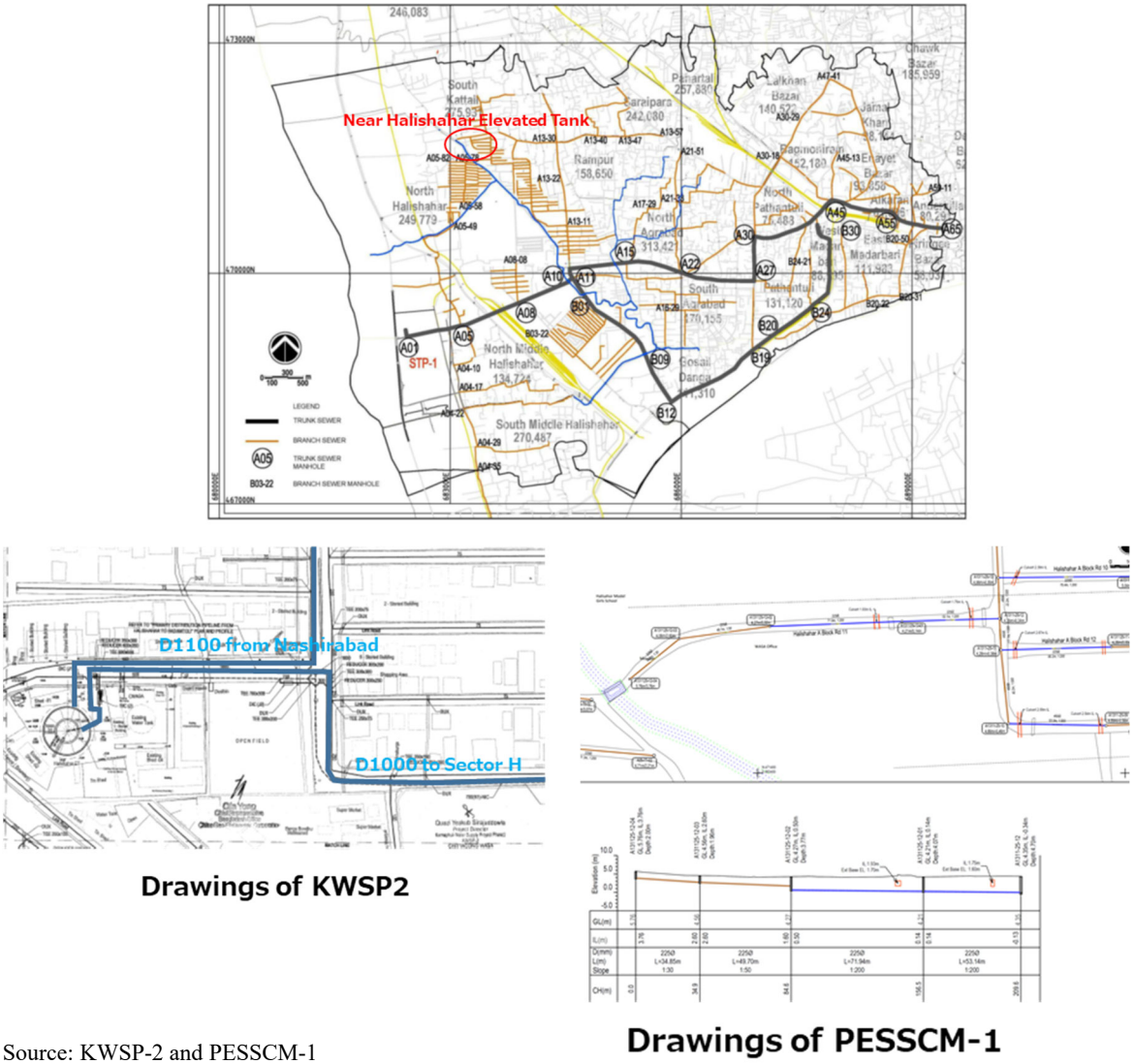
Various underground facilities are located on the pipeline route. Those facilities may affect the pipeline plan and profile. Below figures show the examples of such cases.



Source: KWSP-2 and PESSCM-1

Figure 4.1 Case in Badamtaly Junction

As shown above, the drainage culvert is not indicated in the contract drawings of PESSCM-1. As built drawings of KWSP-2 should be shared with PESSCM-1.



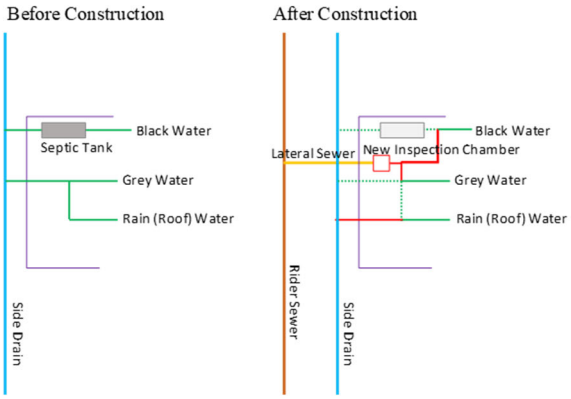
Source: KWSP-2 and PESSCM-1

Figure 4.2 Case near Halishahar Elevated Tank

The sewer pipe must be laid avoiding the large diameter water supply pipe. As-built drawings of KWSP-2 should be shared with PESSCM-1.

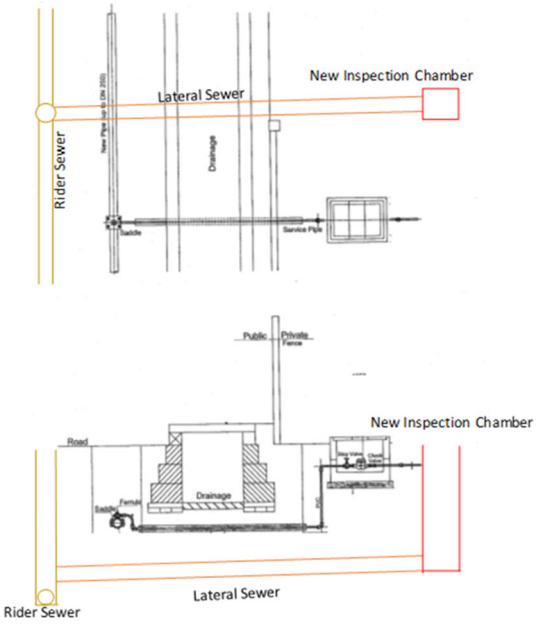
4.2 Challenges in Property Connection

Figure 4.3 and Figure 4.4 shows the general layout of property connection and general drawings of property connection, respectively.



Source: PESSCM-1

Figure 4.3 General Layout of Property Connection



Source: PESSCM-1

Figure 4.4 General Drawings of Property Connection

The actual layout of drainage facilities varies for each building. The detailed pipe arrangement plan needs to be prepared for each building. The design criteria of property connection is not prescribed in the present contract document of PESSCM-1. To ensure a certain level of function of the property connection, the design of property connection should be prepared following the common design criteria.

5. Proposed Solutions for Conceivable Challenges

In order to address the abovementioned challenges, following solutions are proposed.

5.1 Establish the underground facility location map in CCC area

As a first step, as-built drawings of KWSP-1 and KWSP-2 showing the pipeline location should be compiled in the form of CAD/GIS data set and shared with the CWASA staff. Such information sharing system should be created in CWASA.

5.2 Preparation of Manuals for Property Connections

It is recommended that an manual (implantation procedure, design criteria, standard design, work supervision, etc.) for property connection be developed.

Attachment-2.1

Interview with NJS Consultants

Minutes of Meeting		
Interview with KWSP2 Consultant (NJS JV)		
Date/Time	Thursday, June 16, 2022	02:00PM- 03:00PM
	NJS: Mr. Masaharu Takasugi, Team Leader Mr. Takao Ochiai, Senior Pipeline Engineer	
	JICA Expert Team (JET): Mr. Hidehisa Tamura (Expert of Design/Construction Supervision/ Maintenance of Sewerage Works) Ms. Nazia Nur (Communication and Reporting Officer, NKB)	

Main Points Discussed

1. Difficulties encountered during the construction works
There are several underground facilities in the project area:

In Badamtaly Junction, it was necessary to plan the pipeline route between the foundation piles of the overpass. These information was not indicated in the drawings.

CCC is conducting “Water Logging Project” the structure of which is also the obstructions.

2. Drainage culvert
The location of drainage culvert should be carefully checked. The information should be collected from CCC. Also, such information should be checked at site.

3. Large diameter pipe (Dia. 1100mm, 1000mm)
By KWSP2, large diameter pipe (Dia. 1100mm and Dia. 1000mm) were installed near Halishahar ET. The contractor of PESSCM-1 should consider it in construction work in such area.

4. Pipe Jacking
Pipe jacking method was applied for pipeline construction under the culvert or railway. The steel casing pipe was installed by pipe jacking with manual excavation. Then the DCI pipe was installed inside the steel casing Pipe.

5. Profile design of sewer pipeline
It should be noted that the existing underground facilities located on the pipeline route affects the pipeline profile.

Attachment-2.2

Interview with Taeyoung E&C

Minutes of Meeting		
Interview with Taeyoung E&C		
Date/Time	Sunday, June 19, 2022	10:00AM- 11:00AM
	Taeyoung E&C: Mr. Pureunsol Kim, Contract Manager Mr. Yong Noh Lee, Construction Manager	
	JICA Expert Team (JET): Mr. Hidehisa Tamura (Expert of Design/Construction Supervision/ Maintenance of Sewerage Works) Ms. Nazia Nur (Communication and Reporting Officer, NKB)	

Main Points Discussed

Following matters were clarified.

1. Design condition and reference information for detailed design
- The tender design drawings were prepared using the CAD data of tender documents provided from the consultant (ERINCO).
- GIS data prepared by Sanitation Master Plan have not yet provided from CWASA.
- The construction survey is being conducted using GPS. That is, the coordinate system of "UTM_WGS84" is being applied. The surveyed data will be converted to the coordinate system of "BTM_Everest 1830", for preparation of the construction drawings.
- The elevation of the SOB bench mark has been updated. It is necessary to check the basis of the elevation indicated in the existing drawings. That is, it is necessary to clarify whether the figure is on the basis of old figure or updated figure.
- The information of drainage culvert has not been received. Taeyoung E&C will collect such information as needed.

2. Property connection
- Taeyoung E&C has surveyed around 6,000 properties as a target of property connection.
- Several types of standard drawings according to site conditions need to be prepared.

3. Sewer Construction
- Maximum excavation depth for open excavation should be 4m.
  (In the tender design, it is 6m)
- Maximum length of trenchless section will be 200m to 250m. The slurry type or earth pressure balance type of tunnelling machine will be used.
- The GRP (Glass Fiber Reinforced Pipe) will be used for the trenchless section.

付属資料-6：活動 2-3 の成果

下水処理施設の設計ガイドライン、技術基準、マニュアルの作成支援

（各戸接続マニュアル）

Chattogram Water Supply and Sewerage Authority
Property Connection Manual (Draft)
Table of Contents

1. General Provisions

1.1 Scope of the Manual

1 As of 2023, CWASA is developing centralized sewerage system in Chattogram City Corporation (CCC) area according to the Sanitation Master Plan established in 2017. This Property Connection Manual is applied for the property connection in the sewered area in the jurisdiction of CWASA.

2 The technical requirements of property connection is stipulated in Bangladesh National Building Code (BNBC) 2020 published by Ministry of Housing and Public Works. This manual provides its supporting technical information especially for the property connection outside building.

3 The administrative procedures and requirements are stipulated in the Chattogram Water Supply and Sewerage Authority Regulations (Water and Sewerage Connection), 2023. This manual provides supporting information not stipulated in the regulations.

1.2 Definitions

4 The property connection is to discharge sewage from building or household to public sewer owned by CWASA. The sewage discharged to public sewerage system includes black water from toilet and gray water from another source such as shower room or kitchen, etc.. The system is illustrated as shown in **Figure 1-1**.

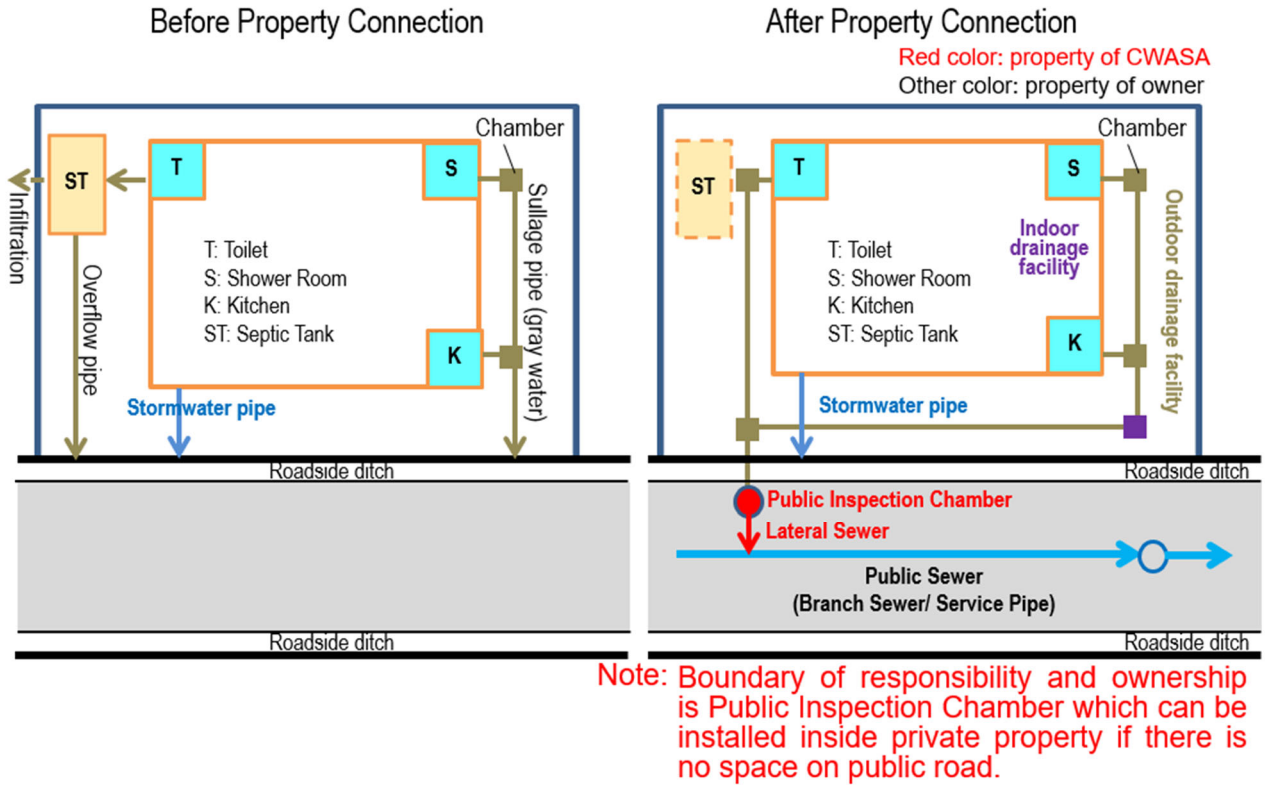


Figure 1-1 Property Connection

5 The property connection is composed of indoor drainage facility, outdoor drainage facility, public inspection chamber, and lateral sewer. The definition and facility are as below :

Table 1-1 Definition and Facility of Property Connection

	Definition	Facility
Property Connection		
Indoor drainage facility	Drainage pipe and ancillary equipment from indoor sanitary facility and roof drain to outdoor drainage facility	Indoor plumbing fittings and drainage pipe for blackwater and graywater Roof drain and stormwater pipe Vertical blackwater and graywater pipes
Outdoor drainage facility	Outdoor chamber and drain pipe for sewage in private property up to public inspection chamber Stormwater pipe up to roadside ditch	Outdoor drain pipe for blackwater and graywater (Building sewer) Maintenance chamber Stormwater pipe (Building drain)
Maintenance chamber	The chamber for maintenance purpose located in outdoor drainage facility (building sewer) in the property.	Chamber in the outdoor drainage facility
Public Inspection Chamber	The chamber which receives black water and grey water from outdoor drainage facility (building sewer) and is directly connected to lateral sewer.	Public inspection chamber whose ownership and O&M responsibility are under CWASA
Lateral Sewer	Drainage pipe from public inspection chamber to public sewer	Lateral sewer whose ownership and O&M responsibility are under CWASA

1.3 Obligations of the Owner of the Holdings

6 The owner of the holdings in the sewered area is responsible to install property connection connecting to public sewer system. The sewerage fee shall be owed by user after half year passed since the holdings are included in the sewered area or since new buildings/households are newly developed in the sewered area.

7 If there is no existing building in the property in the sewered area, CWASA will install public inspection chamber on the road in parallel with the construction of public sewer. The owner of the holdings is obliged to install property connection connecting to public inspection chamber after the construction of building.

1.4 Type of Sewage

8 Separated sewer system is applied in the sewerage system in the jurisdiction of CWASA. Therefore, sewage, industrial waste, and stormwater shall be separately collected and discharged in the property.

9 Sewage collected via property connection is sewage from toilet, kitchen, bath, lavatory, laundry facility.

10 Domestic waste from the industry can be connected to the public sewer.

11 Stormwater shall be discharged directly to the public drain and channel via stormwater pipe in the property.

1.5 Design and Construction

12 Property connection shall be design and constructed to separately collect i) sewage in building (holding) ii) industrial waste, and iii) stormwater from rooftop. And sewage in building shall be connected to the public inspection chamber to discharge sewage to public sewer.

13 Property connection shall be designed and constructed appropriately as below, which can prevent issues to the public sewer system such as sedimentation, clogging, corrosion of concrete material, or overflow of sewer during rain.

- Sedimentation and clogging in the property connection shall be prevented by ensuring the flow velocity.
- Infiltration of groundwater shall be prevented by careful construction of joint of pipes and chambers

14 The technical standard of property connection is as follows:

(i) Sewage, industrial waste, and stormwater shall be separately collected.

(ii) Property connection for sewage shall be connected to public sewer via public inspection chamber. Stormwater pipe shall be connected roadside drain or channel.

(iii) Property connection shall be robust and have enough durability.

(iv) Property connection shall be constructed by following material:

- Indoor pipe: Polyvinyl Chloride (PVC) pipe, High Density Polyethylene (HDPE) or equivalent
- Outdoor pipe: HDPE or equivalent
- Maintenance chamber: PVC, HDPE or equivalent
- Public Inspection chamber: Brick or Reinforced concrete

(v) Infiltration of groundwater shall be prevented.

(vi) Minimum diameter and slope of property connection for sewage is as below to facilitate smooth flowing of grit or material.

Population in the Property	Minumum inner diameter of pipe	Minimum slope (to keep minimum velocity)
User < 150 capita	100 mm (4 inch)	2.0%
150 capita ≦ User < 500 capita	150 mm (6 inch)	1.5%
500 capita ≦ User	Determined by hydraulic calculation	Determined by hydraulic calculation when: pipe diameter 200mm (8inch):1.3%

(vii) Outdoor drainage facility for sewage and industrial waste shall be underground pipe.

(viii) Maintenance chamber shall be adequately located to enable pipe cleaning where indoor discharge facility (pipe) is connected to outdoor drainage facility (pipe), pipe direction or slope is changed drastically, etc.

(ix) Cover for maintenance chamber and public inspection chamber is needed to prevent inflow of stormwater and sedimentation of soil and sand, etc.

(x) Inner diameter of public inspection chamber is as follows:

Diameter of property connection (pipe)	Depth (GL to invert) of property connection (pipe)	Minimum Dimension of public inspection chamber
D≦150mm	Depth < 1.0m	450mm x 450mm or D=450mm
	1.0m≦ Depth	1200mm x 750mm or D=1050mm
D=200mm	Depth < 1.0m	700mm x 700mm or D=600mm
	1.0m≦ Depth	1200mm x 750mm or D=1050mm

(xi) Invert is needed at the bottom of chamber to ensure smooth flow and prevent sedimentation.

(xi) Existing septic tank shall be demolished or filled with sand when the public sewer is start operation.

(xii) Recommended standards for subsoil drainage pipe in BNBC2020 is as below:

Material	Standard
Bituminous fiber pipe	ASTM D23ll
Cast iron pipe	ASTM A74
Concrete pipe	ASTM C654 M
Polyethyline (PE) plastic pipe	ASTM F405
Unplasticiged Polyvinyl chloride (uPVC) plastic pipe	ASTM D2729, ASTM F89l
Vitrified clay pipe	ASTM C4, ASTM C700

(xii) Recommended standards for joints between different pipes and fittings in BNBC2020 is as below:

Material	Standard

ABS plastic pipe and fittings	ASTM D2235, ASTM D266l, ASTM D32l2, ASTM F628 ASME Bl.20.l
Cast iron pipe and fittings	ASTM C564
Concrete pipe and fittings	ASTM C443
CPVC plastic pipe and fittings	ASTM F493, ASME Bl.20.l
Galvanized steel pipe and fittings	ASME Bl.20.l
PE plastic pipe and fittings	ASTM D2657
PVC plastic pipe and fittings	ASTM D2657, ASTM D2855, ASTM D3l39, ASTM D32l2, ASTM F402, ASTM F656, ASME Bl.20.l

15 Construction or improvement work of property connection will be implemented under the construction supervision of CWASA. CWASA shall check the construction work is same as construction drawing attached in the application form and safety measure is implemented based on the safety plan submitted by the Contractor.

2. Application Procedure

2.1 Property Connection

2.1.1 General

16 When owner of holdings or developer will install or improve property connection in the sewered area, owner of holdings, other people with POA or with notarized consent letter in case of renter or tenant, or developer, or its contractor, shall submit application form to MOC offices or any other places of CWASA. Before the installation or improvement of property connection, the application form, as described in Chapter 2, shall be submitted to CWASA before installation or improvement as stipulated in the CWASA Water and Sewerage Connection Regulations. Basically, CWASA will start inspection within 30 days after submission of application form and the construction work of property connection shall be started after the approval by CWASA.

- Install: first connection to public sewer system
- Improve: i) additional property connection is needed due to new construction of building (holding) in the property, etc., or ii) existing property connection shall be relocated or reinstalled due to reconstruction of building (holding), etc.

17 When property connection is installed under the sewerage development in CWASA project, the Contractor shall submit application form to MOC office or any other places of CWASA after receiving consent by owner of holdings or developer of the property.

18 MOC including current sales office of CWASA will review application form in terms of technical aspect therefore the other lease or contractual issues between owner and user shall be solved by themselves before submission of application form.

19 Connection to public sewer system in sewered area is obligation of owner of holdings and developer of property. If connection is delayed more than half year of announcement of sewerage service or half year since new development of buildings in sewered area, they are obliged to pay sewage fee to CWASA. .

2.1.2 Application Form

20 An application for a permit for property connection work shall be made on an attached form by the licensed plumber and the owner of holdings, or by his appointed person or agent to install all or a self-contained or workable part of such work. The application shall accompany property connection plans and adequate description of the proposed drainage and sanitation installation in a drawing (drawn to a scale not less than 1:100) with the following details:

(a) Plan(s) of the building with typical arrangement of plumbing fixtures;

(b) Sanitary waste disposal system;

(c) Venting system in the building drainage system;

(d) Materials, sizes and gradients of all proposed piping;

(e) Position of manhole, traps, waste pipe, stormwater pipe, vent pipe, water closet, urinal, lavatory, sink or other appliances in the premises and their connection with sewerage/drainage system or with private waste disposal system; the following colours may be used to indicate sewers, sewer pipes, stormwater pipes and existing works:

- Proposed building sewer : Red
- Proposed stormwater pipe : Blue
- Existing network : Black

(f) Position of refuse chute, inlet hopper and collection chamber for high rise buildings.

21 In addition to drainage plan, a separate site plan of the building shall be submitted with the following particulars:

(a) Adjoining plots and streets with their identification

(b) Position and invert level of the public sewers (if any) and the direction of flow in it

(c) Level of the proposed drains connecting to the sewers (if any)

(d) Position and layout of private waste disposal system (in absence of public sewers); and

(e) Alignment, size and gradients of all drains.

22 For high rise buildings, design calculations and specifications for various items of the work involved shall be submitted along with the drawings.

2.1.3 Preparation of Construction Drawings

23 Drawing of property connection shall be prepared as follows:

- Drawing shall be prepared based on the condition stipulated in Section 2.1.4.
- The property connection related to the construction work shall be highlighted.
- The property connection: indoor drainage facility, outdoor drainage facility, public inspection chamber, lateral sewer and public sewer pipe shall be illustrated in the drawing.
- The elevation of the front road of the plot, public inspection chamber, and maintenance chamber shall be indicated in the drawing.

24 Site survey will be implemented to prepare drawing. At that time, invert level, dimension and location of public inspection chamber shall be confirmed on site by developer.

25 The existing septic tank(s) in the property must be i) emptied then filled with sand and covered up and made safe or alternatively, ii) modified into public inspection chamber, or iii)

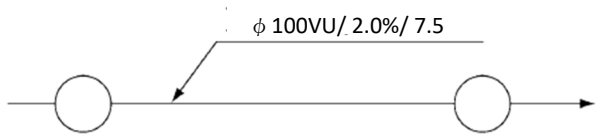
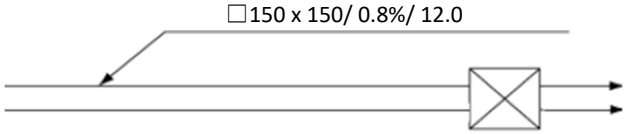
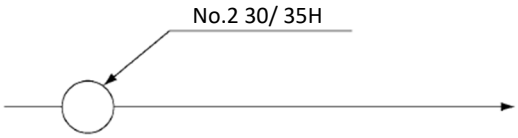
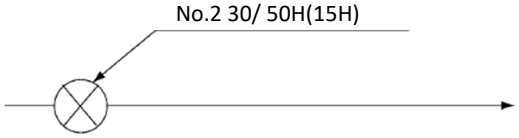
demolished. The existing septic tank shall be indicated and measures for it shall also be indicated in the drawing.

2.1.4 Standards for Construction Drawings

26 Information indicated in the construction drawing is as below:

Type	Unit	Requirement
Length	m	First decimal place
Dimension of chamber	mm	
Diameter of pipe	mm	
Slope of pipe	%	First decimal place
Invert depth from ground	cm	
Earth covering	m	Second decimal place
Ground level	m	Second decimal place
Invert level	m	Third decimal place
Width of road	m	First decimal place

27 Requirement of plan drawing is as below:

Type	Unit	Example	
Public Sewer Outdoor drainage facility	Inner diameter Type of pipe Slope Length	100 VU 2% 7.5	
Stormwater pipe Roadside drain	Inner diameter Height Slope Length	150 150 0.8% 12.0	
Chamber for sewage pipe	Number Inner diameter Depth	No.2 30 35	
Chamber for stormwater pipe	Number Inner diameter Depth Depth of pit	No.2 30 50 15	

28 Requirement of longitudinal drawing is as below:

- MOC of CWASA can request longitudinal drawing of property connection when its length will become long.
- Scale of drawing: Vertical S=1/100, Horizontal S=1/500

29 The sample drawing of property connection in PESSCM-1 is as below:

<Building without Septic Tank>

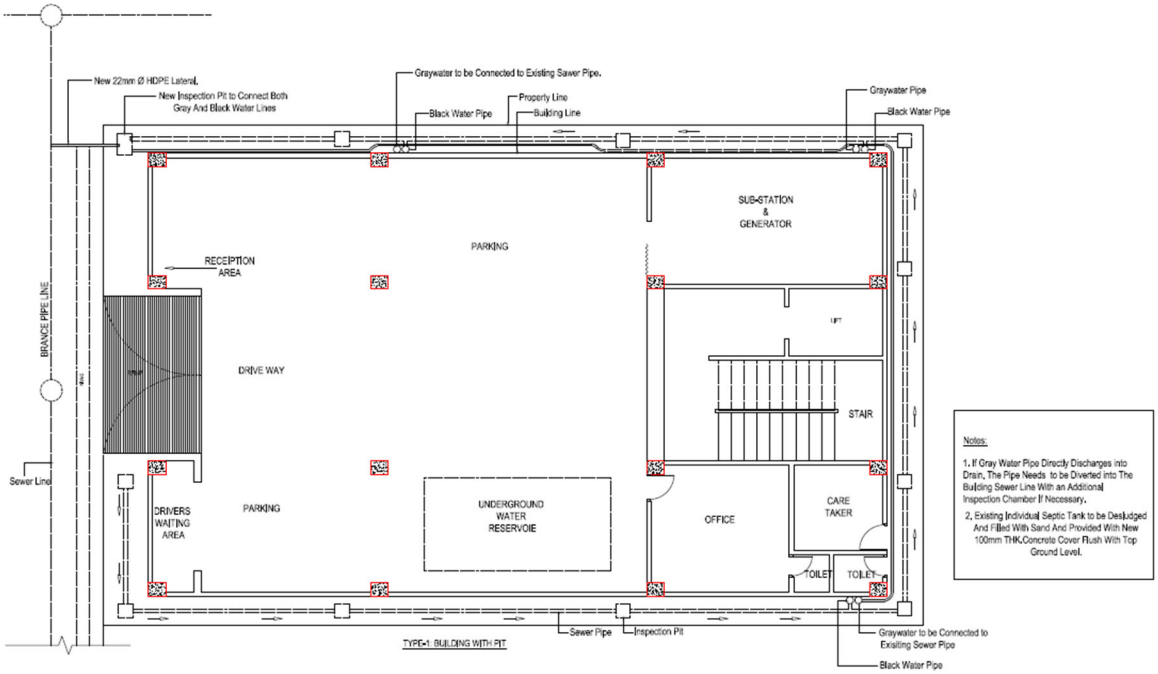


Figure 2-1 Property Connection (Type-I)

<Building with Septic Tank>

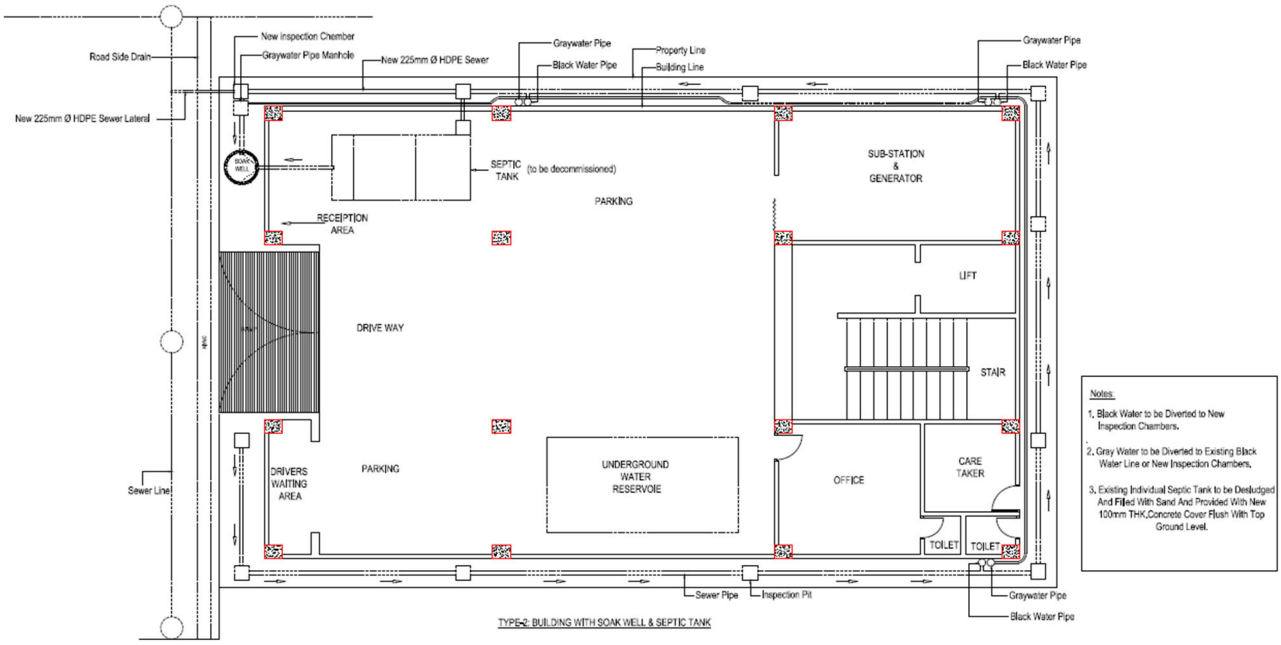


Figure 2-2 Property Connection (Type-II)

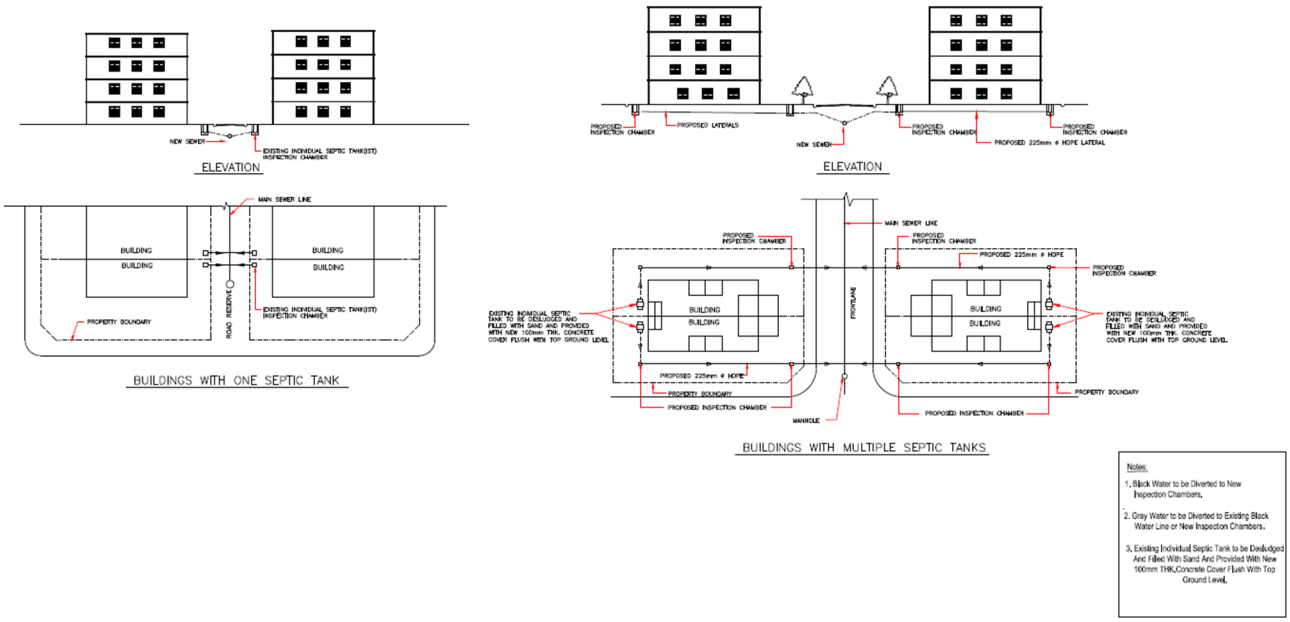


Figure 2-3 Property Connection (Type-III)

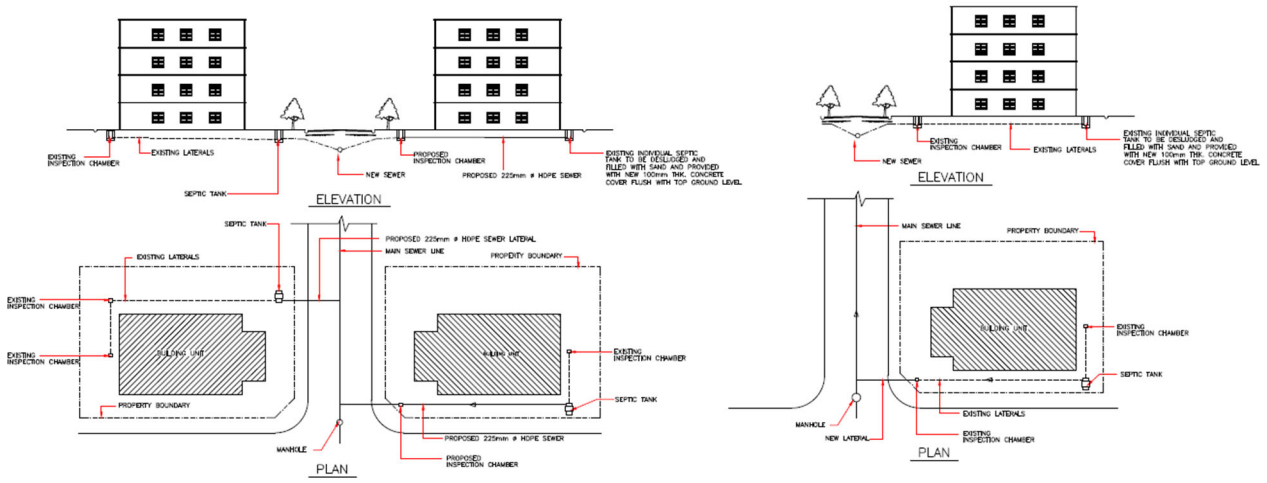


Figure 2-4 Property Connection (Type-IV)

2.2 Public Inspection Chamber

30 When there is no existing public inspection chamber in front of the plot, the owner of the holdings or developer will submit application form requesting CWASA to construct public inspection chamber and its lateral sewer.

31 CWASA is responsible to construct public inspection chamber and its lateral sewer .

32 CWASA will construct and maintain public inspection chamber and its lateral sewer basically with CWASA's own budget.

3. Indoor Drainage Facilities

33 If sewage from toilet, kitchen, bath, etc. and stormwater from rooftop drain are discharged to same vertical drain pipe, namely “one-pipe system” is applied in the building, sewage and stormwater shall be separate appropriately to connect to the public sewerage system. Since indoor drainage facility in the build is difficult to reconnect to new pipe, stormwater from rooftop shall be reconstructed to new vertical pipe beside the building and discharged to roadside drain or channel. In this regard, indoor drainage facility which CWASA shall construct is drainage pipe and ancillary equipment from roof drain to stormwater pipe (outdoor drainage facility).

34 At the kitchen, lavatory and sanitary facility, the trap is needed to prevent offensive odor, sanitary insect from drainage pipe. The trap is the bend pipe as shown in Figure ** where water sealing can be made.

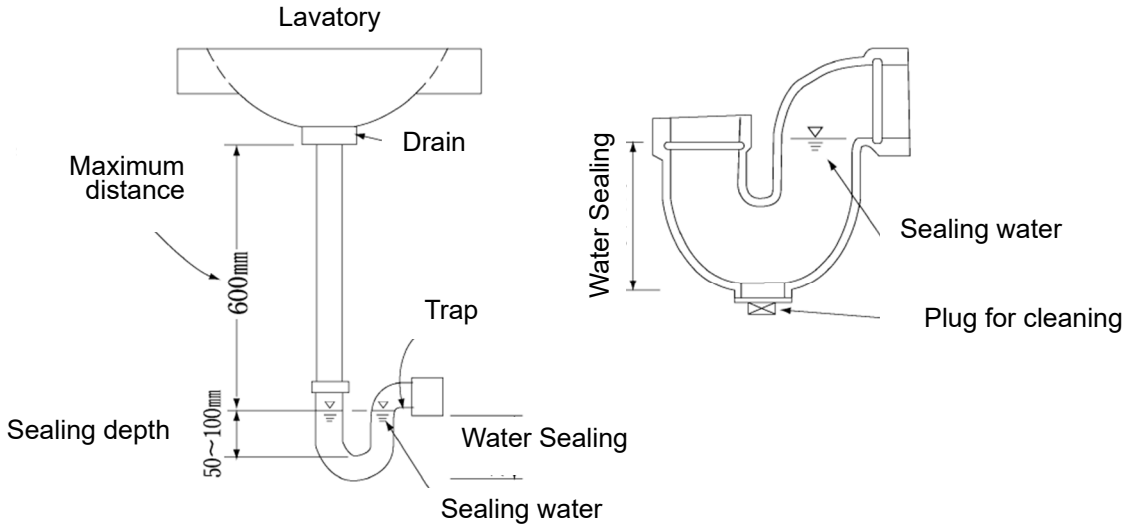


Figure 3-1 Structure of Trap

4. Outdoor Drainage Facilities, Public Inspection Chamber, and Lateral Sewer

4.1 General

4.1.1 Definition

35 Outdoor drainage facility is i) sewage drainage facility to discharge sewage from indoor drainage facility to public sewer system via public inspection chamber, ii) drainage facility for industrial waste to the ETP, and iii) stormwater pipe to discharge stormwater to the roadside gutter or drain.

4.1.2 Consideration for Installation

36 To design and install outdoor drainage facility, the location of public inspection chamber, other indoor drainage facility, and property development plan shall be studied.

37 Sewage, stormwater, and industrial waste shall be separately collected at indoor drainage facility, and separate outdoor drainage facility shall be installed subsequently.

38 Structural requirement shall comply with design criteria and technical specification to have enough drain capacity and durability as mentioned in Section 1.6.

39 If the ground level of property is lower than the front road, the property connection shall be designed considering risk of inflow of storm water from front road and backflow of sewer from sewer main.

40 The property connection for sewage is connected to the public inspection chamber. The stormwater pipe in the property shall not be connected to the inspection chamber to avoid water contamination in public water body and overflow of sewer from manhole.

41 Industrial waste shall be treated at ETP in property and discharged not to public sewerage system but roadside drain outside property.

4.2 Design

4.2.1 Process of Design

42 The process to design property connection is as follows:

1. Household survey (site investigation)
2. Topographic survey and preparation of plan drawing
3. Confirmation of existing indoor/ outdoor drainage facility in the property
4. Determination of alignment of outdoor drainage facility
5. Design of outdoor pipe (sewage flow, diameter, slope, etc.)
6. Design of chamber (location, dimension, type)
7. Preparation of construction drawing
8. Quantity calculation
9. Cost estimation

10. Compilation of drawings into application form
11. Submission of application form to MOC office of CWASA

4.2.2 Site Investigation

43 Followings will be confirmed at the site investigation

(1) Basic information
   i) Whether the property is inside/outside of sewered area where pubic announcement has been conducted,

(2) Public Inspection chamber
   i) Existence or non-existence of the public inspection chamber,
   ii) If there is existing public inspection chamber: its location, dimension including invert level, and its soundness shall be confirmed

(3) Sewage flow from the property
   i) Population (capita)
   ii) Area (m^2 , hectare, or acre)
   iii) Water consumption from tube-well and recycle of rainwater or treated water (m^3/day)

(4) Area
   i) Category of front and surrounded road
   ii) Boundary of the property
   iii) Shape, fluctuation of ground level
   iv) Necessity to use other property to install property connection

(5) Building
   i) Purpose of use
   ii) Ground floor type (e.g. Tiles, Brick, Concrete, etc.)
   iii) Number of floor
   iv) Total Unit/ Apartment
   v) Basement/ Garage
   vi) CWASA Connection of water supply
   vii) Available space for chamber including public inspection chamber

(6) Existing drain, underground pipe, and septic tank
   i) Location. Distance to property boundary, and structure
   ii) Possibility to use
   iii) Plan to demolish septic tank

(7) Future development plan
   i) Future plan of reconstruction or expansion of building,

44 The output of household survey in PESSCM-1 is as below:

Road ID	Block I Lane 89	House ID: 1 Holding# 1		Road ID	Block I Lane 89	House ID: 2 Holding# 2	
Building Use/ Condition:	Residential Commercial / Good	Building Sludge Discharge Location/ Process:	-	Building Use/ Condition:	Residential / Poor	Building Sludge Discharge Location/ Process:	BL
Exist. Drain Information:	Depth: 0.7m Width:0.5m		CCC (Septic Tank)	Exist. Drain Information:	Depth: 0.7m Width:0.5m		Drain
Sullage Pipe Connect to sewage pipe	Easy	Rain & Sullage (Gray) Water Pipe:	Combined	Sullage Pipe Connect to sewage pipe	Easy	Rain & Sullage (Gray) Water Pipe:	NA





Source: PESSCM-1

Figure 4-1 Picture of building Connection

Information of House Connection

Purchaser:	Chattogram Water Supply & Sewerage Authority (CWASA)	Location:	Block-I
PMC:	JV of ERINCO, BETS-DEVCON-IWM	Road:	Lane 9
Contractor:	Taeyoung Engineering & Construction Co., Ltd	Drawing Reference No.:	PESSCM-1/W-1/SN/HC/C/001
Package Name:	Project for Establishment of Sewerage System in Chattogram (PESSCM-1/W-1)	Date:	25/6/2022

House ID	Holding No.	Type of Building					Ground Floor Type	No.of Floor	Total Unit /Appartment	Basement/ Garage	CWASA Connection	Septic Tank to Nearest Property Line (m)	Septic Tank to Road CL (m)	Available Space for Inspection Pit	Building and Road Level(m)	House Picture	Remarks
		RB	CB	RC	SP	TS											
1	1			✓			Tiles	5	8	X	o	0.6	4.3	X	0.30	Attached	
2	2					✓	Brick Floor	1	3	X	X	-	-	X	-0.61	Attached	ST
3	3	✓					Concrete	5	8	o	o	0.9	4.6	o	0.30	Attached	ST
4	4	✓					Concrete	5	11	X	o	0.2	4.9	o	0.76	Attached	ST
5	5	✓					Tiles	2	3	o	o	0.4	5.2	o	0.61	Attached	ST
6	6	✓					Tiles	6	6	o	o	1.5	5.5	X	0.30	Attached	ST
7	7	✓					Concrete	4	8	X	o	0.5	4.6	o	0.30	Attached	ST
8	8	✓					Concrete	4	5	o	o	1.0	5.2	o	0.00	Attached	
9	9	✓					Concrete	3	5	o	o	1.2	5.5	o	0.00	Attached	
10	10				✓		Concrete	1	-	X	o	-	-	o	-0.61	Attached	School (Abandoned), ST
11	11	✓					Tiles	6	18	X	o	1.5	5.5	o	-0.61	Attached	
12	12	✓					Concrete	3	3	o	o	1.4	5.2	o	0.30	Attached	ST
13	13	✓					Concrete	5	4	o	o	1.6	5.8	o	0.91	Attached	Under Constrtuction
14	14	✓					Tiles	5	9	o	o	1.2	5.2	o	0.30	Attached	
15	15				✓		Brick Floor	1	3	X	o	-	-	o	-0.30	Attached	ST
16	16				✓		Brick Floor	1	2	X	o	-	-	o	0.30	Attached	

Source: PESSCM-1

Figure 4-2 Outputs of Household Survey in PESSCM-1

4.2.3 Topographic Survey and Preparation of Plan Drawing

45 Topographic survey will be conducted to prepare property map for design

46 Based on the site investigation and topographic survey, sketch shall be prepared in which discharge point of sewage, location of existing facility including underground pipe and septic tank, ground elevation, etc. shall be indicated.

4.2.4 Setting of Pipe Alignment

47 The route of property connection (outdoor drainage facility) shall be determined so that the owner of the holdings can maintain the facility easily.

48 Outdoor drainage pipe shall be designed considering the fluctuation of ground elevation in the property, location of maintenance chamber, and depth and location of public inspection chamber. Basically the farthermost chamber from public inspection chamber will be the starting chamber.

49 If sewer pipe and stormwater pipe are crossed, the sewer pipe shall locate downward.

50 To minimize length of sewer pipe considering risk of clogging, it shall be located closer to the building than stormwater pipe.

51 If slope of stormwater drain is not enough, U-shape ditch with concrete cover will be applied.

52 Invert level of property connection shall be determined to ensure gravity flow from building. If the invert level of upstream maintenance chamber is lower than invert level of public inspection chamber due to underground or semi-underground floor in the building, pump drainage will be applied to prevent backflow from main sewer.

4.2.5 Design of property connection

53 Property connection for sewer will be designed considering below:

(1) Structure

- Pipe for sewage shall be underground pipe

(2) Pipe diameter and its slope

- Diameter and slope of property connection for sewage shall be determined based on the hydraulic calculation. Minimum diameter and slope of it is as below to facilitate smooth flowing of grit or material.

Population in the Property	Minimum Inner diameter of pipe	Minimum slope (to keep minimum velocity)
User < 150 capita	100 mm (4 inch)	2.0%
150 capita ≦ User < 500 capita	150 mm (6 inch)	1.5%
500 capita ≦ User	Determined by hydraulic calculation	Determined by hydraulic calculation when: pipe diameter 200mm (8inch):1.3%

- Diameter and slope of stormwater pipe shall be determined based on the hydraulic

calculation. Minimum diameter and slope of stormwater pipe is as below.

Area (m^2) of property	Minimum Inner diameter of pipe	Minimum slope
Area <200 m^2	100 mm (4 inch)	2.0%
200 m^2 ≦ Area < 400 m^2	150 mm (6 inch)	1.5%
400 m^2 ≦ Area < 600 m^2		
600 m^2 ≦ Area < 1,000 m^2	200 mm (8 inch)	1.2%
1,000 m^2 ≦ Area < 1,500 m^2		
1,500 m^2 ≦ Area	More than 200 mm (more than 8 inch)	1.0%

(3) Flow velocity

- Flow velocity shall be 1.0 to 4.0 m/sec to keep its traction force the maximum velocity recommended in BNBC2020 is 2.5 m/sec.
- The pipes used shall be internally smooth, corresponding to a Manning formula's coefficient "n" of 0.009.
- Where conditions do not permit building drains and sewers to be laid with a fall as great as that specified, a lesser slope may be permitted provided the computed velocity in the drains will not be less than 0.6 m per second.

(4) Material

- Indoor pipe: Polyvinyl Chloride (PVC) pipe, High Density Polyethylene (HDPE) or equivalent
- Outdoor pipe: HDPE or equivalent

(5) Earth covering

- Minimum earth covering inside property: basically 20cm in the property
- If the pipe is installed where heavy wheel load is expected, protection of pipe is needed.

(6) Pipe foundation

- Appropriate pipe foundation shall be proposed considering the soil condition and earth covering.
- Granular bedding material such as sand shall be applied for the plastic pipes.
- Where soil is completely unstable and large settlements in the pipe line are expected, special arrangements are to be made after proper site investigation and structural calculations. These special arrangements shall be: improvement of mechanical properties of the soil; replacement of soil by other soil or concrete; addition of crushed rock; or slab foundation, etc.
- The choice of bedding and backfilling depends on the depth of the bed, and size and strength of the materials. Table 8.6.7 and Figure 8.6.l0 show two types of bedding and backfilling, and minimum and maximum depth of cover for each type of bedding for rigid pipings.

Table Limits of Cover (m) for Standard Strength Rigid Pipes

Pipe Bore	Bedding Class	Fields and Gardens	
		Min	Max
I00	Type I	0.3	7.4
	Type 2	0.3	5.8
I50	Type I	0.6	5.0
	Type 2	0.6	3.9

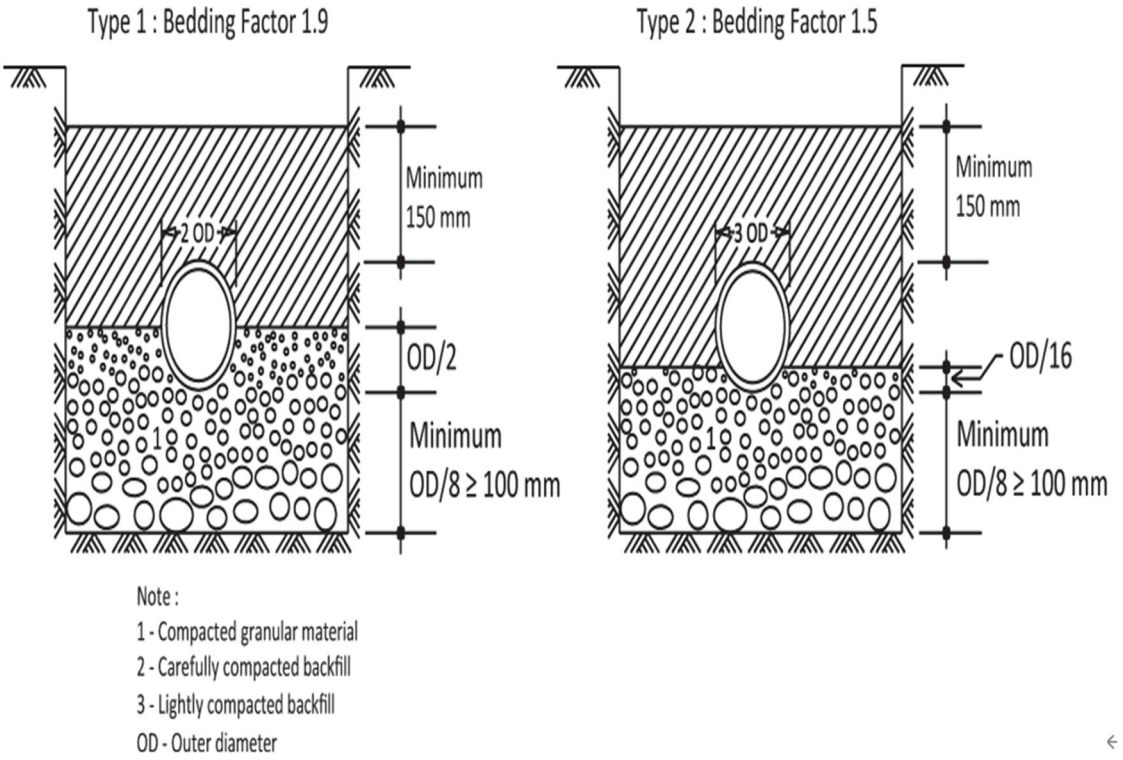


Figure 4-3 Bedding for rigid pipes

54 Property connections, smaller diameter pipes, join the lateral sewer line in the street with the building that the sewer line serves. The lateral sewer can develop defects like cracks and open-jointed pipes, causing considerable infiltration of groundwater. Therefore, the proper construction and maintenance of lateral sewar is also equally important. Chemical grouting and inversion lining procedures are often helpful

55 Length of pipe shall be calculated as below:

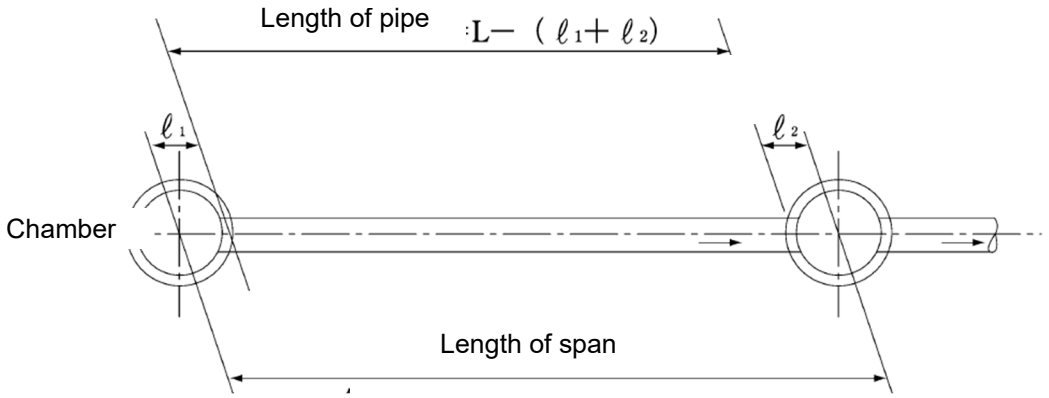


Figure 4-4 Length of Span and Pipe

4.2.6 Design of chambers

56 Chamber (maintenance and inspection) shall be located at following locations:

- Starting point and end point of outdoor pipe
- Connection point of outdoor/indoor pipe
- Point to change direction of outdoor pipe

57 Necessary for maintenance (maximum interval is 120D (D: inner diameter))The chamber shall not be located:

- Building is planned to be constructed
- Inundation is expected

58 Minimum dimensions and cover sizes are as below:

Diameter of property connection (pipe)	Depth (GL to invert) of property connection (pipe)	Minimum internal dimension of public inspection chamber	Cover size of public inspection chamber
D≦150mm	Depth < 1.0m	450mm x 450mm or D=450mm	450mm x 450mm or D=450mm
	1.0m≦ Depth	1200mm x 750mm or D=1050mm	600mm x 600mm or D=600mm
D=200mm	Depth < 1.0m	700mm x 700mm or D=600mm	450mm x 450mm or D=450mm
	1.0m≦ Depth	1200mm x 750mm or D=1050mm	600mm x 600mm or D=600mm

59 Inspection chambers and manholes shall have removable non-ventilating covers of durable material and be of suitable strength. Manholes deeper than l m shall have non-corrosive steps or fixed ladders. Figure 4-5 and Figure 4-6 show the details of typical manholes at smaller depth (<l m) and at higher depth (>l m) respectively.

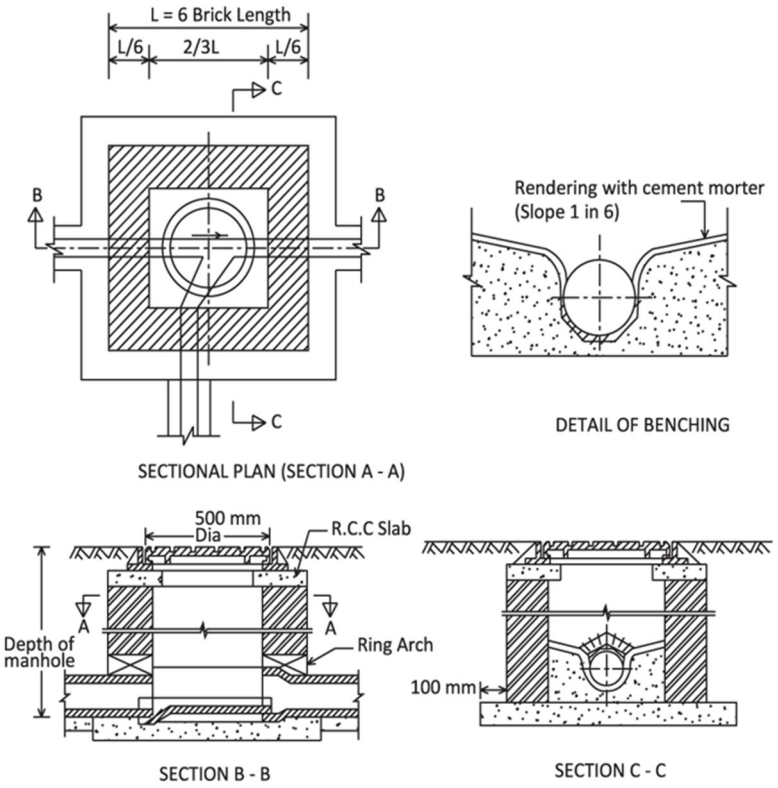


Figure 4-5 Detail of Typical Manhole (Depth 1m and Below)

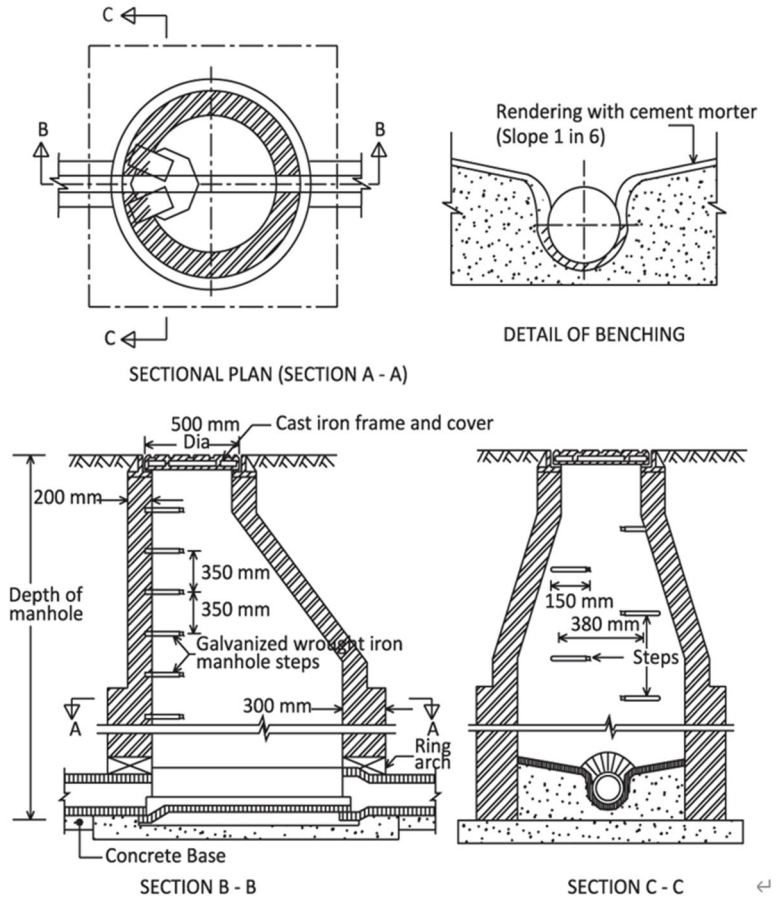


Figure 4-6 Detail of Typical manhole (depth more than 1 m)

60 Material of chamber:

- Maintenance chamber: PVC, HDPE or equivalent
- Public Inspection chamber: Brick or Reinforced concrete

61 Pipes shall be connected at chamber with inflow angle less than 90° (less than 45° is preferable)

62 Requirement of Cover of chamber shall be as follows:

- Cover shall be enough robust. Its material shall be: cast iron, concrete, or plastic.
- Cover of sewer pipe shall be well closed to prevent inflow of stormwater and leakage of offensive odor in the pipe.
- Cover for stormwater pipe can be grating
- Cover for small chamber shall be enough robust and easy for opening. If small chamber is located where wheel load is expected, protection cover is applied.

63 Bottom of chamber shall have invert with semicircle shape to flow sewage smoothly.

64 Bottom of connection chamber shall have step with approx. 2 cm.

65 Foundation of concrete chamber shall be crushed stone with 5cm layer.

66 Depth of chamber shall be calculated as below:

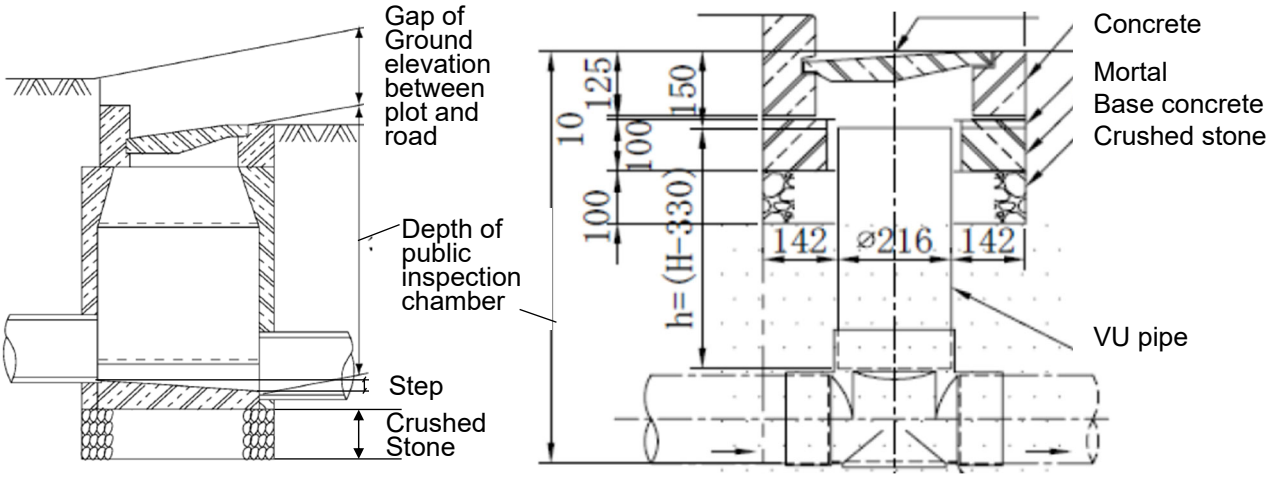


Figure 4-7 Depth of Chamber

4.3 Construction Work

4.3.1 Discharge pipe

67 The piping works is composed of i) excavation, ii) foundation, iii) installation, and iv) backfill. The considerations for construction work are as below:

(1) Excavation

- Depend on site situation and groundwater level, necessary temporary works such as

earth retaining work (sheet piling) and dewatering work will be implemented.

- Bottom surface shall be flat (not to be fluctuated) so that pipes can be installed as designed.

(2) Foundation

- Bottom surface shall be fully tamped down.
- If the property is in soft ground, measures to prevent uneven settlement is applied. (e.g. replacement by gravel)

(3) Installation

- Pipe installation shall be conducted from downstream to upstream.
- The joint of pipes is main reason of infiltration, so careful jointing works shall be conducted.
- Joint shall be properly installed to prevent infiltration of ground water.
- If the pipes with socket connection for plastic pipe is applied, following procedure is applied:

Process	Item	Requirement
1	Cleaning of joint	Removal of oil, water, sand, etc.
2	Indication of guide line	To ensure the necessary length to insert the pipe to the socket
3	Over-excavation for socket and placing pipe with sleeper	Sleeper is temporarily located to fix the pipe alignment
4	Setting of pipe connection facility	If pipe diameter is more than or equal to 200mm
5	Embrocation of agglutinant	Both socket and pipe
6	Connection	Insert up to guide line
7	Keeping and cleaning	Keep necessary duration for connection

(4) Backfill

- After completion of pipe installation and jointing, the backfill work shall be implemented between chambers with careful tamping.

68 Open plumbing shall be avoided as much as possible. If necessary, protection work for open pipe shall be implemented.

4.3.2 Chambers

69 Construction of chamber is depended on the material. The construction process of each material shall be carefully confirmed before the construction work.

70 Chambers with brick and concrete:

71 Foundation requires 5cm of gravel or crushed stone and 5cm of leveling concrete.

72 At the bottom of chamber, invert shall be formulated by mortar.

73 Connection of pipe shall be carefully conducted to prevent inflow of groundwater.

74 Chambers with plastic:

75 Factory production chamber shall be applied.

76 Sand foundation with 5-10 cm thickness is applied for plastic chamber. If soil condition is soft, crushed stone is needed.

4.3.3 Notes for Connection to Public Inspection Chamber

77 The timing of construction work for downstream of public inspection chamber and its upstream, namely outdoor/indoor drainage facility is different. The construction of branch sewer and property connection (lateral sewer) up to public inspection chamber will be implemented in same timing, but construction work in property will be sometimes delayed because it will be implemented after the application form is approved by CWASA.

78 During the connection work, the Contractor shall be careful not to discharge sand, gravel, concrete, construction material, and construction waste to public sewer system.

79 Connection of pipe shall be carefully conducted to prevent infiltration of groundwater.

4.4 Measures for Existing Septic Tank

80 After sediments and septage is withdrawn, unnecessary septic tank shall be demolished or filled with sand.

81 The existing septic tank(s) in the property must be emptied then filled with sand and covered up and made safe or alternatively, modified into public inspection chamber.

82 When the septic tank is demolished, the backfilled sand will be tamped enough to prevent unequal settlement.

4.5 Testing

83 The Connection between building sewer and public sewer or individual sewage disposal system shall be closed by inserting a test plug. The building sewer shall be filled with water under a pressure of not less than 30 kPa for at least l5 minutes. The system shall be able to maintain the test pressure.

84 After the installation of drainage and sanitation system, the licensed plumber shall give a completion certificate to the authority in a prescribed form for inspection and testing. After testing, the Authority will give the final approval (as presented in completion certificate form) to use the system.

5. Ownership and management of Property Connection

85 Basically, CWASA owns the inspection chamber and lateral sewer, and owner of the holdings owns the indoor and outdoor drainage facilities. The owners can alter the indoor/outdoor drainage facilities as they want, however, the owners are obligated to connect their drainage facilities to public sewers appropriately.

86 In the priority area of Catchment 2 and 4 where the sewerage system will be developed with Japanese ODA, CWASA will continue to keep the ownership of new drainage facilities in household/building for 10 years after the start of operation of STP. Therefore, it is necessary for owner of holdings to get permission from CWASA to alter the drainage facilities.

87 Owner of holdings is responsible to keep property connection in good condition and is obliged to bear cost of its maintenance works such as desludging, cleaning or declogging, etc. even during CWASA's ownership. CWASA will request and instruct the owner of holdings not to damage and clog the drainpipes in households/buildings with solid wastes and other materials. And CWASA will receive the notifications and settle the problems in case of troubles, the necessary costs for troubleshooting will be borne by owner of holdings.

88 CWASA will prepare the document recording at least i) name of owner of holdings, ii) type and extent of damage, iii) description of repair and iv) situation of payment for repair as part of structure to implement the acceptance of order, repair and demand for payment appropriately and smoothly.