Up-gradation & Modernizing the Railway Hospital and Establishment of Medical College at Chittagong, Bangladesh on PPP Mode

Draft Feasibility Report

June 2016

pwc

10th June 2016

To
Chief Executive Officer,
Public-Private Partnership (PPP) Authority,
Prime Minister's Office,
AIMS Tower (Level 13), 51-52 Mohakhali,
Dhaka-1212

Dear Sir,

Subject: Transaction Advisory Services for up-gradation & modernization of existing Railway hospital and establishment of medical college at Chittagong – Phase I– Submission of Draft Feasibility Report – Reg.

Ref: Contract no. PPP/TA/Dhaka-Chittagong Railway Hospital – 208/2014 dated 09.04.2015

This has reference to the contract cited above. We are pleased to submit the deliverable "Draft Feasibility Report" for the subject assignment for your kind perusal. Kindly let us know should you require any clarification or should your team have any further suggestions.

We are submitting 20 copies of the Draft Feasibility Report in hard copy and 3 copies of soft copies by way of CDs.

Thanks for your support and assistance.

Yours sincerely,

Kaustabh Basu

Kaustabh Basu, Executive Director
PricewaterhouseCoopers Private Limited
17th Floor, Building 10C, DLF Cyber City
Gurgaon- 122002, Haryana, India
Telephone: +91 (124) 3306025
E-mail: kaustabh.basu@in.pwc.com

Table of Contents

EXECUTIVE SUMMARY 6
1. BACKGROUND OF THE PROJECT 13
2. APPROACH & METHODOLOGY FOLLOWED 15
3. MARKET ASSESSMENT 18
4. NEED ASSESSMENT 37
5. REGULATORY REVIEW 42
6. TECHNICAL ASSESSMENT 48
7. PPP STRUCTURE OF THE PROJECT 55
8. FINANCIAL FEASIBILITY ANALYSIS 57
9. PROJECT RISK ASSESSMENT 67
10. KEY TERMS OF CONCESSION AGREEMENT 69
11. PROCUREMENT PLAN 72
12. ENVIRONMENTAL IMPACT ASSESSMENT 74
13. SOCIAL IMPACT ASSESSMENT (SIA) 88
14. CONCLUSION AND RECOMMENDATION 91
15. WAY FORWARD 92
ANNEXURE 93
DISCLAIMER 121

List of Tables

Table 1 Sample size of stakeholders 16
Table 2: Demographic indicator in Bangladesh & Chittagong....18
Table 3 An Overview of leading disease segment in Non-Communicable Segment....21
Table 4: Private hospitals in Chittagong 25
Table 5 Private Healthcare delivery facilities and level of care 26
Table 6 Population trend in catchment geographies 27
Table 7 Existing hospitals in Chittagong 29
Table 8: Key utilization indicator comparison among private healthcare providers 30
Table 9: Salaries of Medical Professionals in Chittagong 31
Table 10: Pricing comparison between Private medical college & hospitals and private hospitals in Chittagong 32
Table 11 Government and Private medical colleges in Chittagong 33
Table 12 Nursing Courses 34
Table 13 Intake Capacity of Nursing 34
Table 14: Potential Bidders 35
Table 15 Preliminary Investor Consultation 35
Table 16: Specialty provision in Healthcare facilities in Chittagong 38
Table 17 : Healthcare financing overview in Bangladesh 41
Table 18 : FAR and Minimum Ground Coverage Regulation 43
Table 19 : Setback regulations 43
Table 20 : Parking Regulations 44
Table 21 : Services provided by the railway hospital 49
Table 22 : Options of Project Configurations 52
Table 23 : Area of Proposed Hospital Building 53
Table 24 : Area of Proposed Basement 53
Table 25 : Project Cost 57
Table 26 : Means of Finance 58
Table 27 : Revenue Assumptions 60
Table 28 : Other O&M Costs 61
Table 29 : Key Financial Indicators 63
Table 30 : Scenario 1 64
Table 31 : Sensitivity Analysis- Scenario 2 64
Table 32 : Sensitivity Analysis- Scenario 3 64
Table 33 : Sensitivity Analysis- Scenario 4 65
Table 34 : Recommendations 65
Table 35 : Value to BR 66
Table 36 : Risk categories, allocation & mitigation strategies 67
Table 37 : Terms of Concession Agreement 69
Table 38 : Key Performance Indicators 71
Table 39 : Chemical Constitution of Ground Water 76
Table 40 : Noise Quality Standards 77
Table 41 : List of trees, shrubs and perennial climbers found in and around the project site 79
Table 42 : List of herbs and herbaceous plants found in and around the project site 81
Table 43 : Proposed Environment Management Plan 84
Table 44 : Proposed Environmental Monitoring Plan 86
Table 45 : Nature of consultation for social impact assessment 89
Table 43 : Recommendations 91
Table 47 : Presentations Held 94

List of Figures

Figure 1: Age group distribution of population 18
Figure 2: Monthly per capita income of divisions of Bangladesh 19
Figure 3 Distribution of economic units by industrial classification, Chittagong 19
Figure 4 Leading causes of death (Communicable Vs Non Communicable) 21
Figure 5 Disease segments in NCDs and corresponding mortality proportion (2014) 21
Figure 6 Level I – Upazila Hospitals, Top 10 diseases of indoor patients 22
Figure 7 Level II – District Hospitals, Top 10 diseases of Indoor patient 22
Figure 8 Top disease segments in admitted patients in BGSMU 23
Figure 9 Inpatient Oncology admission data of specialised centres of excellence 23
Figure 10 : Inpatient Cardiac admission data of specialised centres of excellence 23
Figure 11 : Inpatient Orthopedics admission data of specialised centres of excellence 23
Figure 12 : Inpatient Nephrology admission data of specialised centres of excellence 23
Figure 13 : Top 10 causes of death in Chittagong city, 2013 (based on data from Chittagong Medical College).. 24
Figure 14 : Top 10 causes of death in Chittagong city, 2013 (based on data from Chittagong Medical College).. 24
Figure 15 : Arsenicosis cases in all divisions 24
Figure 16 : Diarrhea cases in all divisions 24
Figure 17: Country comparison of Human resource per 1,000 population 25
Figure 18: Country comparison of Beds per 1,000 population 25
Figure 19: Public Healthcare Service Delivery system in Chittagong 26
Figure 20: Private Healthcare service delivery system in Chittagong 26
Figure 21 Catchment of Healthcare facilities in Chittagong city 27
Figure 22 Geographical spread of Healthcare Providers in Chittagong 28
Figure 23: Annual revenue figures of Private Hospitals 31
Figure 24: ARPOB and Occupancy rates of hospitals in Chittagong and Dhaka 31
Figure 25 : Pricing comparison of various diagnostics 32
Figure 26 : Pricing comparison of various surgical procedures 32
Figure 27: Private bed split 33
Figure 28: Public and Private Bed split 33
Figure 29 : Beds requirement including secondary catchment 37
Figure 30: Bed requirement in Chittagong 37
Figure 31 : Healthcare Landscape in Chittagong 38
Figure 32 : Specialty need gap in Chittagong 40
Figure 33 : Doctors requirement in Chittagong 40
Figure 34 : Nursing manpower requirement in Chittagong 40
Figure 35 : Healthcare financing overview in Chittagong 41
Figure 36 : Project Site and Surroundings 48
Figure 37 : Earlier Demarcated Site for Medical College and Hospital 48
Figure 38 : Project Site Demarcation on the site map 50
Figure 39 : PPP Structure of the Project 55
Figure 40 : Phasing of capital investment 59
Figure 41 : Project Profitability 63
Figure 42 : Flow Chart diagram for granting EC 75

Executive Summary

Bangladesh Railway (BR), a government owned transportation agency of the country, operates a number of hospitals catering to railway employees across different parts of the country. Many of these hospitals need to be upgraded to cater to the growing demand and need of healthcare services. Chittagong Railway Hospital is one of such hospital. In view of providing quality healthcare services to its employees as well as general public of Chittagong and also to commercialize its non-core assets, Bangladesh Railway intends to upgrade and modernize the railway hospital in to a multi-specialty hospital and medical college under PPP mode. PricewaterhouseCoopers Pvt. Ltd (PwC) was appointed as transaction advisor for the project. A feasibility study has been conducted by PwC for implementation of the project under PPP mode. The outcome of the feasibility study and subsequent discussions held with BR are summarized as below:

Market Assessment

Demographics & Economic trend and Consumer Analysis

- The estimated population of the district of Chittagong is closed to 8.2 million with a population density of 831 persons per sq.km. Chittagong is the second most populous district in Bangladesh, contributing 20% of the country's population.
- The urban population constitutes 41% of the total population in Chittagong in comparison to 23% of the urban population in the country. The paediatric (0-14 years) and working population (25-49 years) constitutes 67% of the total population of Chittagong.
- Chittagong is one of the leading port cities in Bangladesh. While 80% international trade is handled through Chittagong port, the city generates 40% of Bangladesh's industrial output. Chittagong Export Processing Zone is one of the most competitive free economic zones in the world employing more than 1,75,000 workers in Chittagong EPZ, 64% of which are females.
- The per capita income of Chittagong is BDT 14,092 (as on 2010) which is higher than the national average of BDT 11,479 and is also the highest among other divisions in Bangladesh.
- Wholesale and retail trade represents maximum employment in the country and Chittagong division.
- People living in Chittagong have higher purchasing power in comparison to other divisions.
- Based on the consultation with patients and doctors, it is known that, customers are increasingly demanding care for multiple ailments under one roof and creating a demand for multi-specialty care in Chittagong. They look for quality and reliability from hospitals and do not consider price to be an issue. Consumers perceive healthcare facilities to be inadequate in Chittagong for providing upgraded secondary and tertiary care.

Disease Burden & Prevalence

- Considerable progress has been made in national level communicable diseases control, but Non communicable diseases are the leading cause of mortality in Bangladesh and account for 59% of all deaths. Among communicable diseases of concern are malaria, tuberculosis and diarrhea and among non-communicable diseases CVD, cancer and respiratory are the main contributors to the mortality profile.
- Chittagong disease profile indicates the dual burden of communicable and non-communicable diseases.

- Due to lifestyle disorders, significant population in Chittagong city suffers from cardio-vascular disorders. Accidents and trauma, myocardial infarction and Stroke are some of the leading causes of hospitalization amongst NCDs.

- Birth asphyxia, fracture of facial bones and skull and stroke are the leading causes of deaths in Chittagong. Diabetes, Acute MI and Heart failure are also major health concerns.

- Communicable disease trends in Chittagong highlights the increased prevalence of Arsenicosis & Diarrheal diseases.

Healthcare Market Dynamics

- Currently, the healthcare landscape in the country is marked by low public funding, shortage of beds & health workforce and low penetration of health Insurance.

- Infrastructure & human resources lags behind the lower middle income countries average (LMIC) Out of pocket expenditure on health constitutes 96% overall private expenditure.

- Due to non-availability of tertiary super specialty care in Chittagong, patients travel to Dhaka and get treatment in private hospitals. More than 50% of the patients coming from outside to avail treatment in Dhaka are from Chittagong.

- Absence of super specialty tertiary care along with good paying capacity of Chittagong population creates headroom for a private player. It is felt that provision of tertiary care services would improve the ARPOB to a better extent.

- There are 2 big drivers for people of Chittagong to seek medical services overseas. The first factor is their capacity to pay and the second factor is the perception of the people in this region is that the medical institution overseas provides better medical care.

- Chittagong has inpatient bed capacity of approx. 4,000 beds with 66% of the total beds belonging to private sector.

- Majority of the private healthcare market in Chittagong is captured by top three hospitals namely Institute of Applied Health Sciences (IAHS) under USTC, Mao Shishu and Metropolitan. There is headroom to accommodate new players.

- Largest private hospital in Chittagong is Mao Shishu medical teaching hospital. In addition to this, there are 10 private hospitals out of which 4 are medical college hospitals. There is 1 government medical teaching hospital in Chittagong. Apollo Hospital and Imperial group are expected as new entrants in the market with bed capacity of 346 beds and 353 beds respectively. Provider positioning in the market shows that majority of the players offers secondary & upgraded secondary level of care. This result in significant gap in the level of care.

- Primary catchment area constitutes entire Chittagong district while secondary catchment includes five districts namely Noakhali, Feni, Cox Bazaar, Bandarban and Rangamati.

- To reach LMIC (Lower Middle Income Countries) average, Chittagong requires approx. 5840 beds to cater to the primary catchment. To fulfil the healthcare needs of secondary catchment population the bed requirement will go up to approx. 11000 beds.

- Chittagong has 1 government medical college and 5 private medical colleges.

- Private medical colleges in Chittagong like BG trust and Southern medical teaching hospitals have 30% student occupancy levels while only one private medical college hospitals (e.g. Mao Shishu medical college teaching hospital) established long back (>10yrs) is able to maintain an average student occupancy level of 85%. Another renowned private teaching hospital, Institute of Applied Health Sciences

(IAHS) under USTC has 55% of student occupancy. This shows profitability challenges being faced by the medical colleges in Chittagong.

Need Assessment

- Majority of the hospital offers secondary & upgraded secondary care of services with few private hospitals like Mao Shishu, Max and Metropolitan provides tertiary care.
- All these hospitals primarily cater to middle income segment. Low income segment is being catered by one government hospital i.e. Chittagong Medical College & Hospital. This results in a significant gap both in terms of the levels of care and provision for different socioeconomic groups.
- There is a need for quality high end tertiary care treatment for low income segment. In addition to this, presently no hospital caters to the upper income segment of the population, who prefers to travel to Dhaka and to overseas facilities for treatment.
- Shortage of Doctors and Nurses is further impacting the overall service provision in existing hospitals. Chittagong has 0.3 doctors per 1000 people and 0.18 nurses per 1000 population. To reach LMIC average of 0.8 doctors and 1.3 nurses per 1000 population, Chittagong needs 4084 doctors and 9177 nurses.
- Insurance penetration is very low in Chittagong and is estimated to be up to 1%. Increase in the insurance penetration is expected to drive up the affordability.

Technical Assessment & Project Planning

Project Site Analysis

- Initially the project of upgradation and modernization of existing hospital was proposed on the 6 acres of land comprising the existing hospital and adjoining land behind. As part of the project planning it was proposed to demolished the existing IPD block and construct a green field multispecialty hospital in first phase. The nursing institute/paramedical institute was proposed to be developed in the second Phase upon clearance of the land behind the hospital from the existing encroachment.
- For continuing the existing services during construction period, the option of shifting the existing services in the OPD block was assessed and it was found that the existing OPD block could not be used for continuing the existing services due to inadequate space and structural challenges for expansion. Also construction of a new IPD block would delay the project by 2 to 3 years and also requires additional investment of around BDT 13.00 Cr.
- In view of the aforesaid challenges, a new site of 2.55 acre beside the existing railway hospital and a site of 1.50 acre nearby was identified for 250 bed multi-specialty hospital and medical college respectively.
- As per the details provided by BR, the identified site for hospital (2.55 acres) has 8 authorized structures and 6 unauthorized structures and the identified site for medical college (1.50 acres) has 41 authorized structures and 11 unauthorized structures, which shall be rehabilitated by BR.
- Project sites is well connected with major city nodes and residential areas. Chittagong railway station is at a distance of approximately 3km and International airport is at a distance of 17 km. The surrounding environment of the site is covered with hill and vegetation, which provides a pleasnt environment.

Project Configuration

Three options of project configuration were analyzed:

Option 1: Hospital & Medical College

- Hospital to be established in the first phase on 2.55 acre of land.
- As per the regulation for establishing private medical college and administration 2011, a hospital has to maintain an occupancy level of 70% for 2 years for getting approval for commencement of academic session. As per the feasibility assessment, the proposed hospital will achieve the 70% occupancy on 8th year of concession period. Hence medical college can only be established on 10th year of concession period.
- Hence upon achievement of 70% occupancy, the Concessionaire shall communicate to BR about its intent to establish medical college within 3 months from the date of achievement of 70% occupancy for continuous period of 2 years. Within 6 months from the date of communication of its intent, BR shall handover the 1.50 acres of land free from encumbrances to the Concessionaire for establishment of medical college.
- In case the concessionaire fails to provide its consent within the stipulated time period, the Authority would have the right to select another private partner for the medical college subject to the rules and regulations applicable at that time. In such case, the concessionaire would have the obligation to provide all necessary support to the private partner for smooth operation of medical college. BR shall obtain required approvals for establishment of medical college and the concessionaire shall support BR in this regard.
- The concession period of establishing medical college and hospital shall be 99 years (40 years with renewal of additional 59 years in two instances with first instance as 40 years and second instance as 19 years).
- Viability Gap Funding (VGF) for medical college component is required to be provided as per applicable rules.

Option 2: Hospital and Nursing Institute

- There is acute scarcity of nurses for providing inpatient care in Bangladesh. Also, with more physicians than nurses, the role of the nurse is very limited, and doctors perform many tasks that nurses are qualified to do, due to a lack of confidence in the capability of nurses. Hence there is a demand for nursing institute. The nurses qualified from this institute not only fulfill the nurse requirement of the proposed hospital but also contribute towards improvement of demand-supply deficit of nurses in Bangladesh.
- Hospital could be developed on 2.55 acres of land adjacent to the hospital and nursing institute could be developed on the 1.5 acres of land. BR shall have the responsibility to make available the lands for the hospital and nursing institute.
- The Concession period under this option shall be 40 years.
- No Viability Gap Funding would be required for this.

Option 3: Only Hospital

- The proposed 250 bed hospital project is self- sustainable and no VGF would be required. The proposed land of 2.55 acres is adequate for a 250 bed hospital and no additional land would be required. The concession period of 40 years would be adequate.

In view of the above, it is inferred that, hospital and medical college can be established in two phases. In first phase, 250 bed multi-specialty hospital can be constructed in first 5 years of concession period. Thereafter upon compliance with regulatory requirement of 70% occupancy for continuous period of 2 years, a 50 seat medical college can be established on 1.50 acres of land. Hence, project planning and feasibility has been carried out with respect to hospital component, which would be developed first.

Project Planning & Layout Plan

- A 250 bed multi-specialty hospital is proposed on the project site. Bed mix of proposed hospital is 56 ICU beds, 194 single/double/ward beds). Hospital support and engineering services are proposed in the basement along with parking space for 140 cars.
- The multi-speciality hospital is proposed as a 7 storeys high, linear block with podium on lower three levels. Hospital is serviced by a main entrance through double height lobby and an emergency entrance from one side which is visible from access road.
- The total built up area for the project is 2,20, 569 Sq.ft. including basement of 76557.40 Sq. ft.

Project Scoping & PPP Structure

- SPV shall be formed by selected bidder for project. SPV will be the Concessionaire, responsible for design, finance, build, operate project and transfer project assets to Authority after expiry of Concession Period as per terms of concession agreement.
- BR shall provide right to use land, VGF (for medical college), facilitate in obtaining approvals, assistance in obtaining electricity and water, assistance in procuring police assistance for medico-legal cases.
- Concessionaire shall pay annual concession fee (bid parameter), upfront payment to BR and Project Development fees to PPP Authority.
- BR employees will be provided healthcare services at 20% discount rate.

Financial Feasibility Analysis

- Maximization of revenue to Bangladesh Railway and availability of advanced healthcare services are the key consideration
- Construction period of 5 years with phased development (Phase I: 150 beds, 3 years, Phase II: 100 beds, 2 years), Concession Period of 40 years proposed.
- Estimated Project cost is BDT 246.62 Cr. Capital structure of project is assumed to be combination of 40% equity and 60% of debt
- Average Revenue per occupied Bed (ARPOB) assumed based on average ARPOB of United and Square in Dhaka with 15% reduction for Chittagong. Y-o-Y increase of 5.85%[1] considered.
- Based on financial viability, minimum annual concession fee payable by the concessionaire comes to BDT 2.5. Cr (to be considered as Bid Parameter) from 6th year of concession period. An annual escalation of 5.85%[2] is considered on the concession fee of 6th year of concession period for determining the amount

[1] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

[2] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

of concession fee payable during subsequent years of concession period. In addition to this a onetime non-refundable upfront payment of BDT 5.0. Cr and onetime project development fee of BDT 3.50 Cr shall also be payable by the concessionaire at the time of signing of concession agreement.

Procurement Plan

- Single stage bidding (RFP) is proposed for the project. The purpose of the RFP document would be to select the preferred bidder for awarding the project. The RFP documents shall typically include all relevant project details including business plans, bid conditions and key contract documents along with technical and financial eligibility criteria and bid parameter for selection of preferred bidder.

- Three indicators of bid parameter were analysed namely Net Present Value of Upfront Payment and Annual Concession Fee, Upfront Payment and Annual Concession Fee from 6th year of concession period. Based on the analysis, Annual Concession Fee for 6th year of concession period is found to be suitable for bid parameter keeping upfront payment as fixed component due to the advantage of fixed initial revenue for BR with an option of maximizing the annual recurring income through concession fee. The quoted annual concession fee for 6th year of concession period shall be escalated @ 5.85% p.a. for estimating annual concession fee for subsequent years of concession period.

Environmental Assessment

- The proposed hospital project comes under Red category. It requires IEE and EIA for Environment Clearance.

- No evidence of any arsenic or fluoride or toxic heavy metal contamination in ground water. Water table is not alarming in the proposed hospital premises. Appropriate rain water harvesting and ground water recharge to be proposed to minimize adverse impact on groundwater.

- Site and its immediate vicinity is relatively free from air pollution. Noise levels in excess of 75 db is occasional mainly because of high frequency horns by automobiles.

- No forest trees and forest flora near project site. Rain tree (*Samanea saman)* is most dominant tree in the area.

- Kadamba or Kadama (*Anthocephalus chinensis*) and Mahagni (Swietenia macrophylla) (Endangered as per the IUCN Red data) are found near the site area. These trees need to be protected

- No reports or indications of presence of any rare or endemic or threatened (RET) species of fauna. Site area is not part of migratory corridor or breeding ground for any of the RET species and hence not ecologically sensitive.

Social Impact Assessment

- Inflow of migrant workers and associated induced development etc. will lead to rise in consumption of consumer goods in local area, which will tend to boost up the local economy

- Local people will have the opportunity for employment depending on their qualifications

- Existing settlements on the project sites requires rehabilitation & resettlements by BR as per applicable policy & regulations.

- Availability and accessibility to critical healthcare services for BR employee and people of Chittagong.

- Complementary economic activities in the region such as food outlets, general stores, pharmacy, diagnostics centres, shopping centres etc. will further improve quality of life in region

Way Forward

- Upon approval of draft feasibility report, Phase II of the project i.e. PPP Procurement Process Development and Implementation shall commence with activities namely finalization of deliverables and timelines of Phase II, finalization of technical & financial eligibility criteria, key bid conditions and key terms of agreement, preparation of draft procurement documents (RFP) and providing procurement and early operations support.

1. Background of the Project

1.1. Introduction

Bangladesh Railway (BR), a government owned transportation agency of the country is the sole agency responsible for all railway operations of the country. It covers a length of 2,855 km railway track linking the entire length and breadth of the country. Bangladesh Railway operates a number of hospitals catering to railway employees across different parts of the country. Many of these hospitals need to be upgraded with the latest equipment and expanded to cater for the growing demand and need for health services. Chittagong railway hospital at Central Railway Building (CRB), Chittagong is one of such hospital. In view of this, Bangladesh Railway proposed to upgrade and modernize this hospital into multi-specialty hospital under Public Private Partnership (PPP) mode. The proposed project has received in-principle approval by the Cabinet Committee for Economic Affairs (CCEA) on 14th August 2013. Bangladesh Railway requested support from PPP Authority, Government of Bangladesh for project development and transaction advisory services. Accordingly PPP Authority, Government of Bangladesh through a competitive bidding appointed PricewaterhouseCoopers Pvt. Ltd (PwCPL) as transaction advisor for the project vide contract no. PPP/TA/Dhaka-Chittagong Railway Hospital-208/2014 dated 09.04.2015. The transaction advisory services for the project consists of two phases. Phase I covers detailed feasibility study and project development and Phase II covers PPP procurement process and implementation. This report covers findings of Phase I of the transaction advisory services.

1.2. Project Objectives

The main objectives that Bangladesh Railway (BR) intends to achieve through development of this project are:

- To provide medical services to BR employees as well as general public.
- To make available the advance medical services for BR employees
- To commercialize its non-core assets
- To explore PPP as an effective means of attracting investments and expertise for improving the effectiveness and efficiency of the healthcare services offered by BR.

1.3. Objective of this Report

As mentioned above, the transaction advisory services for the project consists of two phases. This report covers the findings of Phase I of the transaction advisory services. The objectives of this report are assessing the market potential, technical and commercial viability of the project and devising a suitable project structure for implementation under PPP mode.

1.4. Content of this Report

The report is structured with following sections:

- **Approach & Methodology:** This section explains our approach and methodology followed for assessment of feasibility and structuring the project for implementation under PPP mode. This section also provides the key stakeholders consulted during the study.

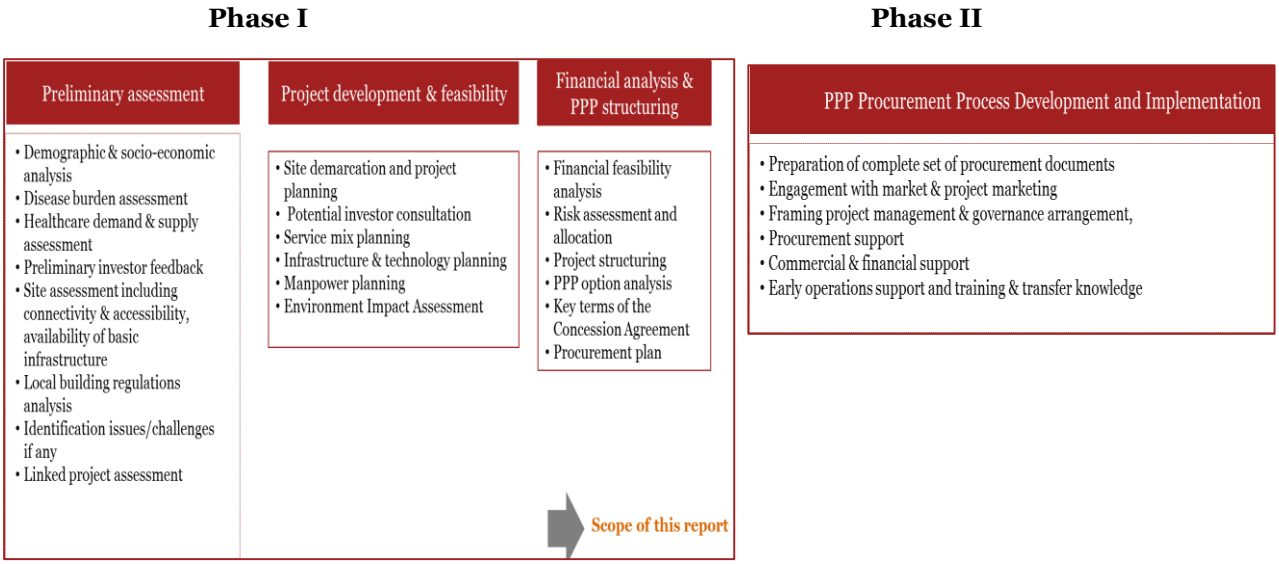
- **Market Assessment:** The market assessment includes demographic & consumer analysis, disease profile & disease burden assessment, market dynamics & competitive mapping. In addition to these, key findings of the consultation with potential investors are also summarized under this section.

- **Need assessment:** This section explains the demand demand-supply gap analysis with respect to beds, manpower and clinical specialties
- **Regulatory Review:** This section summarizes the key applicable regulations considered for technical assessment.
- **Technical Assessment:** The technical assessment includes site assessment, project configuration and project planning & layout plan.
- **PPP Structure:** Based on the project configuration, a PPP structure has been framed for implementation of the project and elaborated under this section.
- **Financial Feasibility Analysis:** Based on the market assessment, technical assessment and PPP structure, a financial viability analysis has been undertaken in order to finalize the commercial terms of the project. This section also highlights the key financial assumptions, estimated project cost, revenue & O&M cost projections, key financial indicators, findings of the financial analysis along with recommended terms.
- **Project Risk Assessment:** This section outlines the key risks involved during various stages of the project namely project development, construction and operation. In addition to this suggested risk mitigation measures are also included.
- **Key Terms of Concession Agreement:** Based on the PPP structure, financial viability analysis and risk assessment, key terms of the concession agreement has been included under this section.
- **Procurement Plan:** This section outlines the proposed procurement process along with suggested technical & financial eligibility criteria and bid parameter.
- **Environment Impact Assessment:** This section provides the findings of environmental study conducted for assessing the impact of the project on the surrounding environment along with environment management and monitoring plan.
- **Social Impact Assessment:** This section covers the social impacts of the project along with mitigation measures.
- **Conclusion & Recommendation:** This section provides our overall recommendations based on the feasibility analysis of the project.
- **Way Forward:** This section provides the next step of the transaction advisory services for the project.

2. Approach & Methodology Followed

2.1. Project Steps & Approach Followed

As per the Terms of Reference, a two phased approach to be followed for the project development activities. The activities to be performed for the project under each phase are depicted below:



The phase I of the services includes assessing the market potential, technical and commercial viability of the project and devising a suitable project structure for implementation under PPP mode as mentioned under section 1.3 above. The detailed activities under phase I is depicted above. Upon successful completion of Phase I, the Phase II of the services will be launched, covering preparation of complete set of procurement documents, engagement with market & project marketing, framing project management & governance arrangement, procurement support, commercial & financial support, early operations support and training & transfer knowledge. The scope of this report covers the activities under phase I.

2.2. Methodology Followed

2.2.1. Market Assessment

The research methodology adopted for the market assessment consists of primary research and secondary research for developing better understanding of the local healthcare landscape, disease burden, assessment of demand. The primary research and secondary research conducted is elaborated as below:

Primary Research

Stakeholder consultation is the major part of our primary research. Various stakeholders consulted during primary research includes:

- Doctors, hospital promoters, administrators
- District level health functionaries (Civil Surgeon, HoDs)
- Industry bodies
- Patients

The hospital promotors consulted and the sample size of the stakeholders are tabulated as below:

Hospitals	
Hospital	**Interviewee**
Chittagong Medical College & Hospital	Director
Mno shishu Medical College & Hospital	Director
USTC (University of Science & technology)	Director
Southern Medical College	Director/Promoter
National Hospital	Co promoter
Medical centre	Manager
Holy crescent	Manager
Max hospital	Clinicians, Finance Director
Metropolitan	Promoter
CSCR	Owner

Table 1 Sample size of stakeholders

Entities	Sample Size
Hospital Administrators and Management	15
Doctors across specialties	10
Patients	20
Diagnostics Centres	2
Participants from Industry Body	1
Total	**48**

In addition to the aforesaid stakeholders, discussions were also held with following officials of Bangladesh Railway during various stages of the study:

- General Manager (East), Bangladesh Railway
- Divisional Railway Manager, Chittagong
- Project Director
- Chief Medical Officer, Chittagong Railway Hospital
- Additional Director General, Bangladesh Railway

Secondary Research

The secondary research shall include collection of secondary data from following sources with respect to demographics, health indicators, healthcare system & framework and disease profile etc.

- WHO Statistics 2014
- DGHS Annual Health Bulletin 2014
- DGHS census 2011
- District Health MIS covering disease Burden
- Bangladesh Bureau of Statistics

The analysis of primary and secondary data together forms the analysis of market potential and demand assessment for the project.

2.2.2. Technical Assessment

Based on the demand assessment, a project configuration comprising the project components has been designed, which is further validated through site survey, assessment, project planning & layout plan and regulatory review. Based on the technical assessment, a project configuration with scale and size of project components is arrived. The technical assessment shall also include environment impact assessment and social impact assessment in order to assess the impact of the project towards surrounding environment and locality and corresponding mitigation measures to be adopted.

2.2.3. PPP Structuring and Financial Feasibility Assessment

An appropriate project structure for implementation under PPP mode is designed based on the project configuration, based on which a financial feasibility analysis has been worked out to finalize the key terms of the project structure.

2.3. Continuous Engagement with Client

While conducting the feasibility study, we have followed an approach of continuous engagement with client for finalization of feasibility and project structure. In this context several discussions with BR were held as provided in the **Annexure I** of this report.

2.4. Key assumptions of the study:

The study conducted for the purpose of this report is based on certain assumptions as below:

- Our survey includes representative sample of hospital providers & doctors, consumers & diagnostic centres.
- Certain findings are based on qualitative feedback from hospital providers & other respondents.
- We have considered industry standards and benchmarks for certain analysis.
- Some of the information & data used in the analysis is not from the current year due to unavailability of latest data.
- Project site assessment and preliminary technical assessment and financial feasibility have been undertaken based on the details provided by Bangladesh Railway.
- Environmental assessment has been undertaken based on the applicable regulations, best industry practices and indicative layout plan prepared. The detailed quantification of impact is dependent on the detailed designs & drawings of the project which will be prepared by the Concessionaire and the same shall be included by the Concessionaire in the EIA report to be submitted to Depart of Environment for environmental clearance.
- Financial feasibility analysis and PPP structuring is based on the data collected from the market study, industry standards and discussion with Bangladesh Railway.

3. Market Assessment

3.1. Demographic, Economic & Consumer analysis

An analysis of demographic & economic profile has been conducted in order to understand the profile of target consumer segment and their paying capacity. In addition to this a consumer analysis has also been conducted to understand their perception and preference towards level of required healthcare services. The details of analysis is described as below:

3.1.1. Population & Demographics

Chittagong district is located in the south-eastern region of Bangladesh**.** The estimated population of the district of Chittagong is close to 8.2 million with a population density of 831 persons per sq.km. Chittagong is the second most populous district in Bangladesh with a Compounded Annual Growth Rate (CAGR) of population of Chittagong is 2.3% which is higher than the national average of 1.4%.

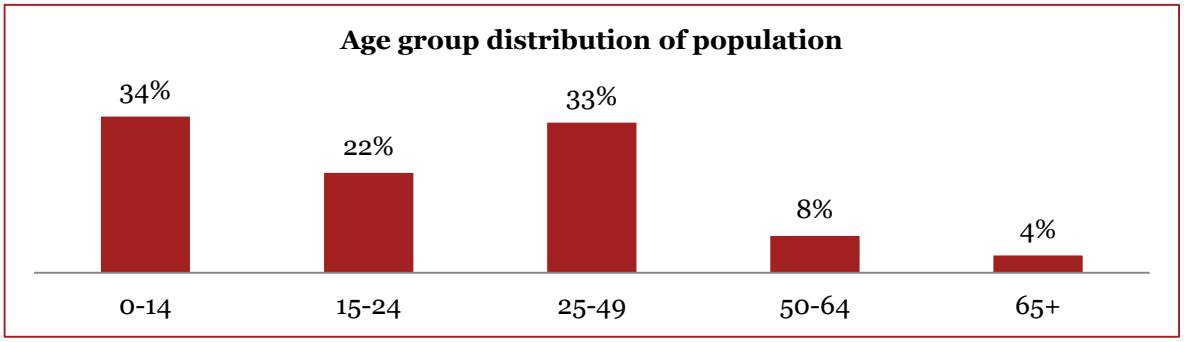
The urban population constitutes 41% of the total population in Chittagong in comparison to 23% of the urban population in the country. Majority of the population of Chittagong is constituted by Pediatric (0-14 years) and working population (25-49 years) which constitutes 67% of the total population of Chittagong.

Table 2: Demographic indicator in Bangladesh & Chittagong

S no.	Indicators	Chittagong	Bangladesh
1	Population (Mn) – 2015	8.2 [3]	161.6[4]
2	Sex Ratio	102	100
3	Literacy rate (%)	58	43
4	Population CAGR (%)	2.3%	1.4%
5	Urban Population to Total Population	41%	23%

Source: Bangladesh Bureau of Statistics

Figure 1: Age group distribution of population



Source: Bangladesh Bureau of Statistics

[3] Estimated population at the CAGR of 2.3% over population in 2011 of 7.6 million

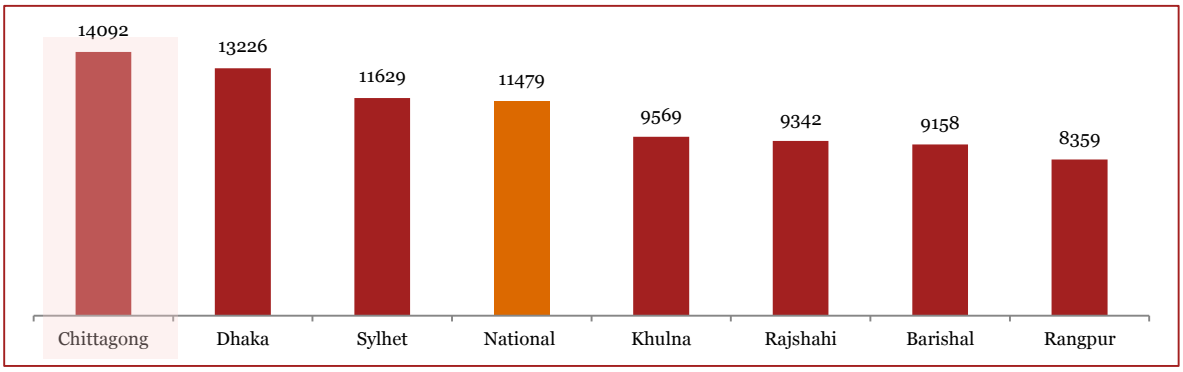
[4] Estimated population at the CAGR of 1.4% over population in 2011 of 152.9 million

3.1.2. Economic profile of Chittagong

Chittagong is one of the leading port cities in Bangladesh. The Port of Chittagong is the largest international seaport on the eastern seaboard of the Bay of Bengal. While 80% international trade is handled through Chittagong port, the city generates 40% of Bangladesh's industrial output. Chittagong Export Processing Zone (EPZ) is one of the most competitive free economic zones in the world employing more than 1,75,000 workers. Chittagong EPZ contributes 39% of total investment in Bangladesh EPZs.[5]

As on 2010, per capita income of Chittagong is BDT 14,092 which is higher than the national average of BDT 11,479 and is also the highest among other divisions in Bangladesh. The per capita income of Chittagong in comparison to other division and national per capita income is depicted in the below:

Figure 2: Monthly per capita income of divisions of Bangladesh

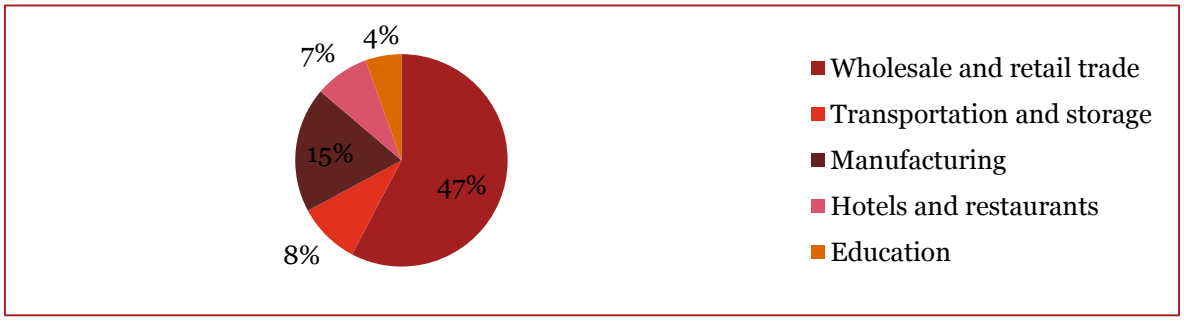


Source: Economic Census 2013

In the above analysis, it is evident that people living in Chittagong have higher purchasing power in comparison to other division.

Wholesale and retail trade represents maximum employment in Chittagong division. Among other sectors, transportation and storage is also one of the key contributors to the employment after wholesale & retail trade due to it being a port city. Economic activity of local population in Chittagong is divided into business owners & service sector employed people. Due to large export base, large numbers of people are employed in export processing zones, especially women. With respect to number of industrial units, wholesale and retail trade has maximum concentration (47%) followed by transportation & storage units & manufacturing (23%). This is represented in the graph below:

Figure 3 Distribution of economic units by industrial classification, Chittagong



Source: Economic census 2013

[5] Source: http://epzbangladesh.org.bd/files/reports/file_1400670187.pdf

3.1.3. Consumer Analysis

In order to map the consumer dynamics in a more insightful manner, a consumer survey was conducted where 50 participants were involved. The objective of the discussion was to understand the potential user's views of healthcare services and the need for a multispecialty/super specialty care in the region. The findings of Consumer research/analysis highlighted the growing demand for a multispecialty care at an affordable cost. Key insights of the analysis are as below:

- The survey highlighted that 66% of the consumers perceive healthcare facilities to be inadequate in Chittagong.
- General physicians (neighborhood / family) are the first point of contact for more than half of the interviewed residents
- People go to Government hospitals for emergency treatment due to non-availability of specialized doctors in private hospitals or else travel to Dhaka
- The perception of the people in the region is that the medical facilities overseas provide better high end medical care. This perception is a big motivator for patients travelling to India, Singapore or Thailand
- Doctors' reputation is one the key decision making criteria for selecting a healthcare provider.

Customers are increasingly demanding care for multiple ailments under one roof and creating a demand for multi – specialty care in Chittagong

Patients demand multi-specialty care for treatment of multiple/related ailments and avoiding hassle

"In matters related to life and death, we want to go to a bigger hospital rather than a small hospital with only some expertise."
Customer

"In Chittagong, the healthcare delivery trend needs a change as patients now prefer multispecialty hospitals, which have a much better look and feel, over small private hospitals or nursing homes."
Director, Metropolitan hospital

Healthcare providers are recognising this need and expanding facilities

"Earlier Healthcare providers used to focus only on General or single specialties. The trend is changing towards multispecialty hospitals."
Director, Mao Shishu Hospital

Hospitals moving from single specialty to multi specialty focus

Mao Shishu → Mother & Child to multispecialty

Max → Cardiac to Multispecialty

Chittagong market is demanding multi-specialty care

Source: Primary Research

3.2. Disease Burden & Prevalence

The national and local disease profile has been studied to assess the nature of disease prevalence and its contribution towards overall mortality profile of the country in general and Chittagong in specific. This will help in designing the proposed specialty mix for the hospital. The details of analysis are described as below:

3.2.1. National Level Disease Profile

Considerable progress has been made at national level in Communicable Diseases (CD) control, but Non Communicable Diseases (NCD) are showing a rising trend. Cardio Vascular Disease (CVD) accounts for the maximum number of deaths in the NCD segment followed by cancers. Among Communicable Diseases of concern are malaria, tuberculosis, diarrhea, and vaccine preventable diseases, HIV/AIDS, endemic diseases such as kala-azar and emerging diseases like avian influenza. As per World Health Organization (WHO), non-communicable diseases are the leading cause of mortality in Bangladesh and account for 59% of all deaths. CVD, cancer and respiratory are the main contributors in NCD segment to the mortality profile.

Figure 4 Leading causes of death (Communicable Vs Non Communicable)

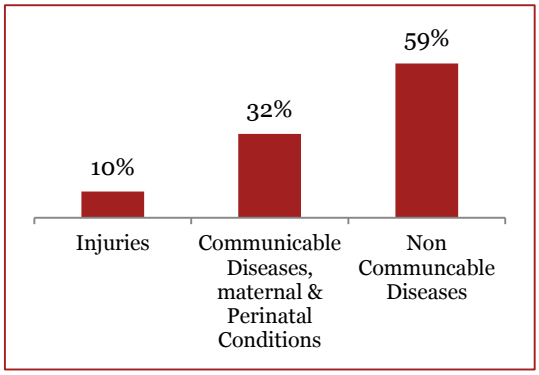
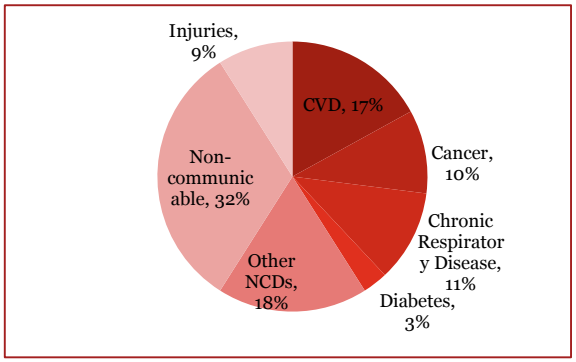


Figure 5 Disease segments in NCDs and corresponding mortality proportion (2014)



Source: WHO 2014

The prevalent disease pattern of various diseases under NCD segment in Bangladesh is tabulated as below:

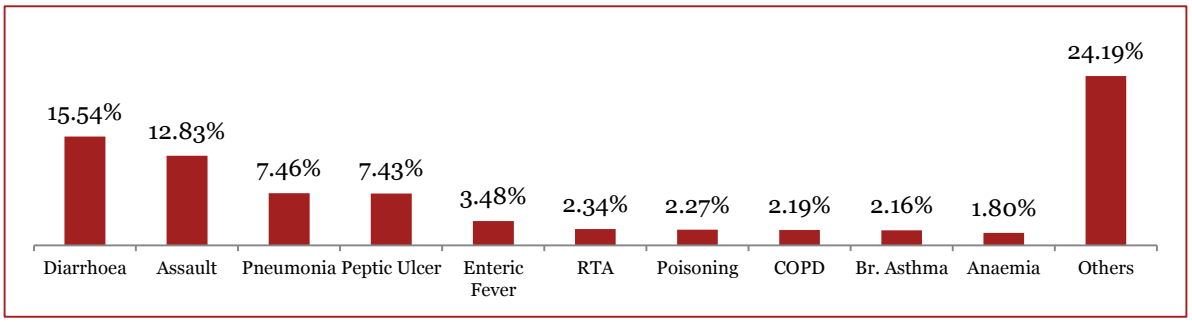
Table 3 An Overview of leading disease segment in Non-Communicable Segment

Disease	Disease Pattern
Cardio vascular diseases	Rapidly increasing incidence of Ischemic Heart Disease (IHD) has reached 10% due to modern life style and has led to increased premature mortality and morbidity.
Cerebra-vascular diseases	Stroke constitutes about 9% of the hospital admissions among those aged 30 or above.
Cancers	Every year about 150,000 people are diagnosed with cancer (Cancer Society of Bangladesh).
Diabetes	Prevalence of diabetes is currently estimated at around 7%, and Bangladesh is projected to be among the top ten countries globally for numbers living with diabetes by 2025.

Disease	Disease Pattern
Accidents & Injuries	Approximately 70,000 deaths occur each year due to injury (burning, drowning, acid and accidents at work). 40% to 45% of injuries are as a result of road traffic accidents.
Mental health	Emerging problem of mental health disorders in the country. Facilities and resources are needed to treat the nearly 14.5 million adults with mental disorders in Bangladesh

Analysis of prevalent health conditions in various health institutions in Bangladesh highlights that the primary and secondary care institutions demonstrates a preponderance of communicable diseases and injuries. The institutions offer general health care services which are primarily secondary care. Communicable Diseases, including infectious, are the most prevalent diseases at sub district and district level care.

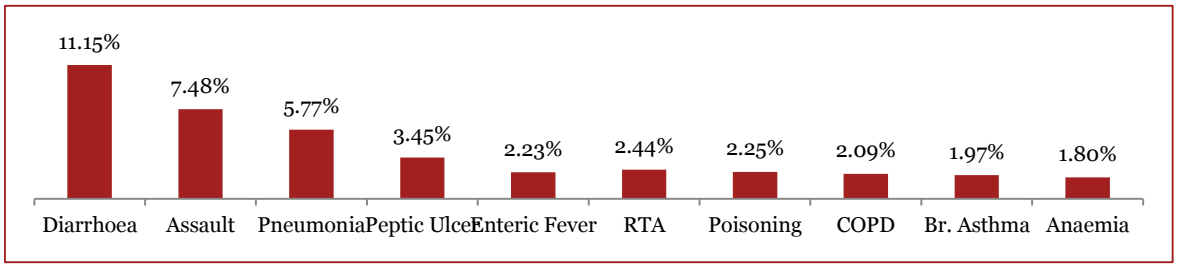
Figure 6 Level I – Upazila Hospitals, Top 10 diseases of indoor patients



Source: Health Bulletin 2014, MoHFW, PwC Analysis

Disease profile of patients at Upazila Hospitals shows maximum burden of diarrheal diseases, pneumonia, gastro disorders & pulmonary diseases

Figure 7 Level II – District Hospitals, Top 10 diseases of Indoor patient



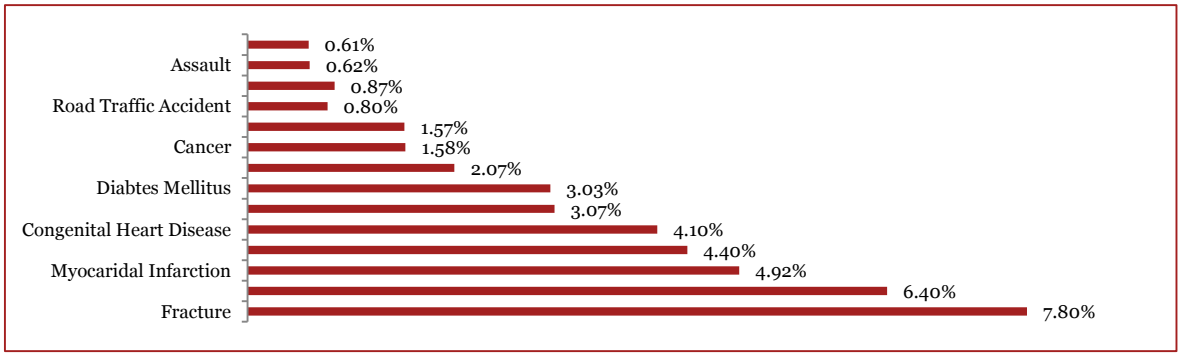
Source: Health Bulletin 2014, MoHFW, PwC Analysis

Similar trend of case mix is observed at district level of care where diarrheal disease, pneumonia, peptic ulcers constitutes the significant share. This is also reflective of the burden of communicable diseases in the semi urban areas.

However, disease profile at tertiary level of care presents significant case load of Non-Communicable Diseases (NCD) such as cardiac, accidents & emergency, diabetes & hypertension diseases. Hypertension and myocardial infarction are the commonest form of cardiac conditions. Oral and stomach cancer are the most prevalent conditions in Oncology. There is a similar trend for kidney ailments and bone and joint disorders. Glomerulonephritis and renal failure account for highest proportion in Nephrology. Accidents and trauma account for the highest proportion of patients admitted under orthopedics.

To corroborate the above point, case load mix of ***Bangabandhu Sheikh Mujib Medical University,*** a premier Postgraduate Medical Institution in the country offering wide variety of services at tertiary level care is analyzed. The disease profile of admitted patients in the hospital was analysed. This highlights that the Non Communicable category of diseases forms the largest share amongst admitted patients. This includes **CVD, Stroke, Arthritis, Bone and Joints and Diabetes** etc.

Figure 8 Top disease segments in admitted patients in BGSMU



Source: Primary research

It is also important to note that the incidence of conditions which make up a sizable proportion of inpatient admission at district and sub district hospitals such as assault, TB, viral fever and road traffic accidents was lowest in a tertiary care facility like BSSMU.

Non Communicable Disease Segments – Overview of Cardiac, Nephrology, Oncology & Orthopedics

Since non - communicable disease segment is increasing at exponential rate, it is also pertinent to analyse the major health conditions amongst non- communicable diseases. In order to further analyse this trend, admitted patient data of major centres of excellence in cardiac, oncology, nephrology & orthopedics are reviewed. Following graph illustrates the major segments/categories under non-communicable diseases:

Figure 10 Inpatient Oncology admission data of specialised centres of excellence

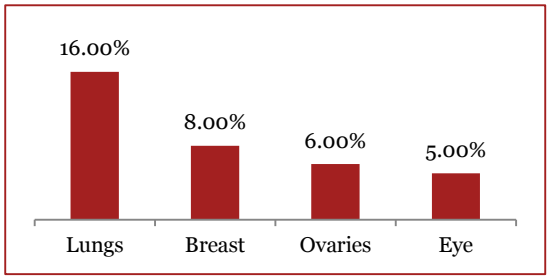


Figure 9 : Inpatient Cardiac admission data of specialised centres of excellence

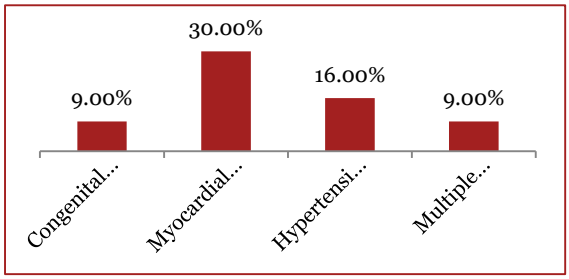


Figure 12 : Inpatient Orthopedics admission data of specialised centres of excellence

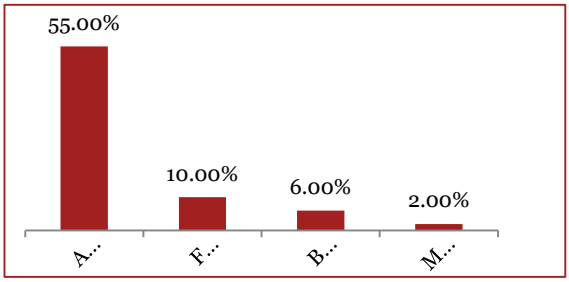
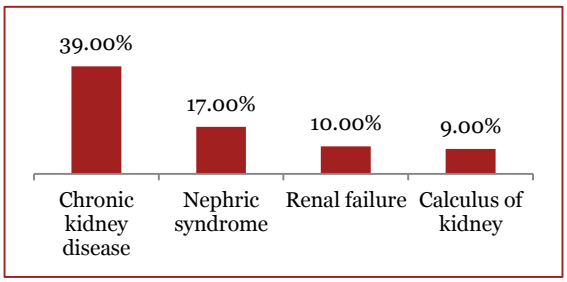


Figure 11 : Inpatient Nephrology admission data of specialised centres of



3.2.2 Disease Profile –Chittagong

Chittagong disease profile indicates the dual burden of communicable and non-communicable diseases. An analysis of patient data of healthcare provider in the region (district Government healthcare facilities) suggests that majority of the case load is constituted by **Diarrhea, Gastroenteritis and Acute respiratory infections.**

Figure 13 : Top 10 causes of death in Chittagong city, 2013 (based on data from Chittagong Medical College)

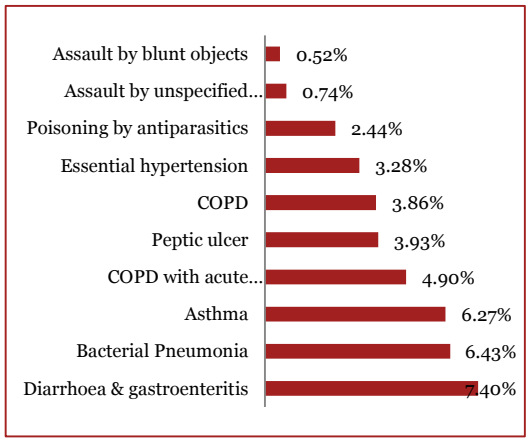
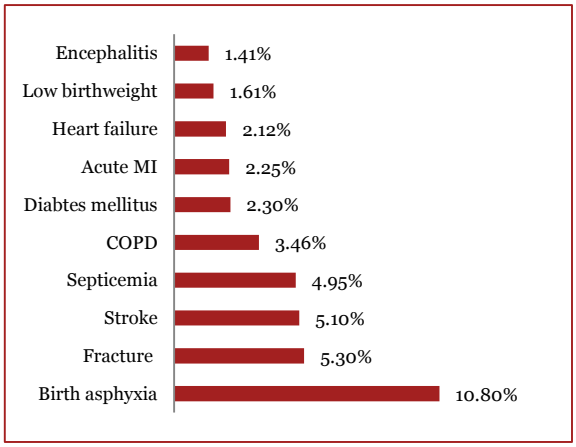


Figure 14 : Top 10 causes of death in Chittagong city, 2013 (based on data from Chittagong Medical College)



Source: Health Bulletin 2014, MoHFW, PwC Analysis

Chittagong Medical College is the largest healthcare provider in Chittagong with inpatient bed capacity of 1010 beds. The hospital provides some elements of tertiary care in the region with MRI, radiotherapy, Neuro surgeries, Cath lab etc.

Due to lifestyle disorders, significant population in Chittagong city suffers from cardio-vascular disorders. Accidents and trauma, myocardial infarction and Stroke are some of the leading causes of hospitalization amongst NCDs.

Birth asphyxia, fracture of facial bones and skull and stroke are the leading causes of deaths in Chittagong. Diabetes, Acute MI and Heart failure are also major health concerns.

Communicable disease trends in Chittagong highlights the increased prevalence of Arsenicosis & Diarrheal diseases. Chittagong falls under high risk areas and reported ~31,230 positive cases of Arsenicosis in 2012. This is nearly half of the reported cases of Arsenicosis in the same year amongst all the divisions of Bangladesh. Diarrheal diseases are one of the major health risks amongst communicable diseases in Chittagong. As per Health Bulletin 2014, Chittagong division accounts for 21% of the overall number of diarrhea cases in the country after Dhaka.

Figure 15 : Diarrhea cases in all divisions

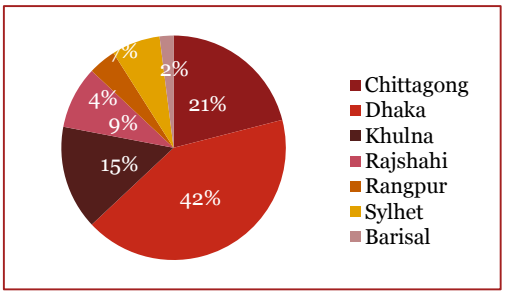
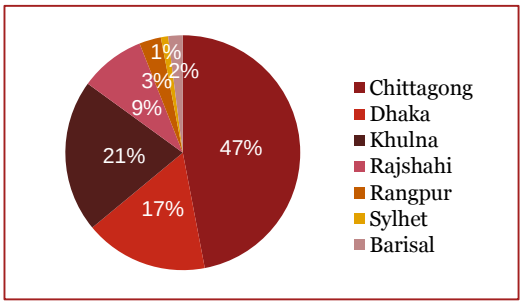


Figure 16 : Arsenicosis cases in all divisions



3.3. Healthcare Market Dynamic

Under this section, the existing market scenario with respect healthcare infrastructure, service delivery and human resource of Bangladesh and Chittagong has been studied in order to assess the gap in services both in terms of quantity and quality. This section also provides the level of competition in the market. In addition to the hospital infrastructure, an assessment of medical education scenario has also been covered under this section. The details of the analysis are as below:

3.3.1. Healthcare Infrastructure & Human Resources in Bangladesh

With increasing economic prosperity demand for healthcare services in the country is bound to increase. Therefore, there is a need to develop sufficient facilities and infrastructure capacity. However to meet this demand curve, country lags behind in terms of bed density & human resources in healthcare.

Figure 18: Country comparison of Human resource per 1,000 population

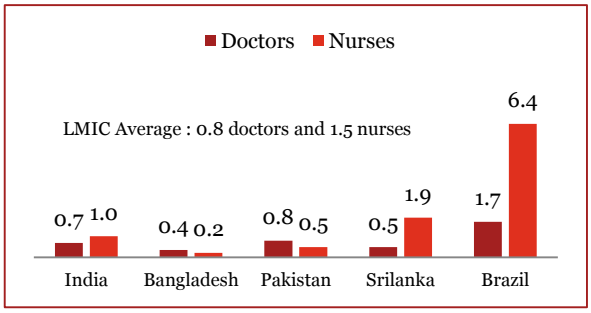
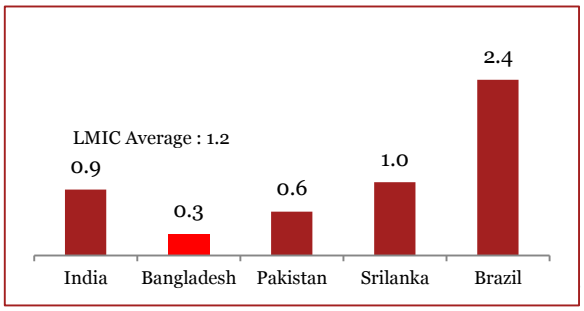


Figure 17: Country comparison of Beds per 1,000 population



In Bangladesh, beds availability per 1000 population is 0.3 which is significantly lower than Lower Middle Income Countries (LMIC) average of 1.2 beds per 1000 population.

Similarly, human resource in healthcare reflects lower density of workforce per 1000 population. In fact, Bangladesh presents a unique trend of having more doctors than nurses as compared to its peer nations. This again highlights the shortfall in comparison of LMIC health workforce density (0.8 doctors per 1000 and 1.5 nurses per 1000 population).

Private healthcare infrastructure is gradually developing in the country, largely concentrated in Dhaka. There are total 7,500 private hospitals and 42,000 private beds. Some of the hospitals along with bed capacity are tabulated as below:

Table 4: Private hospitals in Chittagong

Sr. No	Hospitals	Type	Location	Beds	Remarks
1	United Hospital	Private	Dhaka	~500	Multispecialty tertiary care
2	Apollo Hospital	Private	Dhaka	~450	Multispecialty tertiary care
3	Square Hospital	Private	Dhaka	~300	Multispecialty tertiary care
4	Labaid Hospitals	Private	Dhaka	~250	Multispecialty upgraded secondary care
5	Ibn Sina Hospitals	Private	Sylhet	100	Secondary care

Source: Primary Research

3.3.2. Healthcare Service Delivery in Chittagong

Provision of healthcare service delivery in Chittagong is catered through network of public & private facilities. The public health system represents a sizable network of health facilities at all levels of care. It is represented by Upazila Health Centers, District Hospitals, and Medical College Teaching Hospitals etc. while specialized hospitals are absent in the system.

Figure 20: Public Healthcare Service Delivery system in Chittagong

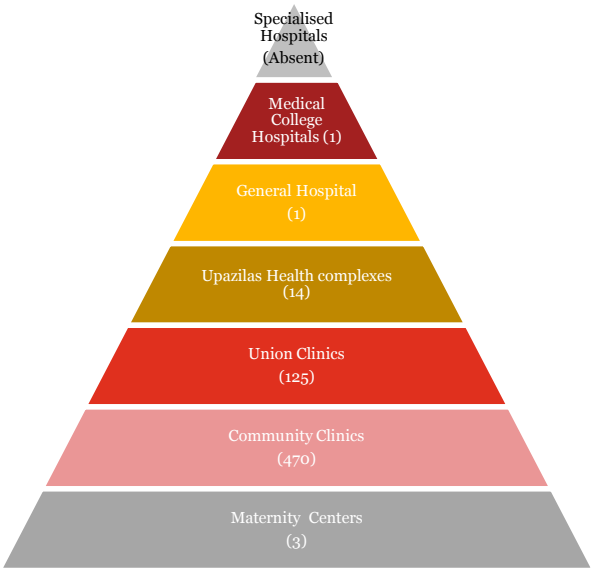
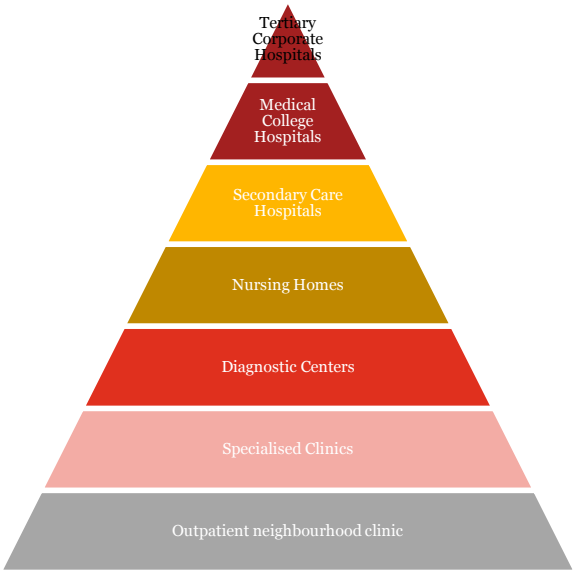


Figure 19: Private Healthcare service delivery system in Chittagong



Source: Primary Research

Public healthcare system in Chittagong forms the mainstay of healthcare delivery. Chittagong medical teaching hospital with 1010 bed capacity is the largest healthcare delivery provider in addition to few small private hospitals. Other facilities include sub district hospitals (referred as Upazila Hospital), clinics & maternity centers.

Private healthcare system in Chittagong is gradually evolving and few private hospitals have come up providing upgraded secondary and tertiary care. The private healthcare system is predominantly catered by nursing homes, clinics, multispecialty private hospitals, diagnostic centers etc. Majority of the hospitals are catering to Cardiac specialties while there is still exists deficiency in super specialty service provision like Neurosurgery, Renal sciences and Orthopedics.

Private healthcare system is primarily categorized in terms of three levels of care namely, primary, secondary, & tertiary as provided below:

Table 5 Private Healthcare delivery facilities and level of care

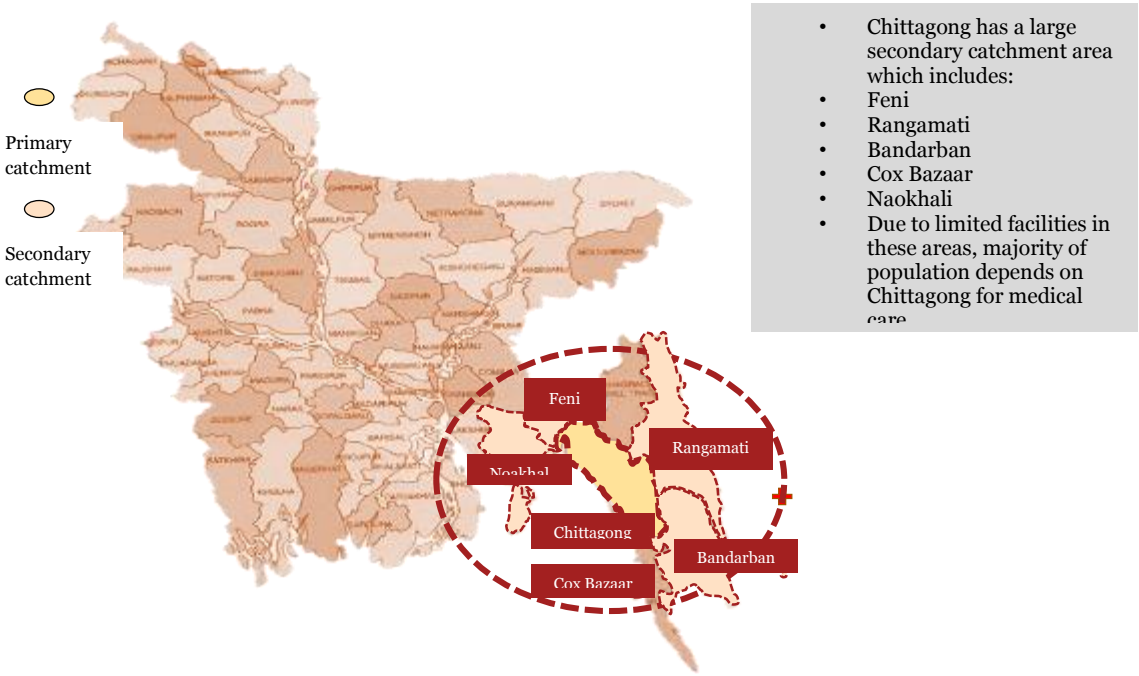
S No	Healthcare Delivery Facility	Level of care
1	Outpatient neighborhood clinic	Primary
2	Specialized Clinics	Primary
3	Diagnostic Centers	Primary
4	Nursing Homes	Secondary
5	Multispecialty Hospitals	Upgraded secondary
6	Private Medical College Teaching Hospitals	Upgraded secondary

S No	Healthcare Delivery Facility	Level of care
7	Government Medical College Teaching Hospitals	Tertiary

3.3.3. Catchment Characteristics

The primary catchment area is the Chittagong district while other 5 districts namely Feni, Rangamati, Bandarban, Cox Bazaar and Noakhali form the secondary catchment. Presently people from this region prefer overseas hospitals (India, Singapore etc.) for treatment. There are two main drivers for people from this region seeking medical services overseas. The first is their capacity to pay. As many families in this region have income from overseas, finance is readily available for treatment and patients go to overseas hospitals (Singapore, India) for better treatment. Secondly, the perception of the people in this region is that the medical facilities overseas provide better medical care.

Figure 21 Catchment of Healthcare facilities in Chittagong city



Source: Primary Research, PwC Analysis

Population growth in catchment geographies is significant:

All districts in the primary and secondary catchment have shown a population growth rate more than the country's growth rate of 1.3% CAGR. Chittagong district is the most populous district in the administrative division of Chittagong. It contributes to 25% of the division population. The population of primary catchment and secondary catchment in 2011 was 7.6 Million and 7.2 million respectively. Population trend of each of the districts under primary and secondary catchment is tabulated as below:

Table 6 Population trend in catchment geographies

Population (Mn)	1991	2001	2011	CAGR
Bandarban	0.2	0.3	0.4	2.6%
Chittagong	5.1	6.6	7.6	2.1%
Cox's Bazaar	1.4	1.8	2.3	2.5%
Feni	1.1	1.2	1.4	1.4%
Noakhali	2.2	2.6	3.1	1.7%

Source: Bangladesh Bureau of Statistics

Within the country, patient from Chittagong travel to Dhaka for high end medical care. Apollo, United and Square Hospitals in Dhaka are the preferred healthcare providers for the patients from Chittagong.

3.3.4. Competition Mapping of Chittagong

Healthcare competition in Chittagong is catered by private healthcare facilities including medical college teaching hospitals, multispecialty private hospitals, clinics & diagnostic centers. There is a strong presence of medical college teaching hospitals in Chittagong with 4 private and 1 government owned medical facilities. The section below provides a snapshot of existing and upcoming healthcare facilities in Chittagong:

Figure 22 Geographical spread of Healthcare Providers in Chittagong

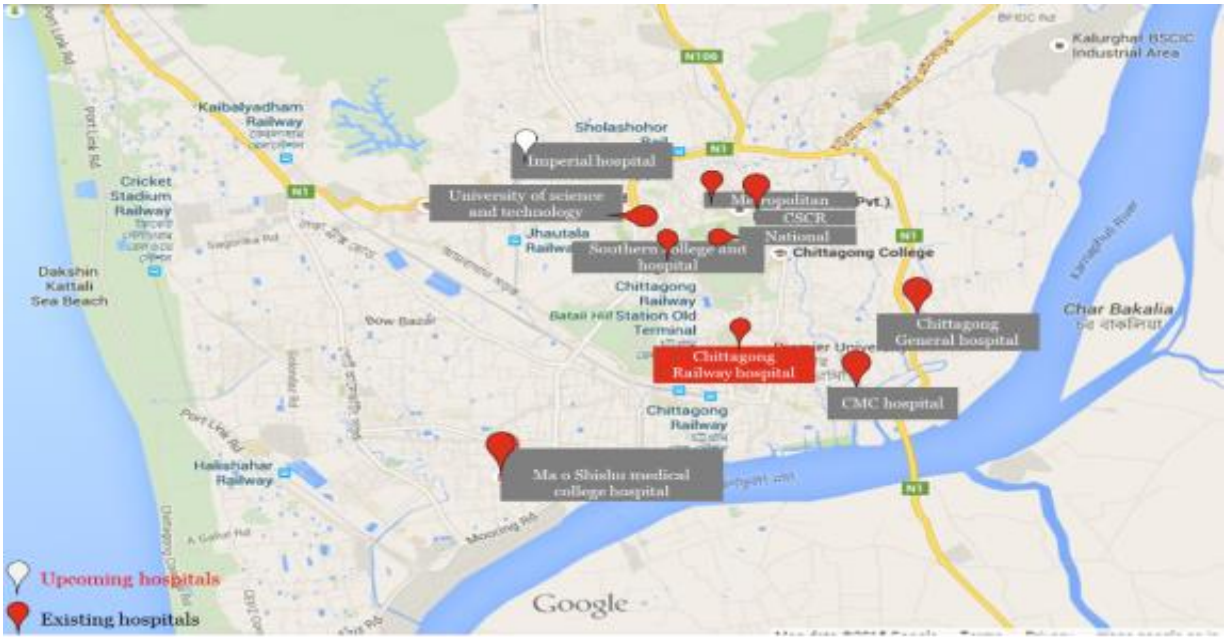


Table 7 Existing hospitals in Chittagong

Hospital	Ownership	Occupancy	Beds	Remarks
Chittagong Medical College & Hospital	Government (Teaching Hospital)	>100%	1010	Upgraded Secondary Care. Needs infrastructure and technology upgradation
Mao Shishu Medical College & Hospital	Private Teaching Hospital affiliated to public university	85%	600	Tertiary care teaching hospital mainly in Mother and Child health. Expanding to a multispecialty super specialty tertiary care facility. Construction started.
Southern Medical College	Private Teaching Hospital affiliated to a public university	30%	400	Secondary care teaching hospital. Location is a constraint.
Institute of Applied Health Sciences (IAHS) under USTC (University of Science & technology)	Private (Teaching Hospital) affiliated to a private university	55%	250	Secondary care teaching hospital.
National Hospital	Private hospital	80%	150	One of the leading multispecialty upgraded secondary care hospitals in the Chittagong. 400+ OPDs per day.
Max hospital	Private hospital	25%	150	Cardiac super specialty state of the art tertiary care hospital. Recently started by a group of cardiac doctors.
Metropolitan	Private	75%	130	Multispecialty tertiary care hospital with cardiac having the maximum inflow of patients. Super specialists except cardiology, primarily working in CMC are attached to the hospital on call basis. Cardiac specialists are on full time basis. The hospital has a single Cath lab.
BG Trust Medical College	Private Teaching Hospital affiliated to a public university	NA	100	Multispecialty 500 bedded tertiary care teaching hospital equipped with modern machineries and facilities. It also provides training and research facilities for the students, interns and Doctors.
CSCR	Private hospital	70%	100	Only private hospital having a CT and MRI machine. Planning for a 2nd MRI procurement and installation. Radiology department contributes significantly to the overall revenue of the hospital.
Medical centre	Private	65%	60	Multispecialty secondary care hospital
Holy crescent	Private hospital	45%	70	Hospital provides services in general specialties such as Medicine, Gynecology, Pediatrics

Hospital	Ownership	Occupancy	Beds	Remarks
				and General surgery. Surgeons are attached to the hospital on empanelment basis. Rest of the services is provided by full time residents.

Source: Primary Research

From the above table, it can be seen that majority of the private hospitals in Chittagong provide upgraded secondary care in general specialties while a few of them are emerging as super specialty tertiary care providers.

3.3.5. Private Healthcare Provider business dynamics in Chittagong

Among the private healthcare providers, Institute of Applied Health Sciences (IAHS) under USTC, caters to a large segment of the population as presented in Table 8 below and followed by Mao Shishu and Metropolitan.

Table 8: Key utilization indicator comparison among private healthcare providers

FY'2013	IAHS, USTC	Mao Shishu	Metropolitan
Total admissions	1,36,000	59,028	6,000
Total OPDs	2,50,000	1,54,080	20,000
Total deliveries	8300	6,096	25000
Total emergency visits	25,000	11,805	3650
Major surgeries	7,656	27,014	100-120
Minor surgeries	17,864	40,521	200
Beds	250	600	130
Bed occupancy	65%	95%	75%
ALOS	6.7	5.2	7-8

Source: Health Bulletin 2014

Average Revenue per Occupied Bed (ARPOB)

The hospital providers in Chittagong have low ARPOB as depicted below primarily due to non-availability of advance specialized care leading to the patient migration to Dhaka.

Figure 23: Annual revenue figures of Private Hospitals

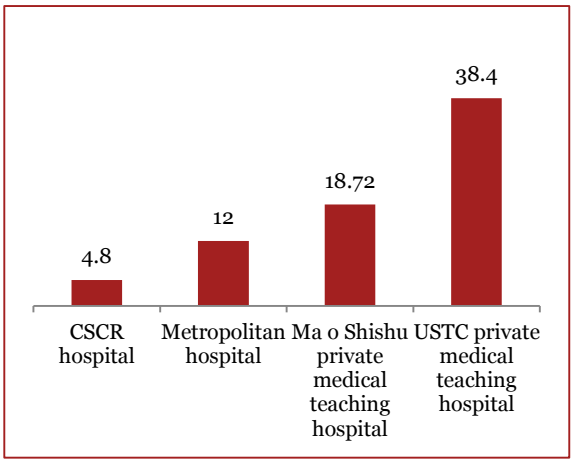
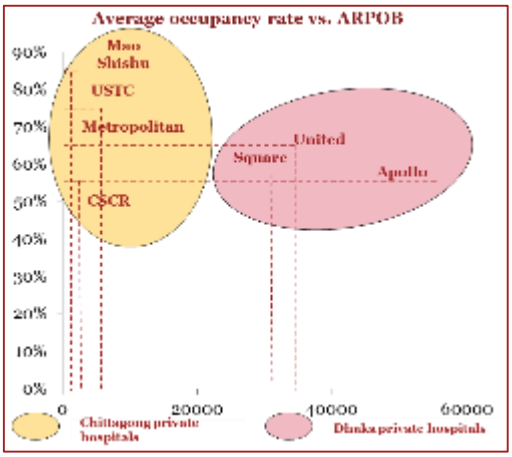


Figure 24: ARPOB and Occupancy rates of hospitals in Chittagong and Dhaka



Source: Primary research, PwC Analysis

Due to non-availability of tertiary super specialty care in Chittagong, patients travel to Dhaka and get treatment in private hospitals. More than 50% of the patients coming from outside to avail treatment in Dhaka are from Chittagong.

Absence of super specialty tertiary care along with good paying capacity of Chittagong population creates headroom for a private player. It is felt that provision of tertiary care services would improve the ARPOB to a better extent.

Manpower salaries

The prevailing salaries in private sector for various medical professionals in Chittagong are tabulated as below:

Table 9: Salaries of Medical Professionals in Chittagong

Hospital staff	Monthly Salary range (BDT)
Sr. Consultant (Super specialties)	5-10 Lakh
Sr. Consultant (General specialties)	2-5 Lakh
Radiologist	3 Lakh
Jr. Consultant	70,000 -1,00, 000
Administrative staff	35,000 – 80,000
Medical Officers (FCPS,MCPS)	50,000 – 70,000
Medical Officers (MBBS)	25,000 -30,000
Nursing (experienced)	16,000 – 20,000
Nurses (Freshers)	8,000-10,000
Housekeeping staff	5,000-7,000

Source: Primary Research

Pricing comparison

The hospital tariffs (single room charges) in Dhaka are 20% - 40% higher than the Chittagong tariffs. The graphs below show the tariff comparison of Chittagong with Dhaka for various surgical procedures and diagnostics services.

Figure 26 : Pricing comparison of various diagnostics

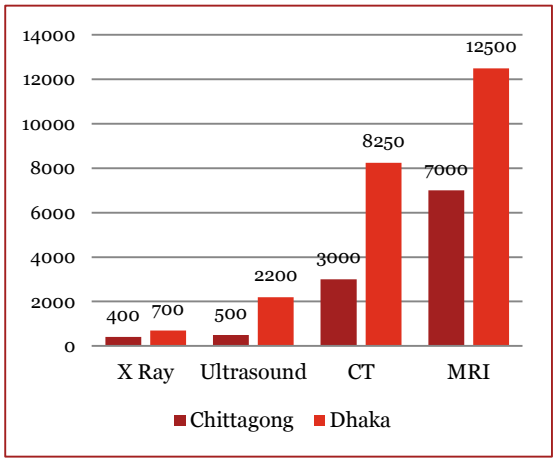
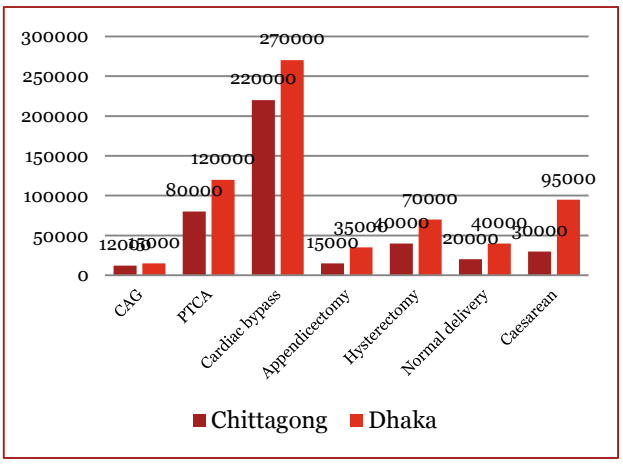


Figure 25 : Pricing comparison of various surgical procedures



Source: Primary Research, PwC Analysis

The private hospitals in Chittagong charge a premium over private medical teaching hospitals as given in 10 below due to state of the art infrastructure and provision of super specialized services.

Table 10: Pricing comparison between Private medical college & hospitals and private hospitals in Chittagong

Particulars	Private medical college		Private hospitals	
Room Tariffs	**Ma O Shishu**	**IAHS, USTC**	**Max**	**Metropolitan**
Non AC room	1200	700	2000	2500
AC room	1800	800	2500	3500
VIP cabin	2000	1500	3500	5000
Investigations				
X ray	200	300	400	400
USG	350	500	500	500
Pathology test*	120	200	500	500

Source: Primary Research, PwC Analysis

3.3.6. Distribution of hospital beds in Chittagong

Chittagong has approximately 4,000 beds. Private beds form the major share of total beds in comparison to the public beds (Government beds) as depicted below. Due to presence of five private teaching medical colleges, the number of private teaching beds forms the largest share of beds as compared to private standalone hospitals. Category wise split of beds:

Figure 28: Private bed split

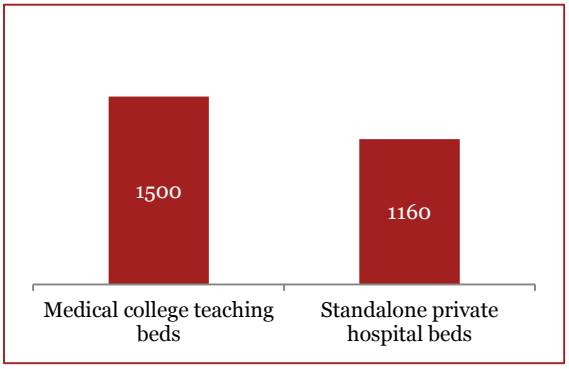
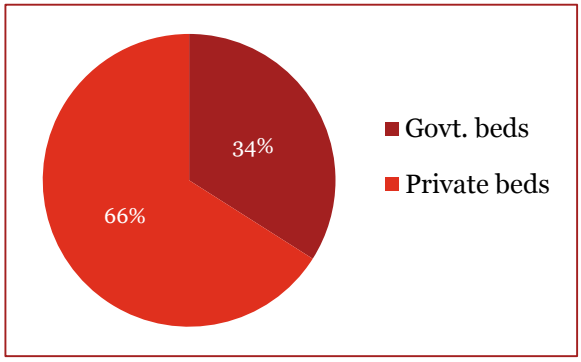


Figure 27: Public and Private Bed split



Source: Primary Research, PwC Analysis

3.3.7. Medical Education scenario in Chittagong

Chittagong has one government and five private medical colleges. All private medical colleges except Institute of Applied Health (IAHS) are affiliated to public government universities. The list of existing medical colleges in Chittagong along with number of seats is tabulated as below:

Table 11 Government and Private medical colleges in Chittagong

#	Government Medical College	No. of seats	Student Occupancy
1	Chittagong Medical college	197	
#	**Private Medical College**	**No. of seats**	
1	Institute of Applied Health Sciences (IAHS) under USTC (University of Science & technology)	80	55%
2	Mao Shishu Medical College	100	85%
3	BG Trust Medical College	100	30%
4	Southern Medical College	70	30%

Source: Primary Research

As mentioned in the aforesaid table, the private medical colleges in Chittagong like BG trust and Southern medical teaching hospitals have 30% student occupancy levels while only one private medical college hospitals (e.g. Mao Shishu medical college teaching hospital) established long back (>10yrs) is able to maintain an average student occupancy level of 85%. Another renowned private teaching hospital, Institute of Applied Health Sciences (IAHS) under USTC has 55% of student occupancy. This shows profitability challenges being faced by the medical colleges in Chittagong.

The medical education in Bangladesh has witnessed a change in the admission procedure in 2015 in the form of a centralized exam conducted by the government for all medical colleges (both Government and Private) and an eligibility criteria has been laid down by the government for the exam.

3.3.8. Nursing education scenario in Chittagong

There are two forms of pre-services education in nursing in Bangladesh. One is diploma and another is B.Sc. in nursing. In addition to pre-service education, the scope of in-service (post-basic) education for

building the capacity of nurses as nurse manager; nurse teacher; nurse administrator and nurse leader is available in 4 colleges. There are also other courses namely post-basic nursing and specialized courses on CCU, ICU, and Cardiac care. The below table is the representation of nursing education programs in Bangladesh:

Table 12 Nursing Courses[6]

Sl. No.	Degree/Courses	Remarks
1.	Diploma in Nursing	• Non Science background students can also apply, • Duration: 3 Years • Referred as Nursing Institutes • Commonly pursued program by students
2.	B.Sc. (Nursing) - Basic	• Started in Bangladesh since 2008 • Only science Students can apply • Duration: 4 Years • Referred as Nursing Colleges
3.	B.Sc. (Nursing) - Post Basic	• Available as In-service education module • Diploma Nurses can join the Post basic program after 2 years of work experience
4.	Specialised Courses	• Courses available includes CCU, ICU, Cardiac nursing and Rehabilitation Nursing • CCU, ICU, Cardiac nursing are available in National Heart Foundation, Mirpur with capacity of 20 nurses • Rehabilitation Nursing is available in BHPI (CRP), Savar. With capacity of 20 nurses. • Limited training facilities

There are 43 public Nursing Institutes offering Diploma in nursing, 7 public Nursing Colleges offering B.Sc. nursing (basic) and 4 public Nursing Colleges offering B.Sc. nursing (post-basic) in Bangladesh.[7] In addition to this there are 39 Nursing Institutes and 12 Nursing Colleges in the private sector also opens the scope for students. The details of nursing seat capacity is shown as below:

Table 13 Intake Capacity of Nursing[8]

Sl. No.	Nursing College	No. of seats
1.	Number of Nursing Institutes at the Public Sector	2580
2.	Nursing Colleges at the public sector providing BSc in Nursing (Basic) Education	7
3.	Nursing Colleges in public sector providing BSc in Nursing (Post-basic) Education	4
4.	Private Nursing Institutes	1520
5.	Private Nursing Colleges	365

Bangladesh has a Doctor per bed ratio of 0.62 and Nurse per bed ratio of 0.38 in comparison to the LMIC average of 0.8 Doctor per bed and 1.5 Nurse per bed. Thus, there is acute scarcity of nurses for providing inpatient care. Also, with more physicians than nurses, the role of the nurse is very limited, and doctors perform many tasks that nurses are qualified to do, due to a lack of confidence in the capability of nurses.

[6] Source: Directorate of Nursing Services, Government of Bangladesh
[7] Source: Directorate of Nursing Services, Government of Bangladesh
[8] Source: Directorate of Nursing Services, Government of Bangladesh

3.4. Potential bidders for partnership

Based on the primary market research, following healthcare providers are identified as potential bidders for the project:

Table 14: Potential Bidders

Category: Local Hospital Providers (Dhaka)		(Chittagong)
1	United Hospitals	National Hospital
2	Square Hospitals	CSCR
3	Apollo Hospitals	Medical Centre
4	Labaid Hospitals	Metropolitan Hospital
Category: Local Medical education Providers (Chittagong)		
1	Southern Medical College, Chittagong	
Category: International Players		
1	Manipal Hospitals, India	
2	KPC	
3	Parkway group	

Source: Primary research

3.5. Investor consultation

We have conducted discussions with few hospital providers in Dhaka to assess their interest in the project. We are planning to meet more investors, including medical education providers, industrialists & hospitals in our next round of visit, which will be covered in the Draft Feasibility Report. The responses obtained from the hospital providers consulted at this stage are as below:

Table 15 Preliminary Investor Consultation

Hospital provider	Feedback
Apollo Hospital, Dhaka	Chittagong has huge potential for hospital business and we are planning to open a new hospital in the city. We are getting significant number of patients from Chittagong for advanced medical treatment and a good quality hospital will benefit the city residents
United Hospital, Dhaka	Chittagong is a strategic location for a hospital project and would like to explore the opportunity to tap the business potential
Square Hospital, Dhaka	We would be interested in hospital projects only and do not want to venture in medical education business
A K Khan Group	Healthcare is a good opportunity and we would like to explore the project. This also fulfils our social obligation. However, we would like to partner with an Indian operator, since quality care & trained workforce is limited in Bangladesh.
Labaid Hospital	We are currently in expansion mode and are planning to open a few more facility in Bangladesh. We would be interested to partner in PPP project. We think that investments by the operator should be done in a phased manner to increase the viability of the project

Hospital provider	Feedback
Bangladesh Medical College, Dhaka	Medical college business has now saturated and is no longer an attractive business for new entrants. Due to ambiguous regulatory guidelines and stringent requirements, managing medical college business has become difficult. Moreover, the appropriate level of care & services is not same in a medical college hospital & a standalone hospital
Mao Shishu Medical College, Chittagong	Medical education demand has now saturated in Chittagong city but there is good demand for quality medical care in the city

4. Need Assessment

4.1. Bed gap

In Chittagong today, a combination of factors like natural population growth, improved health services, education and technology, decline in mortality rates and longer life expectancy is fueling an exponential increase in the demand for more no. of Healthcare facilities. Chittagong has a current bed density (per 1000 population) of 0.53 in comparison to the LMIC average of 1.2 and WHO average of 2.7. The bed deficit is reflective of the fact that there is a lot of potential for the private sector to fulfil the healthcare infrastructure need gap. The healthcare facilities in Chittagong gets majority of the patients within the city while patients from adjoining districts like Feni, Noakhali, Rangamati, Bandarban and Cox's Bazaar also get treated here. The current bed requirement doubles up including the secondary catchment. To reach LMIC average of 1.2 beds per 1000 population, Chittagong requires approx. 5840 beds to cater to the existing population. To fulfil the healthcare needs of secondary catchment population, the bed requirement will go up to approx. 11000 beds.

Figure 29: Bed requirement in Chittagong

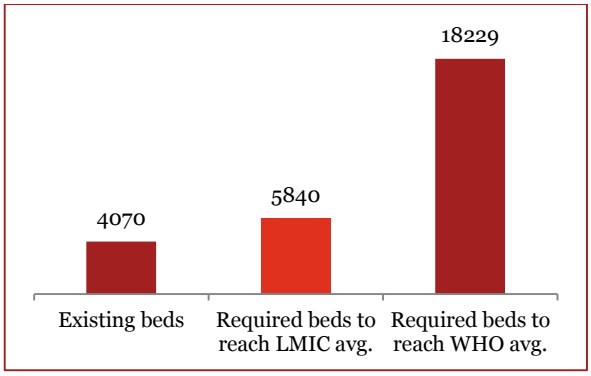
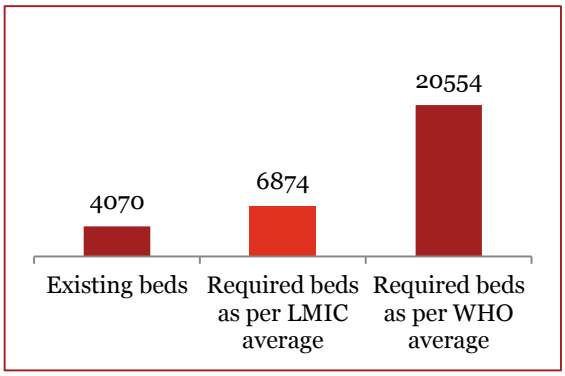


Figure 30 : Beds requirement including secondary catchment

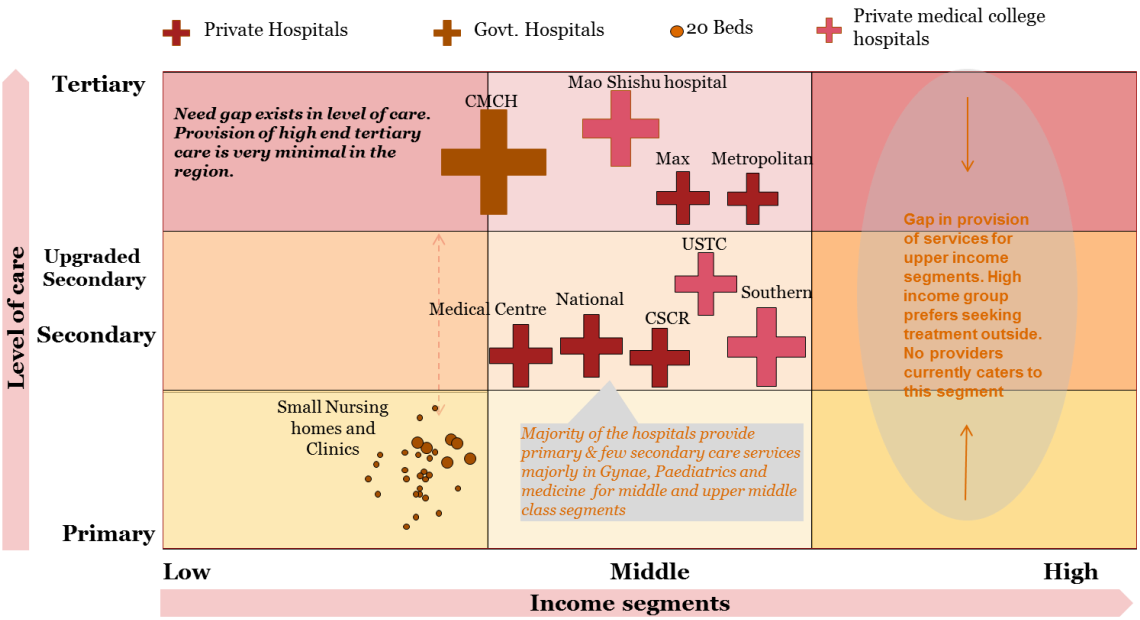


Source: PwC Analysis

4.2. Healthcare service provision need gap

Majority of the private hospitals in Chittagong provide upgraded secondary care in general specialties while a few of them are emerging as super specialty tertiary care providers. There exists a gap in provision of tertiary care services, especially for the upper income segments. Seeing the potential in the city, private providers like Apollo and Imperial are coming up with large multispecialty tertiary care hospitals.

Figure 31 : Healthcare Landscape in Chittagong



Source: Primary research, PwC Analysis

It is observed from the above that, majority of the hospitals in Chittagong provides secondary and upgraded secondary care services with few private hospitals like Mao Shishu, Max and Metropolitan provides tertiary care. All these hospitals primarily cater to middle income segment. Low income segment is being catered by one government hospital i.e. Chittagong Medical College & Hospital. This results in a significant gap both in terms of the levels of care and provision for different socioeconomic groups. There is a need for quality high end tertiary care treatment for low income segment. In addition to this, presently no hospital caters to the upper income segment of the population, who prefers to travel to Dhaka and to overseas facilities for treatment.

4.3. Specialty need gap

Table 16: Specialty provision in Healthcare facilities in Chittagong

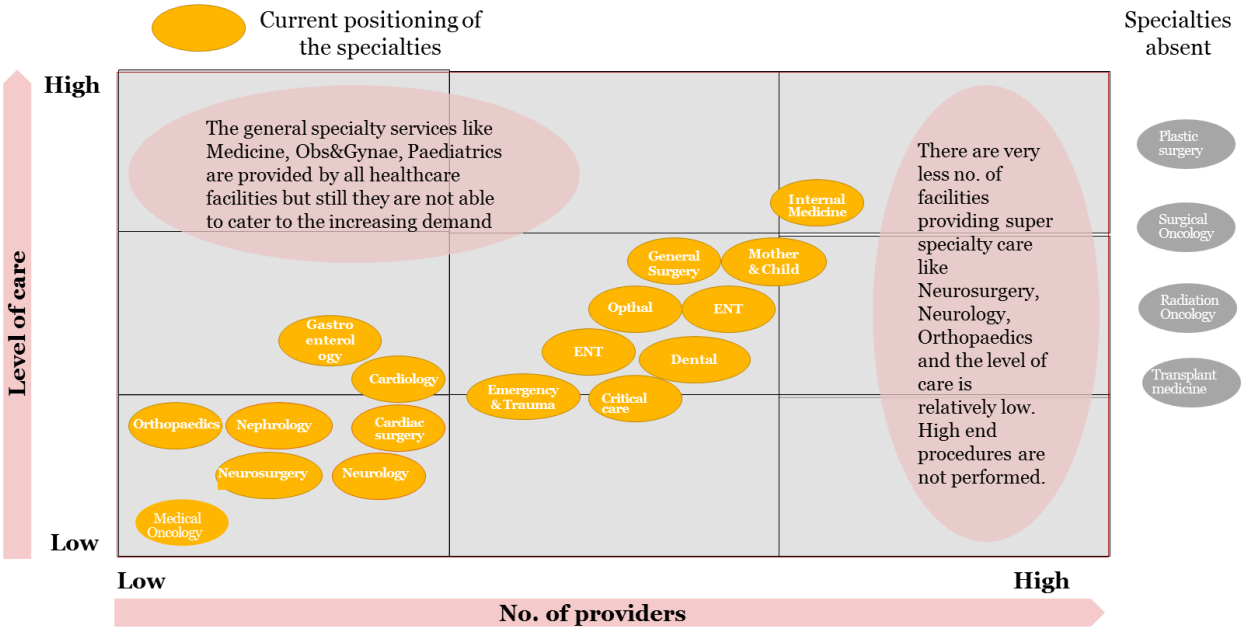
Specialties	Providers	Remarks
General specialties (Medicine, Gynecology, Pediatrics)	All Govt. and private hospitals and medical teaching hospitals	• CMCH and Ma o Shishu are the largest providers of these services. Due to communicable disease burden, Chittagong has a high demand in these specialties. Currently, hospitals are over-burdened due to high demand in these specialties and require capacity building to cater to the service needs.
General surgery	All private and Govt. hospitals	• General surgery procedures are done in almost all private hospitals
Cardiac sciences	CMCH, Metropolitan, Max	• Due to the dietary habits the incidence of cardiac diseases has increased creating a high demand for service in cardiac sciences. • CMCH and Metropolitan are the only hospitals providing tertiary care services like PTCA and CABG. Max hospital has recently started and provides tertiary services exclusively in Cardiac. • More no. of private hospitals are trying to introduce cardiac services but facing an acute shortage of specialists. • Medical colleges in Chittagong (both private and Govt.) doesn't provide PG course in Cardiac sciences.

Specialties	Providers	Remarks
Neurosurgery	CMCH, Private hospitals like Metropolitan, National, CSCR	• There are about 4-6 Neurosurgeons in the Chittagong city. They primarily work full time in CMCH and on call basis in private hospitals. • Basic procedures such as craniotomy are done in these hospitals. High end neurosurgical procedures require infrastructure upgradation as well as more no. of specialists which currently both private and Govt. hospitals are lacking. • People with good paying capacity travel to Dhaka for procedures like brain tumor removal and spinal injuries. • Chittagong hospitals get significant no. of trauma patients and to cater to them a complete neurosurgery set up is required.
Neurology	CMCH	• Similar to Neurosurgery even the Neurologists are very less in no. in Chittagong. CMCH is the only hospital having full time Neurologists. They work on part time basis in private hospitals for treating patients. • Metropolitan is coming up with a 150 bedded facility exclusively for treating stroke patients. • Chittagong is witnessing an increase in the demand for stroke patients due to lifestyle disorders.
Renal sciences	CMCH, private hospitals like Metropolitan, National, CSCR	• Renal services like Dialysis and other minor procedures such as stone removal etc. are done in majority of the healthcare providers. High end procedures like kidney transplant are still not done, although Chittagong is witnessing an increase in the no. of chronic renal failure patients. • In comparison to other super specialties Chittagong has adequate no. of nephrologists but at the same time with increasing demand and no. of hospitals more no. of specialists are required.
Orthopedics	CMCH, private hospitals like Metropolitan, National, CSCR	• Major Ortho procedures such as TKR and THR are not done in existing hospitals. • Need for provision of specialized orthopedic procedures
Transplant medicine	Not available	• No hospital provider offers transplant procedures.

Source: Primary research, PwC Analysis

Service providers in Chittagong cater to few specialties but there is a need gap for quality care in the existing specialties. Tertiary Care Infrastructure is relatively less developed in the region and only Chittagong Medical College Hospital & few private hospitals are offering cardiology (catheterization lab), Cardiac surgery & few specialized Orthopedic and Neurosurgery procedures. However volumes of such specialized treatment are very minimal. In private medical teaching hospitals, the major specialties driving the bulk of patient workload includes internal medicine, women & child, general surgery etc. The upgraded secondary and tertiary care hospitals have fair amount empanelment of specialists (majorly from Chittagong Medical College). The specialty need gap in Chittagong is depicted as below:

Figure 32 : Specialty need gap in Chittagong



Source: PwC Analysis

It is evident from the above that, there are very less no of providers in Chittagong offering super specialty care like Neuro Surgery, Neurology, Orthopedics, Cardiac Surgery, Nephrology, Oncology. Specialties like transplant medicine, surgical oncology, radiation oncology, plastic surgery are not available. This shows a gap in super specialty care in Chittagong.

4.4. Manpower need gap

There is a huge shortage of doctors and nurses in Chittagong, impacting the overall service provision in existing hospitals. With increasing number of private hospitals the demand for specialist doctors and nurses is increasing. The existing medical manpower is not able to cater to the current demand.

Chittagong city is highly deficient in specialist doctors like Neuro and Cardiac doctors since the medical colleges offer PG courses only in few specialties. There are only 3-4 nursing institutes in the Chittagong. The nursing manpower is not able to cater to the current demand. Deficiency of specialized nurses affects the quality care in hospitals specifically the super specialty care in Neuro and Cardiac. (Shortfall calculated based on LMIC average of 0.8 for doctors and 1.3 for nurses (per 1000 population)

Figure 34 : Nursing manpower requirement in Chittagong

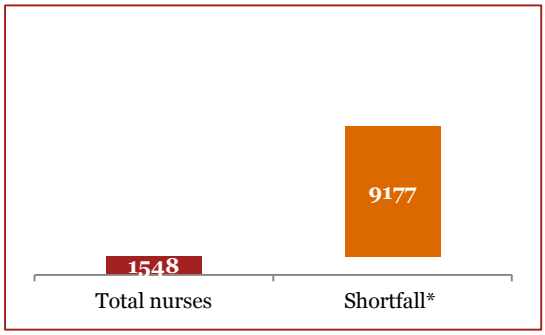
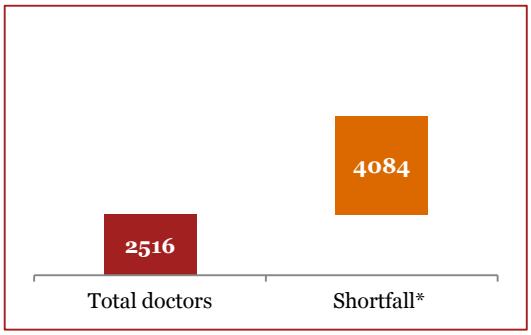


Figure 33 : Doctors requirement in Chittagong



Source: Primary research, PwC Analysis

4.5. Healthcare financing

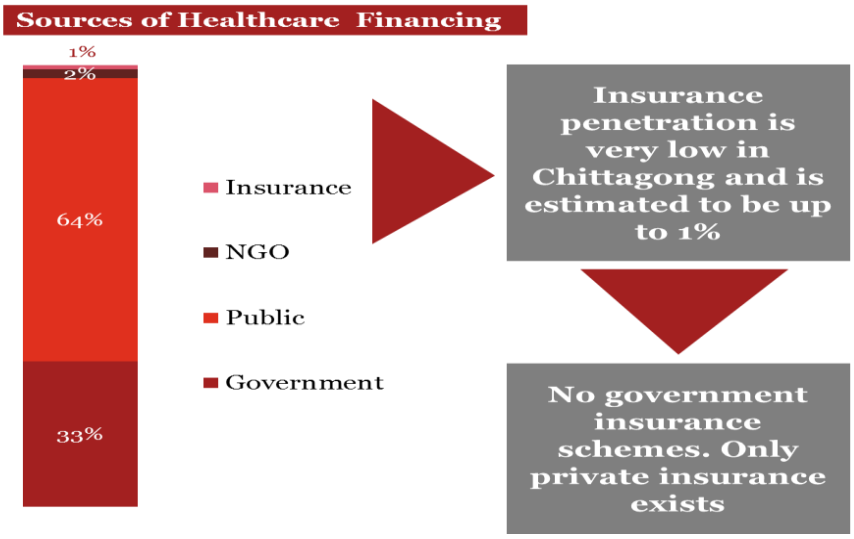
Healthcare financing in Bangladesh is characterized by low level of public funding, high out of pocket expenditure and negligible penetration of health insurance mechanism. An overview of key financing indicators is presented in the following table:

Table 17 : Healthcare financing overview in Bangladesh

Sr. No	Indicators	Bangladesh	LMIC Average
1	Total Health Expenditure (% of GDP)	3.7	4.1
2	General government expenditure on health as % of total expenditure on health	36%	36%
3	Private Expenditure on health as % of total expenditure on health	64%	64%
4	Out of pocket expenditure as % of private expenditure on health	96%	87%
5	Per capita total expenditure on health (PPP,$)	61	152

Source: MoHFW, Primary research, PwC Analysis

Figure 35 : Healthcare financing overview in Chittagong



Source: MoHFW, Primary research, PwC Analysis

Insurance penetration is very low in Chittagong and estimated to be up to 1%. Those who can afford healthcare costs pay out of pocket and get treatment in private hospitals. Paying capacity of population of Chittagong is good due to which they go to Dhaka for high end procedures. More than 95% of business in private hospitals is cash business. Government hospitals are overburdened with poor patients. Insurance scheme can enhance their affordability.

5. Regulatory Review

The applicable regulations for development of the project are described as below:

5.1. Zonal regulations as per Detailed Area Plan for Chittagong Metropolitan Master Plan issued by Chittagong Development Authority

CRB building and surrounding site falls under "Conservation and special hill landscape" under DPZ 03 as per DAP of Chittagong Metropolitan Master Plan. Under this zone:

- No hill cutting and tree removing should be allowed
- All surrounding open spaces should be protected
- Civic building/institute/tourism related building might be permitted
- Hospital area may be developed with sensitivity to replace existing dilapidated houses with more intensive development
- No commercial use or apartment building is permitted
- Heritage structures should be protected
- New developments should be in sync with the existing architecture

5.2. Chittagong city building regulations 2008

The applicable provisions of Chittagong City Building Regulation 2008 issued by Chittagong Development Authority (CDA) are described as below:

Approvals required prior to commencement of construction:

Prior to the commencement of construction, following approvals need to be obtained from CDA:

- Land use clearance
- Special Project Permit for large and specialized projects
- Building Permit

Type of Projects requiring Special Project Permit:

Projects of following types will require special project permit from Large & Special Project Approval Committee of CDA:

- Any residential complex with more than 40 residential units;
- Any project over 7000 sq. ft. floor area;
- Any project over 5000 sq. ft. floor area;
- Any project directly connecting with Highway or main road;
- Any project within the proximity of 250 meters of any historical or architectural heritage building;
- Any project within the proximity of 250 meters of any natural beauty;
- Any project within the proximity of 250 meters of any hill area beauty;
- Any project within 250 meters of sea beach;
- In case of projects which claim to recover land from sea

The Project site is located just opposite to the CRB building, which is heritage building and hence the project requires special project permit.

FAR and Maximum Ground Coverage Regulation

The proposed project of redevelopment of railway hospital falls under Category D (Healthcare) building. Applicable Floor Area Ratio (FAR) and Maximum Ground Coverage (MGC) regulations for such type of building as per the provisions of Chittagong Building Regulations 2008 are tabulated as below:

Table 18 : FAR and Minimum Ground Coverage Regulation

Size of Plot		Building Category: D (Healthcare)		
Square meter	**Katha**	**Normal Width of the Road (in meters.)**	**FAR**	**MGC (%)**
134 sq. meters. or less	2 katha or less	**	**	**
134-201	2-3	**	**	**
201-268	3-4	**	**	**
268-335	4-5	**	**	**
335-402	5-6	6.0	3.25	60.0
402-469	6-7	6.0	3.25	60.0
469-536	7-8	6.0	3.25	60.0
536-603	8-9	9.0	3.50	57.5
603-670	9-10	9.0	3.50	57.5
670-804	10-12	9.0	3.75	55.0
804-938	12-14	9.0	4.00	55.0
938-1072	14-16	9.0	4.25	52.5
1072-1206	16-18	9.0	4.50	50.0
1206-1340	18-20	9.0	4.75	50.0
More than 1340	More than 20	12.0	5.00	50.0
Any sq.mt	Any katha	18.0	Non-Restricted (No compulsion regarding FAR)	50.0*
Any sq.mt	Any katha	24.0	Non-Restricted (No compulsion regarding FAR)	50.0*

** The site area above 20 katha and road width of above 18m, Maximum of 75% of Ground Coverage would be permitted if more space after leaving the required setbacks is available and the podium shall be built at a height of at least 12m from the road level.*

The project site area of Chittagong railway hospital is 2.55 acres (10317 sqm). The abutting road to the site is CRB road which is approximately 18m wide. It falls under the category of "No compulsion regarding FAR" with 50% maximum ground coverage.

Setback Regulation for Buildings up to 33m or 10 floors

The minimum front, back and each side setbacks for buildings up to 33m or 10 floors are tabulated as below:

Table 19 : Setback regulations

Size of Plot		Minimum Setback (in metres)		
Square meter	Katha	Front	Back	Each Side
134 sq. meters. or less	2 katha or less	1.5	1.0	0.8
134-201	2-3	1.5	1.0	1.0
201-268	3-4	1.5	1.5	1.0
268-335	4-5	1.5	2.0	1.25
335-402	5-6	1.5	2.0	1.25
402-469	6-7	1.5	2.0	1.25
469-536	7-8	1.5	2.0	1.25
536-603	8-9	1.5	2.0	1.25

Size of Plot		Minimum Setback (in metres)		
603-670	9-10	1.5	2.0	1.25
670-804	10-12	1.5	2.0	1.25
804-938	12-14	1.5	2.0	1.25
938-1072	14-16	1.5	2.0	1.25
1072-1206	16-18	1.5	2.0	1.25
1340 and above	20 and above	1.5	2.0	1.50

The applicable front, back and each side minimum setback for the project site will be 1.5m, 2.0m and 1.5m respectively.

Minimum Parking Space Required for Category D (Healthcare) Building

The minimum parking space required to be provided for different types of healthcare buildings are tabulated as below:

Table 20 : Parking Regulations

Occupancy Type	Minimum Parking Requirements
Hospital, Clinics	For every 5 bed 1 car parking
Others (Outdoor, Practice chambers)	For every 200 sq. meter 1 car parking
Health Research Institutes	For every 100 sq. meter 1 car parking

Note:

- There should be minimum space of 2.3 meters for parking 2 cars side by side.
- If there is separate entrance and exit for bus and trucks then the minimum length of entry and exit should be 4.25 meters. If there is no separate exit and entry for bus and trucks then the minimum length of entry and exit should be 6 meters

5.3. Rules & Regulations for establishing private medical colleges and administration 2011 (Revised) issued by Ministry of Health & Family Welfare, Government of Bangladesh

The provisions under "Rules & Regulations for establishing private medical colleges and administration 2011 (Revised) issued by Ministry of Health & Family Welfare, Government of Bangladesh are classified under following categories:

- Infrastructure related provisions
- Rules for starting academic curriculum
- Rules for application
- Granting of approval for establishing private medical colleges
- Process of getting academic approval
- Rules for administration of private medical college
- Field Visits & Evaluation

Infrastructure related provisions

- The private medical college can be established as registered trust/foundation/limited company.

- For establishing a private medical college consisting of 50 seats in a metropolitan city area, the college must have minimum 2 acres of land in its own name wherein it must have space of 100000 square feet for its academic building and 100000 square feet for hospital building.
- Outside metropolitan city area minimum land size required is 4 acres and the minimum square feet requirements for academic building and hospital building is same as in the case of metropolitan area.
- The land has to be in the name of the trust/foundation/limited company in which the private medical college has been established. At the beginning to begin the academic curriculum the private medical college has to have a floor space of 125000 square feet (combined floor space in academic building and hospital building) with proper infrastructure. Within 2 years the minimum criteria regarding floor space as mentioned above (i.e. 100000 square feet each for academic building and hospital building) and infrastructure has to be completed. For setting up college of greater number of seats than 50, then the floor space and infrastructure has to be increased proportionately.
- The private medical college and hospital has to be set up in allotted land only. Even temporarily it cannot be set up in rented building.
- A security deposit of 1 crore taka has to be made in any scheduled bank in the name of private medical college. Once the college gets approved the security deposit will go under the control of Ministry of Health and Family Welfare. This money cannot be withdrawn without prior approval from the Ministry of Health and Family Welfare nor can it be used for any expenditure. However as per the decision of Governing Body the private medical college authority after informing the Ministry can at the year-end withdraw the interest of the security deposit and transfer it to college accounts. The Scheduled Bank in which the security deposit has been kept will have to furnish an agreement letter to the Ministry of Health and Family Welfare agreeing to the terms and conditions as mentioned. No loan can be taken against the security deposit. If the college does not get approved then the college authorities can withdraw the security deposit. If the college is to be made on any individual person's name then extra 1 crore taka is needed for security deposit with all other conditions remaining constant.
- **Before beginning of the academic session of a 50 seat private medical college, at least 250 bed modern hospital (with 70% bed occupancy) and with required physical infrastructure should be there in running condition from 2 years before.** So, that it can be later converted into full-fledged medical training hospital. The hospital should have at least 10% seat reserved for rendering free treatment. The hospital should have all the modern facilities and modern amenities to render public healthcare service.
- **Both the academic building and the hospital building should be in the same campus. In no way will the idea of establishing 2 buildings in separate campuses will be accepted. The hospital should be established according to the number of seat of the medical college. The ratio to be maintained is 1:5 i.e. for a 50 seat medical college there has to have a 250 bed hospital.**

Rules for starting academic curriculum

- College authorities after getting approval from the Ministry of Health and Family Welfare cannot start their academic curriculum without getting written approval from concerned Public University or BMDC. If the college authorities fail to start the academic curriculum within 2 years after getting the required approvals then approvals received will be treated as cancelled.
- Before starting the admission procedure for students the college authorities should submit the entire details of human resource hiring according to the government approved human resource structuring and guidelines to the Ministry office. Any change in human resource composition has to be intimated to the Ministry on a quarterly basis.
- The resources hired for medical college should be permanent and not temporary. The qualification criteria for the professors should be according to the BMDC guidelines. The ratio of professor and students should be 1:10. The maximum age for professors should be according to the guidelines of the respective university. If needed then temporary professors, assistant professors can be hired however that should not be more than 25% of the allotment. Anyone who is currently in Government service cannot be taken as a temporary staff without prior permission of the concerned government department.
- The college should have all the required education facilities, modern library, sports facility, entertainment facility for the student's as well residential facility for the students in the campus.

- The college should have a reservation of 5% of the seats for the poor and meritorious students. Also the list of the students falling in this category should be given to the Ministry. The college authorities may charge fees according to government medical colleges from them.
- In order to establish a private medical college, the medical college and the attached hospital for running the MBBS course has to acquire the floor space, recruitment of teaching and technical staff, education materials like medical tools & kits and machines has to be according to the BMDC set standards.
- With every private medical college a sub district health complex and one community should be associated for providing field site training to the students.
- In every private medical college there should be one medical education unit and quality assurance program.

Rules for Application

- Applicant should apply according to the guidelines mentioned in the form (it will be available in the Ministry Office) to the Secretary, Ministry of Health and Family Welfare every year between January to April. While submitting the application the applicant should furnish a non-refundable deposit of 50 thousand taka in the name of Director, Medical Education and Public Health Development for 1st visit (for granting approval of rules and regulations) and for 2nd visit (for granting permission for beginning academic curriculum). The application should contain the names of other medical colleges situated near the proposed private medical college.
- After getting the application the Ministry will send the application to one of its offices for detailed examination and field visit. The Office under Ministry of Health and Family Welfare within 6 months after getting the proposal and after conducting detailed examination and field visits will present a report to the Ministry regarding whether the proposed private medical college can be granted approval or not. The Office will take help of the following committee for doing this work:
    - Director (Health Office)-President
    - Dean Faculty of Medicine, Respective University- Member
    - Professor/Assistant Professor of basic science- Member
    - Professor/Assistant Professor of clinical science- Member
    - Registrar/ Representative, BMDC, Dhaka- Member
    - Additional Secretary/Senior Additional Secretary of ministry of Health and Family Welfare- Member
    - Assistant Director (Medical Education) – Secretary
    - Committee can co-opt other members if needed.

Granting of approval for establishing private medical colleges

After getting the report from the Office under the Ministry of Health & Family Welfare and after discussing it with the Committee members in the Ministry of Health and Family Welfare, approval will be granted to the proposed medical college. After giving the approval, college authorities will be asked to fulfill the conditions for beginning academic curriculum. If it is decided that the proposed medical college will not be given approval then the reasons should be explained to the applicant. After approval is granted 200000 taka is needed to be submitted through treasury challan in government accounts.

Process of getting academic approval

- After conditions for beginning academic curriculum have been fulfilled and Ministry of Health and Family Welfare has been informed of submission of required amount of 200000 taka through treasury, the application will be sent to Office under the Ministry of Health and Family Welfare. The Office after doing examination and field visit will submit a report to the Ministry regarding whether the proposed private medical college should be given approval for beginning academic curriculum.
- After getting the report from the Office under the Ministry of Health and Family Welfare the matter will be presented to the Committee dealing with granting of academic approval. There the final decision regarding granting of academic approval will be taken. The final decision will be intimated to the applicant.

- After academic approval is granted then an amount of 100000 taka is needed to be submitted through treasury challan in government accounts. Academic approval will be given for a period of 2 years. After every 2 years the academic approval has to be renewed and without renewing the approval, no students can be admitted in the medical college.

Rules for administration of private medical college

- Before admission of students, private medical college has to take affiliation from the respective public university and get registered within 2 months with BMDC. After getting the affiliation and registration, private medical college has to intimate the Ministry. The college authority has to make sure that before students appear for their 1st professional exam, registration with BMDC is completed and intimated to the Ministry.
- Private Medical College has to follow the academic curriculum and syllabus like government medical colleges which follow syllabus of public universities and BMDC.
- Private medical college will follow the same rules regarding admissions like government medical college. The students will be given admission based on the merit list.
- Private Medical College has to take permission from Ministry of Health and Family Welfare before admitting students for the first time. Later if the college goes for any infrastructural development, increase in number of seats then permission from Ministry of Health and Family Welfare has to be obtained with recommendation from respective University.
- Private Medical College should not ask for permission for increasing the number of seats without recommendation from respective University.
- Private Medical College should not admit extra students other than what has been granted to them. If extra students have been admitted then the registration of the private medical college can be cancelled.
- Private medical college cannot use any government hospital/private hospital/ clinics for imparting practical training to its students other than its own hospital. However, for training in matters related to forensic medicine and radiotherapy, government hospitals can be used. However, prior agreement has to be made with authorities of the government hospital.
- Only after the first batch of the private medical completes and gets the degree then only will the college be eligible to admit foreign students. In that case the ratio of national and foreign students will be 75%:25%. In case there is a short fall in the number of foreign students, then national students will be admitted to mitigate the shortfall of foreign students. The rules and regulations followed by government medical colleges in case of admission of foreign students will be applicable to the private medical colleges as well.
- Structure of the governing body of the private medical college should be according to the respective public university. However the governing body of private medical college should have at least one member from Ministry of Health and Family Welfare.
- After taking the required approvals from the authority of Bangladesh Government, financial and technical aid can be taken from foreign donor agencies.
- All documents relating to the financial transactions should be maintained by the private medical college authority. Budget for the financial year should be submitted to the Ministry after getting it approved from the governing body of the college. Accounts should be audited by a registered audit firm and audit report should be submitted to the Ministry of Health and Family Welfare. The expenses relating to audit shall be borne by the college authorities. The selection of audit firm will be done by the governing body of the private medical college.

Field Visits and Evaluation

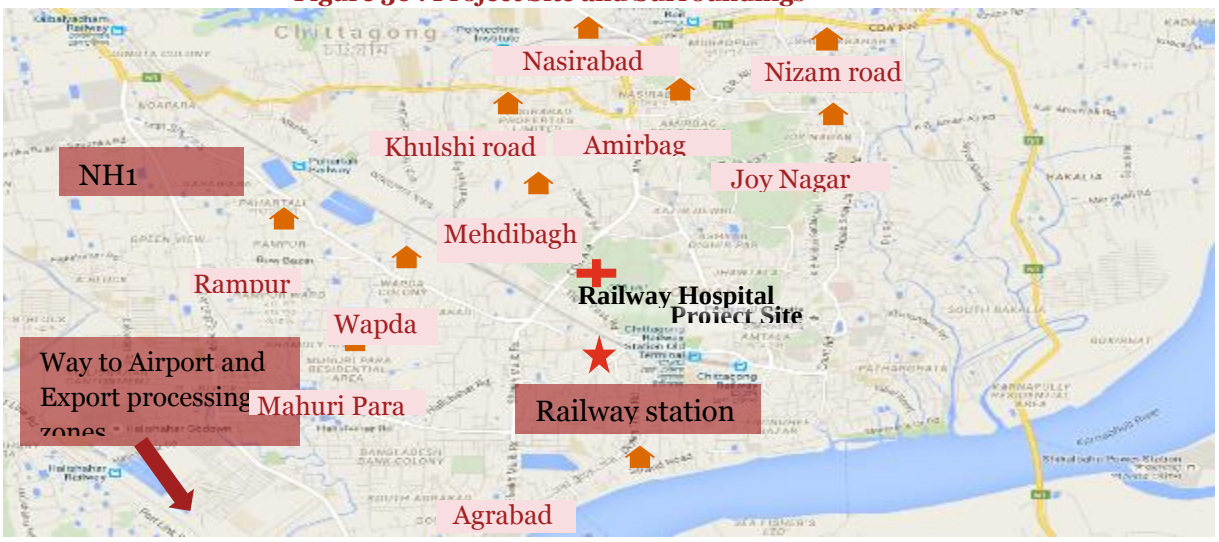
- To ensure whether the private medical college is being run according to the rules and regulations. Committee formed by Government will go for field visit once every year for the first 5 years and then once every 2 years.
- If it is found during visit that the private medical college is not being run properly then the number of seats for admission can be reduced and also temporarily the right of admission can be suspended. If the non-compliance is serious and non-rectifiable then the registration of the college might be cancelled. Any decision in this regard will be taken by the Ministry and no notice or reason will be given to the private medical college authority.

6. Technical Assessment

6.1. Site Assessment and Project Plan

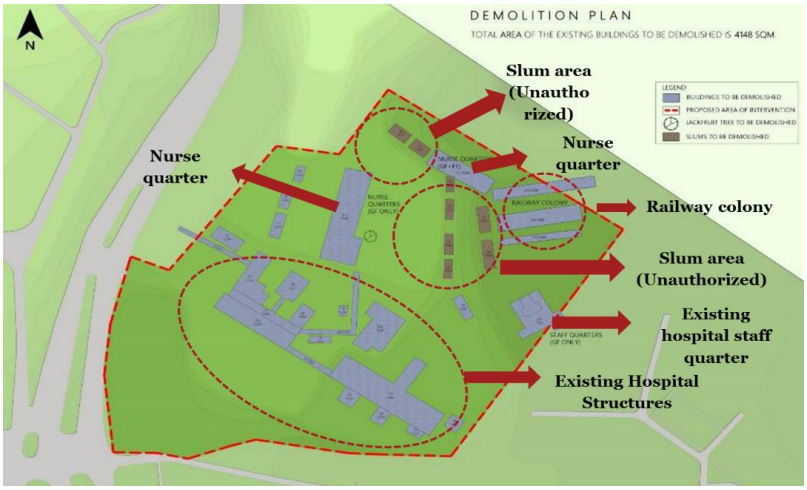
The existing railway hospital is located opposite to Central Railway Building (CRB) and is well connected with major city nodes and residential areas. Chittagong railway station is at a distance of approximately 3km and International airport is at a distance of 17 km from the railway hospital. The surrounding environment of the site is covered with hill and vegetation, which provides a pleasnt environment. The location of the railway hospital is depicted as below:

Figure 36 : Project Site and Surroundings



The upgradation and modernization of existing hospital was initially proposed on the 6 acres of land comprising the existing hospital and adjoining land behind. The site assessment was carried out for development of a multi-specialty hospital, a medical college or nursing institute. As part of the project planning it was proposed to demolished the existing IPD block and construct a green field multispecialty hospital in first phase. The nursing institute/paramedical institute was proposed to be developed in the second Phase upon clearance of the land behind the hospital from the existing encroachment. The OPD block was proposed to be retained. The demarcation of the existing hospital premises and adjoining land have been reproduced in the below map.

Figure 37 : Earlier Demarcated Site for Medical College and Hospital



The findings of assessment of the aforesaid site are as below:

- The site behind the existing hospital has authorized and unauthorized settlements which require rehabilitation
- The existing IPD Block needs to be demolished and the existing services need to be continued during the construction period

The existing services in the railway hospital includes:

Table 21 : Services provided by the railway hospital

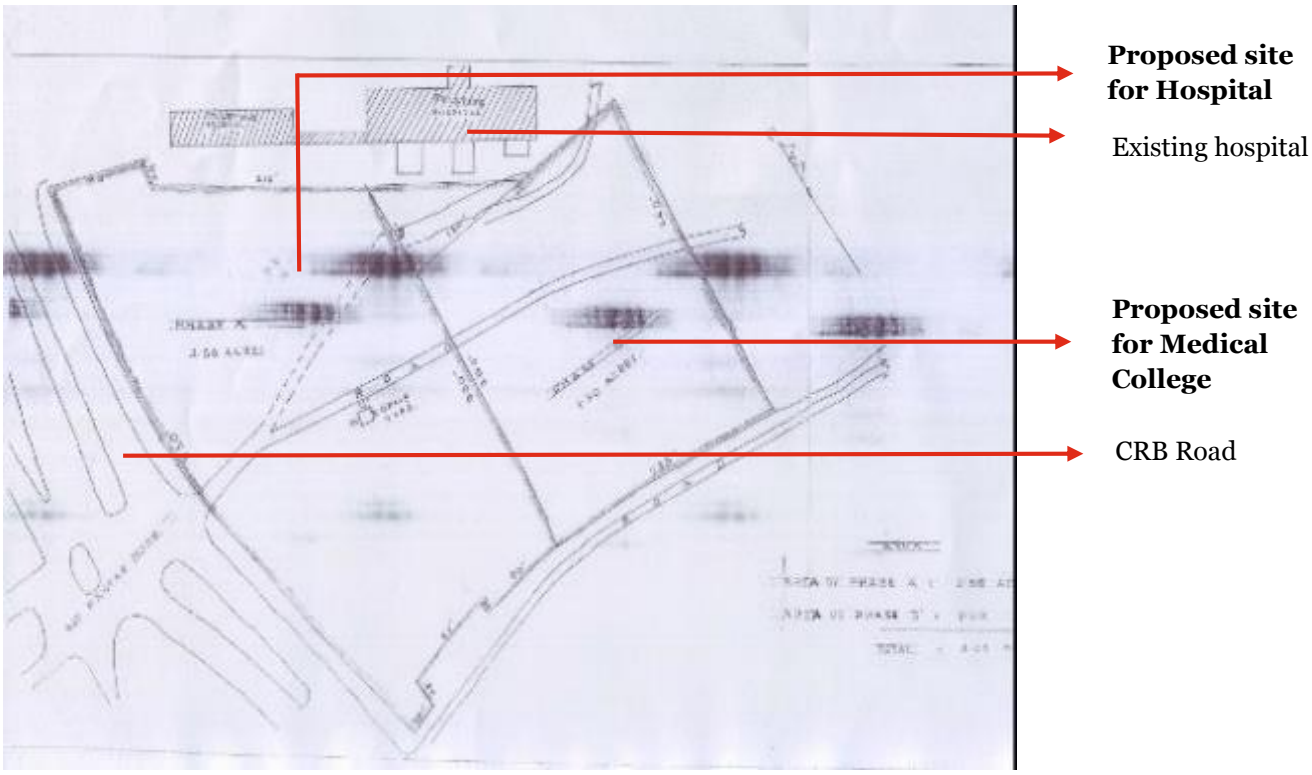
Services being provided by the Railway hospital	
Specialties	**Remarks**
Medicine	Consultation/ Admission services provided
Obs & Gynae	Consultation/ Admission services provided (Provision for Normal Delivery only)
General surgery	Consultation/ Admission services provided (Provision for minor procedures only)
Diagnostic (Lab/Radiology)	Basic investigations like CBC, Blood sugar, Serum creatinine, SGPT/SGOT, Blood group, Lipid profile, Urine routine, X ray
Utilization	
OPDs	100-150 per day
Admissions	2-4 per day
Pre employment check	3000 test conducted in last one year
Surgeries	2-3 per month

Source: Primary research

For continuing the existing services during construction period, the option of shifting the existing services in the OPD block was assessed and it was found that the existing OPD block could not be used for continuing the existing services due to inadequate space and structural challenges for expansion. Also construction of a new IPD block would delay the project by 2 to 3 years and also requires additional investment of around BDT 13.00 Cr.

In view of the aforesaid challenges, it was decided by BR to construct the project on a new land. For this purpose, 2.55 acres of land for construction of proposed hospital and 1.5 acres of land for medical college, as depicted in the site map below, were identified. As per the details provided by BR, the identified site for hospital has 8 authorized structures and 6 unauthorized structures and the identified land for medical college has 41 authorized structures and 11 unauthorized structures, which shall be rehabilitated by BR. The demarcation of the site on the map and dimensions as provided by BR is shown as below:

Figure 38 : Project Site Demarcation on the site map



Source: Bangladesh Railway

6.2. Project Configuration

In view of the analysis undertaken in the previous section, following three options of project configuration were analyzed:

- Hospital to be constructed and operationalized in the first phase and upon meeting regulatory requirements, medical college can be established in the second phase.
- Hospital and Nursing Institute can be developed on identified sites.
- Only hospital to be developed on 2.55 acres of site.

6.2.1. Hospital & Medical College

During our market study, regulatory review and consultation with potential investors, we found certain challenges with respect to operation of medical college Bangladesh. The key challenges involved include:

- **Regulatory Constraints:**
  - For establishing a private medical college, the college must have land in its own name. The land has to be in the name of the trust/foundation/limited company in which the private medical college has been established.
  - As per the regulation for establishing medical college 2011, a hospital has to maintain an occupancy level of 70% for 2 years for getting approval for commencement of academic session, which is difficult for the newly established hospitals to achieve. Also the medical education in Bangladesh has witnessed a change in the admission procedure in 2015 in the form of a centralized exam conducted by the government for all medical colleges (both Government and Private) and an eligibility criteria has been laid down by the government for the exam, which in the opinion of investors is challenging and reduced

the student inflow. Recently Institute of Applied Health Sciences (IAHS) under USTC, a private medical college in Chittagong has reduced its annual intake from 200 to 80.

- **Oversupply of medical colleges:** In Chittagong there are five private medical colleges which are largely dependent on the student fees and the income from the hospitals is not a major contributor in the revenue earned. As mentioned under section 6.3 of this report only one private medical college hospitals (e.g. Mao Shishu medical college teaching hospital) established long back (>10yrs) is able to maintain an average occupancy level of 85%. Other medical colleges are having an occupancy below 50% except Institute of Applied Health Sciences (IAHS) under USTC, which has 55% of occupancy. This shows an oversupply situation and profitability challenges being faced by the medical college operators in Chittagong.

- **Low consumer attractiveness**: The objective of a medical college hospital is to impart training and research rather and has limited focus on service quality and consumer oriented healthcare provisioning. As a result, majority of these teaching hospitals cater to economically low segment of the population. Moreover, infrastructure and ambience of these medical college hospitals is also not an attractive proposition for a high end consumer.

- **High cost of medical education:** Private medical colleges charge a fee that varies between BDT 11 lakh – BDT 15 Lakhs and not many students can afford private medical education due to this high cost.

In view of the aforesaid challenges, following intervention for implementation is suggested:

- The Concessionaire shall construct and commence operation of hospital in the first phase on 2.55 acres of land. As per the regulation for establishing private medical college and administration 2011, a hospital has to maintain an occupancy level of 70% for 2 years for getting approval for commencement of academic session. As per the feasibility assessment, the proposed hospital will achieve 74% occupancy on 8th year of concession period. Hence medical college can only be established on 10th year of concession period. Therefore, upon achievement of 70% occupancy, the Concessionaire shall communicate to BR about its intent to establish medical college within 3 months from the date of achievement of 70% occupancy for continuous period of 2 years. Within 6 months from the date of communication of its intent, BR shall handover the 1.50 acres of land free from encumbrances to the Concessionaire for establishment of medical college. In case the concessionaire fails to provide its consent within the stipulated time period, the Authority would have the right to select another private partner for the medical college subject to the rules and regulations applicable at that time. In such case, the concessionaire would have the obligation to provide all necessary support to the private partner for smooth operation of medical college. BR shall obtain required approvals for establishment of medical college and the concessionaire shall support BR in this regard.

- Viability Gap Funding (VGF) in terms of capital grant to the extent of 30% (as per extant rules) of the capital cost of medical college is required to be provided.

- The Concession period of 99 years (40 years with renewal for additional in two instances with 33 years and 26 years) need to be proposed for hospital and medical college.

6.2.2. Hospital & Nursing Institute

As mentioned under "Market Dynamics in Chittagong" section of this report, there is acute scarcity of nurses for providing inpatient care in Bangladesh. Also, with more physicians than nurses, the role of the nurse is very limited and doctors perform many tasks that nurses are qualified to do, due to a lack of confidence in the capability of nurses. Hence there is a demand for nursing institute. The nurses qualified

from this institute not only fulfill the nurse requirement of the proposed hospital but also contribute towards improvement of demand-supply deficit of nurses in Bangladesh.

In view of the above, under this option, hospital would be developed on 2.55 acres of land adjacent to the hospital and nursing institute could be developed on the 1.5 acres of land. BR shall have the responsibility to make available the lands for the hospital and nursing institute. Concessionaire will have the responsibility to build, operate the hospital and nursing institute during the concession period of 40 years and transfer the same to BR after the concession period. No VGF would be required under this option.

6.2.3. Only Hospital

The proposed 250 bed hospital project is self- sustainable and no VGF would be required. The proposed land of 2.55 acres is adequate for a 250 bed hospital and no additional land would be required. Concessionaire will have the responsibility to build, operate the hospital and nursing institute during the concession period of 40 years and transfer the same to BR after the concession period.

A summary of key requirements of the aforesaid three options are tabulated as below:

Table 22 : Options of Project Configurations

Options of Project Configuration	Key requirements		
	Additional Land required	**VGF required**	**Concession Period**
Hospital and Medical College	Yes	Yes	99 years (40 +33+26)
Hospital and Nursing Institute	Yes	No	40 Years
Only Hospital	No	No	40 Years

In view of the above analysis, it is inferred that hospital and medical college can be established in two phases. In first phase a 250 bed multi-specialty hospital can be constructed in first 5 years of concession period. Thereafter, upon meeting with regulatory requirements as mentioned under section 6.2.1 of this report, a 50 seat medical college can be established on identified 1.50 acre of land. As the hospital is to be developed in the first phase, the technical assessment and financial feasibility has been carried out with respect to the identified land for the hospital component.

6.3. Project Planning & Layout

In order to assess the feasibility of the proposed hospital project, a tentative project planning layout has been prepared for developing the hospital in a 7 stories building with one basement for support services and parking. However, the concessionaire could adopt their own project planning for establishing the proposed hospital on 2.55 acres of land.

The key features of the indicative layout plan prepared for the project are as below:

6.3.1. Key features of Project Planning

- 250 bed multi-speciality hospital is proposed with mix of 56 ICU beds and 194 single/double/ward beds.
- The hospital is proposed to be a G+6 structure with lower three floors comprising OPD, diagnostics and treatment block and Upper four floors comprising Inpatient block

- A Basement of ~ 76,500 Sq.ft.is proposed out of which 23900 Sq.ft. proposed for hospital support and engineering services and 52600 sft proposed for parking, which can accommodate approximately 140 cars.
- The total estimated built up area including basement comes to 2,20,569 Sq. ft.
- Internal roads with separate entry and exit is proposed for smooth vehicular movement. An exclusive entry for emergency care is also planned.

6.3.2. Area Statement

Hospital Building

The proposed multi-specialty hospital is a G+6 storied building with total built up area of 13,384 Sq.m. There will be facilities like emergency room (ER), Radiology, Out Patient Department (OPD), Medical Intensive Care Unit (MICU), Endoscopy, Recovery, Labour Unit, Operation Theater (OT) Complex, Coronary Care Unit (CCU), Cath Lab and Surgical Intensive Care Unit (SICU) and Inpatient Department (IPD). The breakup of the area is shown below:

Table 23 : Area of Proposed Hospital Building

Sl. No.	Floor	Departments	Built-Up Area (in Sq.m)
1	Ground	ER, Radiology, OPD	2848
2	First	MICU, Endoscopy, Recovery, Birthing unitmplex	2136
3	Second	CCU, Cath lab, SICU, OT complex	2136
4	Third	Inpatient ward	1566
5	Fourth	Inpatient ward	1566
6	Fifth	Inpatient ward	1566
7	Sixth	Inpatient ward	1566
	Total		**13384**

Basement

In order to support operation of the hospital, a basement would be constructed comprising engineering, hospital support services and parking. The area details of the same has been tabulated below:

Table 24 : Area of Proposed Basement

Sl. No.	Floor	Departments	Built-Up Area (in Sq.m)
1	Basement	Engineering services, Hospital Services and Parking space	7115
	Total		**7115**

The lay out plans are enclosed under **Annexure II**

6.3.3. Indicative Service Mix

An indicative mix of services as tabulated below have been designed in order to assess the feasibility of the proposed project mix. However, the concessionaire shall have their own assessment and service mix subject to the minimum requirement to be specified in the RFP.

Particulars	Service Mix
Medicine	Anaesthesiology, Nephrology, Cardiology, Neurosciences, Dermatology & Venerology, Dialectology & Endocrinology, Ophthalmology, Dentistry, Physical Medicine & Rehabilitation, ENT, Gastroenterology, Psychiatry
Surgeries	General Paediatric Surgery, GI Surgery, ENT, Surgical Gastroenterology, Urology, Ophthalmology, Cardiology (Angioplasty, Angiography), Orthopaedics (Arthroscopy, Lumbar spinal fusion), Obstetrics & Gynecology (Hysterectomy, High risk pregnancies, Vulvectomy)
Diagnostic	CT Scan, MRI, Mammography, Digital X-Ray, Ultra-sound (Color Doppler)

7. PPP Structure of the Project

The proposed project of up gradation and modernization of the existing railway hospital under PPP mode has been structured based on the discussions held during the meeting on 21st March 2016 with the objective of maximization of revenue to BR. The PPP structure designed for the project is described as below:

7.1. PPP Structure

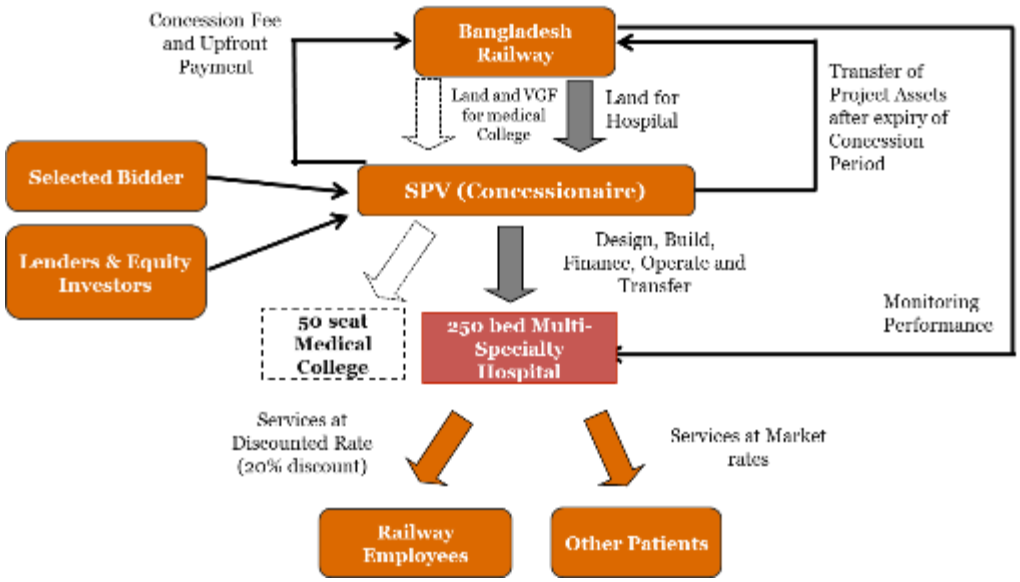
It is proposed to form an exclusive Special Purpose Vehicle (SPV) for the project. The SPV shall be the concessionaire, who shall have the responsibility of design, build, finance, operate the hospital during the concession period and transfer the project assets upon expiry of the concession period. Upon meeting the regulatory compliance as mentioned under section 6.2.1 of this report, the concessionaire shall intimate BR about its intent to establish 50 seat medical college within 3 months. Within 6 months from the date of communication of intent, BR shall handover the identified 1.50 acres of land free from encumbrances to the concessionaire for development of medical college. In case the concessionaire fails to provide its consent within the stipulated time period, the Authority would have the right to select another private partner for the medical college subject to the rules and regulations applicable at that time. In such case, the concessionaire would have the obligation to provide all necessary support to the private partner for smooth operation of medical college. BR shall obtain required approvals for establishment of medical college and the concessionaire shall support BR in this regard.

The detailed obligations of the concessionaire and Authority shall be specified in the concession agreement.

The Concessionaire shall pay the quoted annual concession fee as per the financial bid, to the authority during the concession period. In addition to this, there will be a one-time non-refundable upfront payment payable by the Concessionaire to the Authority prior to the signing of Concession Agreement.

As part of pricing of services, the Concessionaire shall be free to determine and collect the charges for services in line with the market rates from general patients and BR employee would be given a discount of 20% on market rate for availing the medical services. The following figure depicts the proposed PPP project structure. The dotted lines in the diagram shows the medical college component of the project:

Figure 39 : PPP Structure of the Project



Summary of PPP structure for the proposed project has been summarized below:

Sl. No.	Particulars	Remarks
1.	Project	250 bed multi-speciality hospital to be constructed and operationalized in the first phase. Upon meeting the regulatory compliance as mentioned under section 6.2.1 of this report, the concessionaire shall intimate BR about its intent to establish 50 seat medical college within 3 months. Subsequent to this within 6 months, BR shall handover the identified land free from encumbrances to the concessionaire for development of medical college. In case the concessionaire fails to provide its consent within the stipulated time, the Authority would have the right to select another private partner for the medical college subject to the rules and regulations applicable at that time. In such case, the concessionaire would have the obligation to provide all necessary support to the private partner for smooth operation of medical college.
2.	Authority	Bangladesh Railway
3.	Concessionaire	Special Purposed Vehicle (SPV) formed by the preferred bidder
4.	Proposed Land	2.55 acre of land to be handed over by the BR to the concessionaire in the first phase. Upon compliance with regulatory requirements and upon communication of consent to establish the medical college, 1.50 acres of land will be handed over to the concessionaire by BR.
5.	Payments to be made to BR by the concessionaire	Upfront payment and annual concession fees
6.	Tariff	Market rate for general patients and 20% discount on market rate for BR employees
7.	Monitoring of performance	Will be done by the Authority as per the terms of concession agreement
8.	Transferring the project assets	After expiry of the concession period, the project assets shall be handed over to the Authority. The authority may extend the concession period based on performance of the concessionaire.
9.	Viability Gap Funding (VGF)	VGF in the form of capital grant as per applicable rules to be provided by BR to the concessionaire for medical college component upon handing over of the 1.50 acres of land.

8. Financial Feasibility Analysis

The financial viability analysis of the recommended project structuring option is conducted in order to assess the financial feasibility of the project for private sector participation and to finalize the terms of PPP structure. The financial viability has been assessed based on the key financial indicators namely project IRR, equity IRR and DSCR. In addition to this, a sensitivity analysis with respect to the key variable factors of the project has been conducted to assess the sensitivity towards risk of changing scenarios. The key assumptions and findings of the financial analysis are summarized as below:

8.1. Project Cost

The key assumptions considered for estimation of project cost has been given below:

- The proposed project is to be developed in five years. In the first 3 years of concession period 150 beds shall be made operational and remaining 100 beds shall be operational in next two years of concession period. The total construction period for hospital is assumed to be 5 years.
- The construction cost is assumed as BDT 4700 per sq. ft. for hospital building.
- The estimated cost of medical equipment comes to BDT 65.03 Cr. The cost break- up of the medical equipment is provided under Annexure III.
- The other components considered under the project cost includes HIS system (BDT 20.00 Cr), IT hardware & licensing (BDT 50000 per bed) and upfront payment to Bangladesh Railway (BDT 5.00 Cr
- Project development fee payable to PPP Authority is considered as BDT 3.50 Cr.
- Interest during construction period is estimated and capitalized as part of the project cost.
- Preliminary & pre-operative expenses of 5% of construction cost has been assumed which include project management, independent engineer cost, manpower during construction, approval expenses etc.
- The project contingency of 8% of construction cost to meet the unforeseen costs during the construction period and technical- know -how of 5% of construction cost towards site survey & investigations, design and preparation of DPR is assumed.
- Annual cost escalation during construction period is assumed as 6.66% based on the average annual inflation rate of Bangladesh from 1994 to 2015.

Based on the aforesaid assumptions, the total estimated project cost comes to **BDT 248.03 Cr.** The detailed break- up of the project cost is given under.

Table 25 : Project Cost

Sl. No.	Particulars	Project Cost (BDT Cr)
1.	Construction Cost Hospital	67.68
2.	Medical Equipment	65.04
3.	IT Hardware & licensing	1.25

Sl. No.	Particulars	Project Cost (BDT Cr)
4.	Lifts and HIS System	22.50
5.	Cost of STP	0.60
6.	Land Development	1.47
7.	Construction of Basement	15.31
8.	Preliminary and pre-operative expenses	8.70
9.	Project Contingency	14.60
10.	Technical know-how	9.86
11.	Upfront Payment to BR	5.00
12.	Project Development Fees	3.50
13.	Margin For Working Capital	1.20
14.	Interest During Construction	17.27
15.	Cost Escalation during construction period	14.05
16.	**Total Project Cost with escalation (BDT Cr)**	**248.03**

8.2. Means of Finance

The capital structure of the project is assumed to be a combination of 40% equity and 60% of debt. The financing assumptions are summarized as below:

Table 26 : Means of Finance

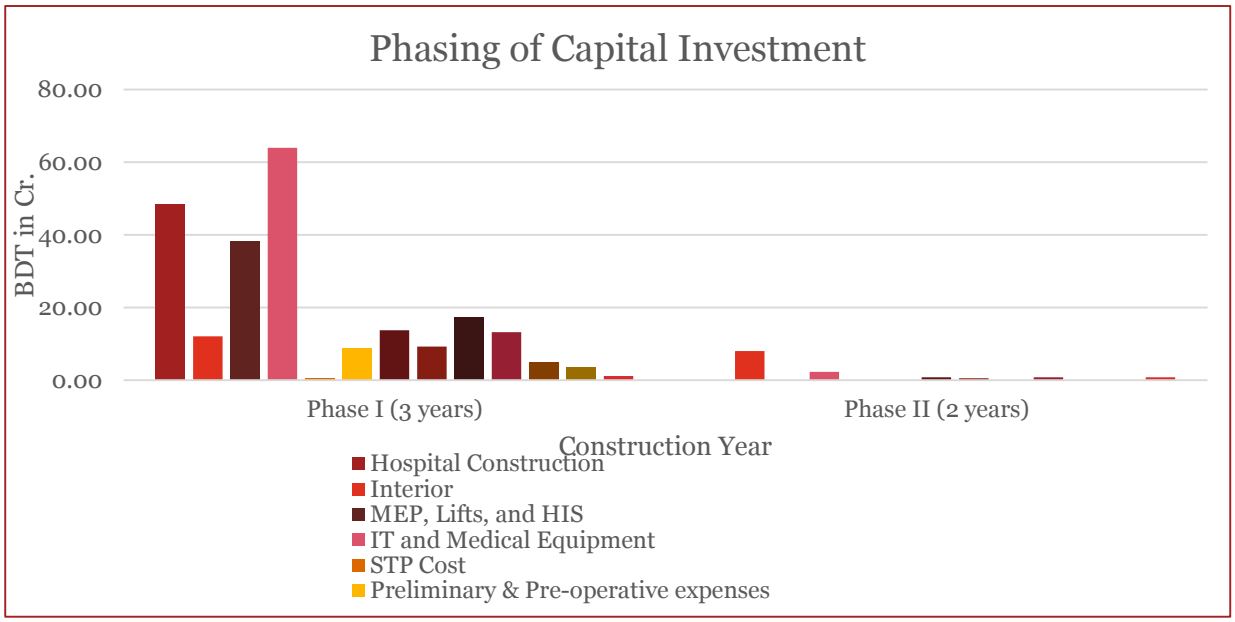
Sl. No.	Particulars	Figures
1.	Equity	40% of Total Project Cost
2.	Debt	60% of Total Project Cost
3.	Cost of Debt	12% p.a.[9]
4.	Cost of working capital loan	12% p.a.[10]
5.	Debt Draw Down	4 Years
6.	Moratorium Period	1 Year
7.	Debt Repayment Period	7 Years
8.	Debt Tenure	12 Year
9.	Repayment Schedule	Quarterly

[9] Source: Bangladesh Bank
[10] Source: Bangladesh Bank

8.3. Phasing of Investment

Since, the construction of the proposed hospital would be in two phases, the capital inflow would also be in the same line. The Phase I will be for 3 years and Phase II will be for 2 years. In Phase I, 150 beds would be made operational and in the Phase II, the remaining 100 beds would be made operational. The civil construction cost for 250 beds would be made in Phase I. Only capital cost pertaining to interior, medical equipment & furniture and IT hardware & licensing will be phased out in line with the operational beds. Accordingly the proposed capital investment in Phase I would be BDT 235.44 Cr and for Phase II would be BDT 12.59 Cr. The graphical representation of phasing of investment is depicted below:

Figure 40 : Phasing of capital investment



Source: PwC Analysis

8.4. Revenue Assumptions

The concession period of 40 years (including construction period) has been considered for the project. The project would commence operation from 4th year with 150 beds and would be fully operational with 250 beds from 6th year onwards. The operational revenue of the hospital would come from both BR patients and other general patients. The revenue for general patients has been estimated based on the Average Revenue per Occupied Bed (ARPOB) of BDT 27832, which is estimated based on the average ARPOB of United Hospital and Square Hospital in Dhaka with a reduction of 15% for Chittagong. As per the project structure, BR employees can avail the healthcare services at a discount of 20% on the market rate. Hence a discount of 20% on the ARPOB is assumed for revenue from BR employees. A year on year escalation of 5.85% [11] has been assumed for revenue projection during the concession period. Other assumptions considered for estimation of the revenue are tabulated as below:

[11] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

Table 27 : Revenue Assumptions

Sl. No.	Particulars	Unit	Remarks
1	Proposed Bed Capacity	Nos	250
2	Occupancy	%	The occupancy level for 1st year, 2nd year, 3rd year, 4th year of operation has been considered as 48%, 68%, 55%, 65% respectively. Subsequently the occupancy level has been normalized at 74% from 5th year of operation onwards. The aforesaid occupancy levels include occupancy for BR patients and for other general patients. The occupancy for BR patients comes to 8% for 1st and 2nd year of commercial operation, 5% for 3rd and 4th year of operation and normalized from 5th year onwards at 4%. This occupancy is based on following assumptions: • Total railway employees for East Zone is 13435 (as per details provided by BR) • Employees for Chittagong is considered as 55% as discussed with BR • Number of dependent per employee is considered as 4 • Hospitalization rate for BR employees considered as 30 per 1000 population as per Annual Health Bulleting 2014, DGHS, Government of Bangladesh.
3	ALOS	Nos	5 days in 1st year of operation, 4.9, 4.8. 4.7 and 4.6 in 2nd , 3rd, 4th and 5th years respectively and optimized at 4.5 days from 6th year onwards
4	ARPOB	BDT/Bed/Day	Based on primary research, ARPOB of BDT 27,832 has been assumed and thereafter 5.85% [12] of annual escalation has been considered.

8.5. O&M Cost Assumptions

The operational costs of the project include manpower cost, sr. consultant (specialist) costs, cost of consumables, Annual Maintenance Charges (AMC), Marketing cost, discount and other operating, general administration and overhead expenditures. Following assumptions, based on the industry experience, have been considered for estimation of Operation & Maintenance cost of the hospital:

Manpower Cost

The manpower cost is the major cost component in the operation cost. The total cost of manpower including senior consultant cost for the first year of operation comes to BDT 44.13 Cr., which is ~53% of the total operational cost of the first year. The detailed manpower requirement and cost for the same have been projected based on the bed occupancy. The senior consultant cost has been assumed to be higher during initial years. In first year of operation, the senior consultant cost has been assumed as 32% of revenue which has been normalized at 20% of revenue from 7th year of operation. Year wise projection of manpower cost during the concession period has been attached under **Annexure IV**.

[12] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

Other O&M Costs

Other O&M costs assumed based on industry standards are tabulated as below:

Table 28 : Other O&M Costs

Sl. No.	Particulars	Assumptions
1	Consumables	30% of revenue in 1st and 2nd year of operation, 29% and 27% of revenue in 3rd and 4th year of operation and 26% from 5th year of operation onwards
2	Annual Maintenance Charges (AMC)	0.5% of equipment cost
3	Marketing Cost	Marketing cost shall be higher during initial years of operation. Hence 2% of gross revenue is assumed as marketing cost during first 2 years of operation, there after 1% for remaining years of operation
4	Discount	Cost towards discount on healthcare services during initial 2 years assumed to be higher as 2% of gross revenue and thereafter 1% of gross revenue from 3rd year of operation onwards.
Cost of Hospital Services		
1	Patient meals (BDT)	BDT 300 per day per occupied bed
2	Housekeeping	BDT 150 per sq. ft per annum
3	Waste generated	0.43 kgs per bed per day
4	Cost for waste management	BDT 10 per kg
5	Medical Gases	BDT 30 per occupied bed per day
6	Laundry charges	BDT 50 per bed per day
7	Linen	BDT 2400 per bed per annum
General Administration Expenditure		
1	Telephone and communication Charges	BDT 20 per bed per day
2	Stationary and printing per bed	BDT 7500 per annum
3	Legal & Consultancy fees	0.5% of gross revenue
4	Conveyance & Travelling	BDT 2000 per annum per employee
5	Medical Books & Journal	BDT 20 lakhs per annum
6	Staff welfare	BDT 2400 per annum per employee
7	Staff uniform	BDT 2000 per annum per employee
8	Training	BDT 2000 per annum per employee
9	Credit Card commission	1% of 10% of revenue. Assuming 10% payments by credit cards

Sl. No.	Particulars	Assumptions
10	Licenses & Fees	BDT 5 lakhs per annum
11	Property Taxes	BDT 10 per sft per annum
12	Stationary and printing	BDT 8000 per annum per bed
Overhead Expenses		
1	Electricity and fuel cost	BDT 3,00,000 per occupied bed per annum
2	Repairs & maintenance	0.5% of building cost
Utilities & Miscellaneous		
1	Water requirement	365 kl per bed per annum
2	Cost of WASHA water supply	BDT 92.26per 1000 gallon
3	Miscellaneous expenditure	1% of total gross revenue
Replacement Cost		
1	Civil	0.5% of civil construction cost from 3rd year of operation
2	Minor Replacements of equipment	1% of equipment cost in 1st year of operation, 2% in the 2nd and 3rd year of operation and 3% thereafter up to major replacement of all equipment subsequent to which again the aforesaid % (1%, 2% and 3%) of equipment cost will continue.
3	Major Replacement of equipment	20%, 40% and 40% of total equipment cost in 10, 11 and 12 year intervals during operation period.

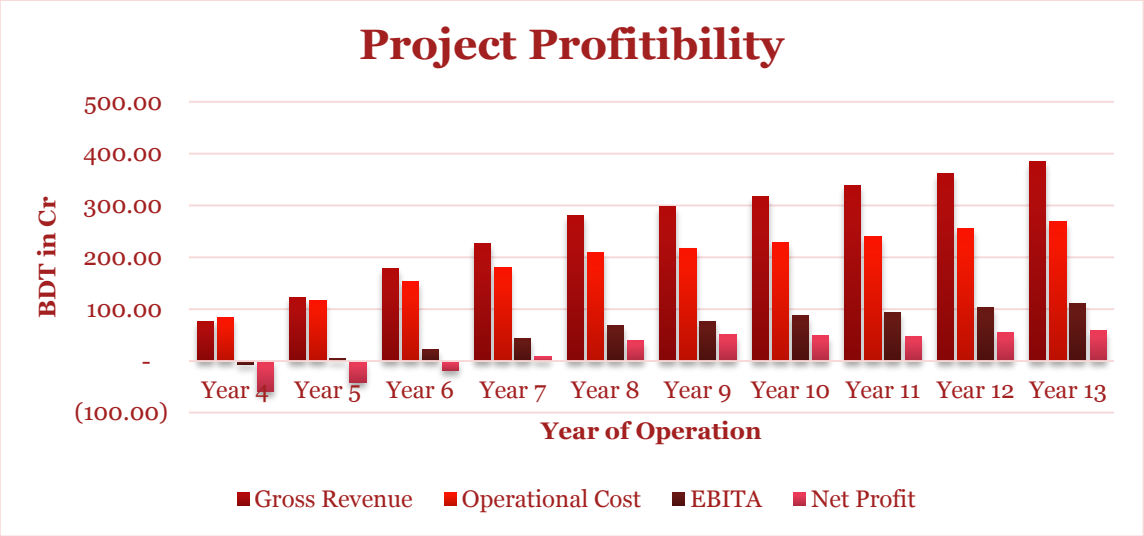
Annual cost escalation of 5.85%[13] has been assumed for O&M costs.

8.6. Revenue and Profitability

Based on the above assumptions, the revenue estimation and profitability analysis of the project has been worked out. The proposed project would register a top line of BDT 178.64 Cr with full operational bed capacity in 3rd year of operation and at an occupancy level of 55%. With regard to profitability, the project is expected to generate loss during first 3 years of operation due to low level of occupancy and higher operational costs. However, from 4th year of operation, the occupancy will improve to 65% due to increase in awareness and marketing and the bottom line of the project turns into positive. The trend of gross revenue, operational costs, EBITDA and profitability has been shown in the following graph:

[13] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

Figure 41 : Project Profitability



Source: PwC Analysis

The profit & loss projections, projected cash flow statement and balance sheet are attached under **Annexure V.**

8.7. Key Financial Indicators & Project Viability

The estimated key financial indicators are tabulated as below:

Table 29 : Key Financial Indicators

Sl. No.	Particulars	Remarks
1	Project IRR (40 years)	18.21%
2	Equity IRR (40 years)	19.17%
3	Average DSCR	1.68

The aforesaid key financial indicators are in line with the similar projects of PPP Authority. However, bidders may have their own independent assessment for financial viability of the project.

8.8. Benefits to Bangladesh Railway (BR)

The benefits to BR shall be in the form of upfront payment, annual concession fee and discounted services to BR employees. In addition to the above, upon expiry of the concession period the project assets shall be returned back to the BR. The land ownership shall always remain with BR. Accordingly a sensitivity analysis has been undertaken in order to finalize the amounts of benefits to BR. The outcome of the sensitivity analysis is summarized below:

8.8.1. Sensitivity Analysis

The sensitivity analysis among the three variables namely upfront payment, annual concession fee and discount to BR employees are shown as below. Based on the financial feasibility and discussion with BR, the base case is considered as BDT 5.0 Cr as upfront payment, BDT 2.50 Cr as annual concession fee for

6th year of concession period with 5.85%[14] annual escalation during the concession period and 20% as discount to BR employees. Various scenarios of sensitivity analysis are tabulated as below:

Table 30 : Scenario 1

Project IRR: Sensitivity analysis between Annual concession fees and upfront amount at 20% discount to be given to BR employees

Upfront Amount (BDT in Cr)	Concession Fees (BDT in Cr)						
	2.00	2.50	3.00	3.50	4.00	4.50	5.00
5.00	18.29%	**18.21%**	18.14%	18.06%	17.99%	17.91%	17.83%
6.00	18.25%	18.17%	18.10%	18.02%	17.95%	17.87%	17.80%
7.00	18.21%	18.13%	18.06%	17.98%	17.91%	17.83%	17.76%
8.00	18.17%	18.09%	18.02%	17.94%	17.87%	17.79%	17.72%
9.00	18.13%	18.05%	17.98%	17.90%	17.83%	17.75%	17.68%
10.00	18.09%	18.01%	17.94%	17.87%	17.79%	17.72%	17.64%

Table 31 : Sensitivity Analysis- Scenario 2

Project IRR: Sensitivity analysis between Annual concession fees and discount to be given to BR employees

Discount to BR employees	Concession Fees (BDT in Cr)						
	2.00	2.50	3.00	3.50	4.00	4.50	5.00
0%	18.90%	18.83%	18.76%	18.69%	18.61%	18.54%	18.46%
10%	18.60%	18.52%	18.45%	18.37%	18.30%	18.22%	18.15%
15%	18.44%	18.37%	18.29%	18.22%	18.14%	18.07%	17.99%
20%	18.29%	**18.21%**	18.14%	18.06%	17.99%	17.91%	17.83%
25%	18.13%	18.06%	17.98%	17.91%	17.83%	17.75%	17.68%

Table 32 : Sensitivity Analysis- Scenario 3

Project IRR: Sensitivity analysis between upfront amount and discount to be given to BR employees

Discount to BR Employees (%)	Upfront Amount (BDT in Cr)					
	5.00	6.00	7.00	8.00	9.00	10.00
0%	18.83%	18.79%	18.75%	18.71%	18.67%	18.63%
10%	18.52%	18.48%	18.44%	18.40%	18.36%	18.32%
15%	18.37%	18.33%	18.29%	18.25%	18.21%	18.17%
20%	**18.21%**	18.17%	18.13%	18.09%	18.05%	18.01%
25%	18.06%	18.02%	17.98%	17.94%	17.90%	17.86%

[14] Average Consumer Price Index (CPI) for medical care and health expenses of Bangladesh for FY 12-13, FY 13-14 and FY 14-15

From the above analysis, it is observed that, with no discount to BR employees, the upfront amount can go up to BDT 10.0 Cr keeping the annual concession fee fixed at BDT 2.50 Cr. Also if the upfront amount is fixed at BDT 5.0 Cr, annual concession fee for 6th year of concession period can go up to BDT 5.0 Cr with 5.85% annual escalation in case no discount to BR employees. However based on the discussion with BR, the discount to BR employees has been kept as 20%. In order to assess the amount of upfront payment and annual concession fee for 6th year of concession period, following analysis has been undertaken:

Based on the market enquiries, it is known that the annual rental value for a property in Bangladesh is in the range of 2% to 3% of the property value. It is also known from the market enquiry that, the market rate of lands in the surrounding area is BDT 50.0 lakhs to BDT 60.0 lakhs per katha (740 sft). Accordingly the value of 2.55 acres of land comes out to be in the range of BDT 76.50 Cr to BDT 91.80 Cr. The annual concession fee of BDT 2.50 Cr for 6th year of concession period comes to around 2.7% of the market value of the land, which is equivalent to the prevailing property rental value. In order to arrive at a suitable value for upfront amount and annual concession fee, a sensitivity analysis with respect to revenue and O&M cost is carried out. The outcome of the analysis is tabulated below:

Table 33 : Sensitivity Analysis- Scenario 4

Project IRR: Sensitivity analysis with respect to decrease in gross revenue and increase in O&M cost

% increase in O&M cost	% decrease in Gross Revenue		
	0%	5%	10%
0%	**18.21%**	17.28%	16.29%
5%	16.60%	15.65%	14.63%
10%	14.87%	13.87%	12.80%

In view of the aforesaid sensitivity analysis, it can be observed that, with the reduction of revenue by 5% and/or increase in O&M cost by 5%, the project becomes unviable. This shows the demand risk of the project. Hence, the upfront amount and annual concession fee, being the fixed outflow from investor side, should be kept at lower side. Therefore, considering the annual concession fee for 6th year of concession period as BDT 2.50 Cr and 20% discount to BR employees, the upfront amount comes to BDT 5.0 Cr.

8.8.2. Recommended Amounts payable to BR

In view of the aforesaid financial analysis, following benefits to BR is recommended:

Table 34 : Recommendations

Sl. No.	Particulars	Remarks
1	Non-refundable Upfront payment payable by Concessionaire	BDT 5.00 Cr at the time of signing of concession agreement
2	Annual Concession Fee payable by Concessionaire	BDT 2.50 Cr (Bid Parameter) with 5.85% annual escalation
3	Discount to BR employees	20% on market rate

8.8.3. Value to BR

The estimated value to BR has been tabulated below:

Table 35 : Value to BR

Sl. No.	Particulars	Value to BR (in BDT Cr)
1	Net Present Value of upfront payment and annual concession fees at a discount rate of 8.24%[15]	41.32
2	Net Present Value of estimated annual discounted amount offered to BR employees at a discount rate of 8.24%	52.41
3	Present value of residual value (at the end of concession period) of the building at a discount rate of 8.24%	2.26
	Total	**95.99**

It is observed from the above table that the total estimated value to BR from this project is BDT 95.99 Cr, which is more than the estimated market value of the land, which is in the range of BDT 76.50 Cr to BDT 91.80 Cr as mentioned under section 8.8.1 above.

[15] 20 years T-bills yield as per Bangladesh Bank

9. Project Risk Assessment

One of the critical factors for the success of a PPP contract is the correct identification and allocation of risks between the private and public sector. This involves careful assessment of all foreseeable risks involved in pre commencement and post commencement phases of the project, considering impact and identifying probable mitigation measures.

Table below provides a list of identified risks categories which we can foresee for the project, along with the allocation and mitigation strategies.

Table 36 : Risk categories, allocation & mitigation strategies

Risk Categories	Risk Allocation		Mitigation measures
	Govt.	Pvt.	
Project Development			
Delays in project - Design risk - Planning risk		√	• Extensive technical and design studies to be conducted by Concessionaire • Clear timelines for design & planning, timelines for approval by authority to be included in Concession Agreement. Incorporation of clause like "approval is deemed to be granted in case no communication received from authority within specified time" will help.
Construction Period			
Project completion risk		√	• Private partner to provide performance guarantee for project completion. • Concession period to start from the date of obtaining approvals can avoid the risk of delay in project completion on account of delay in approvals. • Concession fee to start from 6th year of Concession Period shall mitigate the risk for BR
Project cost risk/Cost over-runs		√	• Project should be completed on time; • Design the project in compliance with best standards & applicable regulations and prepare cost estimate accordingly.
Construction/ Operations Period			
Environmental risk	√	√	• Clarity to be taken on the regulatory framework applicable for the project. • Follow the approval process, prepare IEE and EIA as per guidelines of DOE and obtain environmental clearance prior to commencement of construction. • Compliance with the terms & conditions throughout the concession period based on which environmental clearance is granted.
Operations Period			
Regulatory & administrative risk	√	√	• Specify clearly the trigger clauses for renegotiation in case of change in legislations

Risk Categories	Risk Allocation		Mitigation measures
	Govt.	Pvt.	
Commercial risk		√	• Concessionaire to bear the risk of demand, both upward and downward variability, without granting revenue guarantees
Operations & maintenance risk		√	• Performance standards with minimum service and safety level specifications to be included in the Concession Agreement. • O&M risk to be borne by the Concessionaire
Financial risk (Interest Rate, Tax, Inflation etc.)		√	• Financial risk to be borne by the Concessionaire
Termination risk	√	√	• Specify clearly the trigger clauses for termination
Throughout Project Cycle			
Force Majeure	√	√	• Concession Agreement shall clearly articulate the events of force majeure, obligation of each party during force majeure period, relaxations/exemptions during force majeure period, compensation in the event of termination due to force majeure.

10. Key Terms of Concession Agreement

In view of the recommended project structure and the financial feasibility analysis conducted, some of the key terms of concession agreement are tabulated as below:

Table 37 : Terms of Concession Agreement

Sl. No.	Key Terms	Particulars
1.	Authority	Bangladesh Railway, Government of Bangladesh
2.	Construction Period	5 years from the date of fulfilment of conditions precedent
3.	Concession Period	40 years from the date of fulfilment of conditions precedent
4.	Conditions Precedent	Authority Conditions Precedent • Handing over of land free from encumbrances • Access to power supply, water supply and sewerage facility • Facilitate in obtaining approvals & permits Concessionaire Conditions Precedent • Provided performance security • Procured applicable permits and approvals • Executed financing agreements
5.	Conditions Precedent Period	180 days from the date of signing of concession agreement
6.	Obligations of the Concessionaire	• Obtain applicable permits and approvals at its cost • Not undertake or permit any change in ownership without written approval of Authority • Procure, finance, design, construct, operate and maintain as per terms of concession agreement • Transfer project assets to Authority after expiry of concession period • Comply with applicable regulations and safety requirements • Safe, smooth and uninterrupted healthcare services and facilities to the Patients • Periodic and preventive maintenance and replacement as required • Shall maintain adequate insurance during the concession period • Pay annual concession fee to BR timely
7.	Obligations of Authority	• Provide right to use the land and demolish existing structures within site and make available the land for use by concessionaire free from any encumbrances • Facilitate in obtaining applicable permits and approvals • Reasonable assistance in obtaining electricity and water at rates available for general public • Assist in procuring police assistance for dealing with medico-legal cases • Support upon request by concessionaire in resolving any issue related to right to use land
8.	Tariff	• Concessionaire free to determine, charge and collect user charges as per market rates from patients • 20% discount on market rate to be provided by the concessionaire to BR employees for availing the healthcare services
9.	Project Development Fees	• The concessionaire has to pay a project Development fees of BDT 3.50 Cr to the Authority at the time of signing the Concession Agreement
10.	Annual Concession fee	• Concession Fee as quoted shall be payable from Y6 onwards as per the terms of the concession agreement

Sl. No.	Key Terms	Particulars
11.	Upfront Payment	• Non-refundable upfront amount of BDT 5.00 Cr shall be payable by concessionaire to BR at the time of signing of concession agreement.
12.	Performance Security	• 5% of the estimated project cost in the form of Bank Guarantee valid till the date of completion of construction.
13.	Performance Guarantee	• BG of amount equivalent to 6 months concession fee of Y6 to be submitted at least 1 month prior to COD. • Performance Security shall be released upon submission of Performance Guarantee. From Y7 onwards, Performance Security BG shall be rolled over with additional amount to make it equivalent to 6 months concession fee of respective year.
14.	Payment Security	• Escrow agreement to be entered between BR, Concessionaire and Escrow Bank • Concessionaire shall open the escrow account one month prior to COD • All project revenues, expenditures, concession fee to be transacted through escrow account
15.	Compensation on Termination	Termination for: • **Force Majeure:** 100% of Debt Outstanding (incl. breakage costs) + 100% of Equity Outstanding (net of distributions) – Insurance Claims • **Authority's Event of Default or Convenience:** 100% of Debt Outstanding (incl. breakage costs) + 150% of Equity Outstanding (net of distributions) – Insurance Claims • **Concessionaire's Event of Default:** 80% of Debt Outstanding (incl. breakage costs) – Performance Security – Insurance Claims
16.	Project Monitoring Planning	• Two level project monitoring can be proposed. • First level monitoring comprises of Independent engineer and Independent panel. Independent Engineer shall be responsible for monitoring the construction monitoring. Independent panel comprises of 2 members of the Authority and 1 member of the Concessionaire and independent experts/advisors as required. Independent panel shall be responsible monitoring during operation period • Second level monitoring includes a high level governing committee comprises of representative of line department or ministry, representative of PPP authority and 3-4 independent members like professors, doctors and industry experts etc. who shall be responsible to review the reports of independent engineer and independent panel, and discuss & resolve any issues related to the project. The high level governing committee will meet quarterly once during construction period and half yearly once during operation period. The details roles & responsibilities of independent engineer, independent panel and High level governing committee will be elaborated in the concession agreement.
17.	Reporting & MIS	• MIS will be set up by which daily, monthly, quarterly and annual reports will be generated. Authority and Independent Engineer will have access to the reports.
18.	Key Performance Indicators (KPIs)	The KPIs for monitoring service delivery are designed in view of the objectives of quality healthcare service delivery and avoiding discrepancy to BR patients. The KPIs along with their purpose are tabulated separately below this table.

Key Performance Indicators

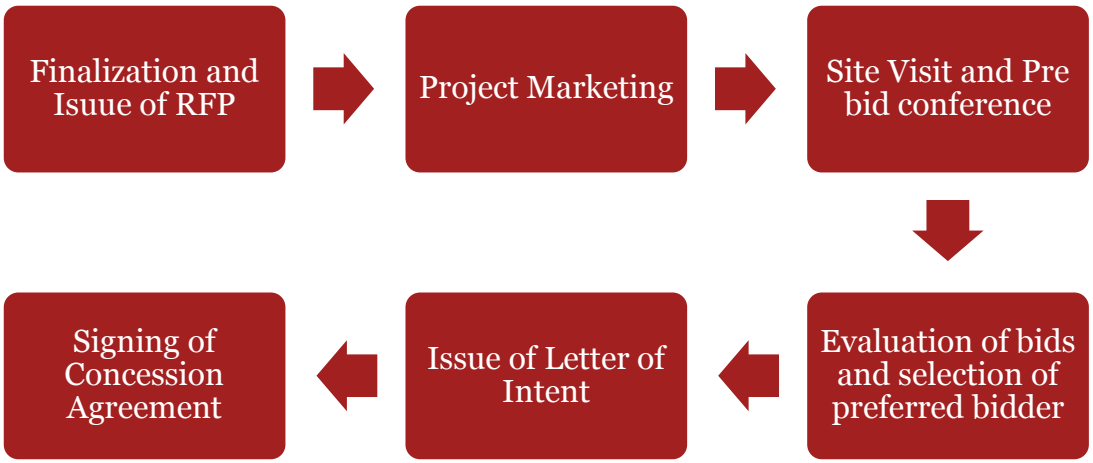
The Key Performance Indicators along with their purpose in assessment of availability and quality of care are tabulated as below. Each KPI shall be monitored separately for general patients and BR patients against the specified targets to be defined in the draft concession agreement.

Table 38 : Key Performance Indicators

Sl. No.	Key Performance Indicators	Purpose
Availability KPIs		
1.	Discount to BR employees	Shall ensure 20% discount is provided to BR patients for all healthcare services
Service KPIs		
1.	Time for initial assessment of indoor and emergency patients	Shall assess the time taken to complete first initial assessment after the patient has arrived. Also assess the difference between time taken for general patients and BR patients.
2.	Average length of stay	Shall assess the difference between ALOS between general patients and BR patients
3.	Out Patient and Inpatient satisfaction Index	Shall assess the overall satisfaction between general patients and BR patients through patient satisfaction survey
4.	Time taken for discharge	Shall assess the time taken for completing the discharge formalities for general patients and BR employees
Quality KPIs		
1.	No. of reporting errors per 1000 investigations	Shall assess the accuracy of medical reports generated by lab diagnosis.
2.	Blood stream investigation rate	Shall assess the quality of medical disinfections and sterilization levels adopted in the hospital
3.	Surgical site infection	Shall assess the quality of medical disinfections and sterilization levels adopted during and post- surgery
4.	Incidence of medication error	Shall assess the diligence taken in prescribing an appropriate medication to the patient
5.	Urinary Tract Infection rate	Shall assess the due care adopted in taking a medical decision to insert/remove a catheter
6.	Return to ICU within 48 Hours	Shall assess the level of care provided to patients during their stay and after their discharge from an ICU

11. Procurement Plan

It is proposed to follow a single stage bidding procedure namely Request for Proposal (RFP) for the project. The contour of the bidding process is shown below



11.1. RFP Stage

The purpose of the RFP document would be to select the preferred bidder for awarding the project. The RFP documents shall typically include all relevant project details including business plans, bid conditions and key contract documents along with technical and financial eligibility criteria and bid parameter for selection of preferred bidder. The interested parties shall be provided an option to visit the site. A pre-bid conference shall be conducted to provide clarification as required by the bidders. Upon receipt of bids, evaluation of technical and financial proposal shall be conducted to select the preferred bidder. Upon selection of preferred bidder and upon approval of authority, a Letter of Intent (LOI) shall be issued to the preferred bidder. Subsequently upon compliance of conditions of signing of agreement, the concession agreement shall be signed with the selected bidder. A time period of 5 weeks from the date of issue of RFP is envisaged for this stage till recommendation of preferred bidder.

11.1.1. Technical Eligibility Criteria

- At least 1 multi-specialty or super specialty hospital of 200 beds under management and operation since last 3 years
- Minimum 5 years of operating experience of multi-speciality or super-specialty hospitals

11.1.2. Financial Eligibility Criteria

- Min. Average Annual Turnover of BDT 300 Cr in last 3 financial years and Net worth of BDT 100 Cr in last financial year

In addition to above criteria a consortium of maximum two members is allowed. In case of high net worth firm having net worth of BDT 1000.00 Cr and above, is not required to meet the technical eligibility criteria at the RFQ stage. However, the high net worth firm/organization has to bring technical expertise in subsequent bidding process

11.1.3. Bid Parameter for selection of preferred

As per proposed project structure, upfront amount and annual concession fees are two variables which could be used for framing the bid parameter. Followings options of bid parameter are analysed:

Option 1: NPV of Upfront Payment and Annual Concession Fees together: - Under this option, the bidder would quote both upfront payment payable at the time of signing the concession agreement and annual concession fees for sixth year of concession period. The concession fees remaining year would be estimated based an escalation of 5.85% on the quoted annual concession fees. The bid parameter for selection of bid parameter would be higher at net present value at specified discounted rate of the quoted upfront payment and annual concession fees during the concession period together.

Under this option, bidder can quote lower upfront payment and higher annual concession fees to reduce the initial higher financial burden. This will reduce the initial revenue for BR.

Option2: Upfront Payment:- Under this option, the bid parameter for selection of preferred bidder would be higher upfront payment subject to a minimum amount and annual concession fees will be fixed. This option will create higher initial financial commitment by the concessionaire which may reduce the attractiveness of the project or can generate the lower quotes of upfront payments.

Option 3: Annual Concession Fees: - Under this option, the bid parameter would higher annual concession fees for sixth year of concession period. The concession fees would be payable for remaining year based an escalation of 5.85% on the quoted annual concession fees. Upfront fees payable would be fixed.

Out of the aforesaid three options, option 3 is found suitable as this option will have the advantage of fixed initial revenue for BR in the form of upfront payment and also an option of maximization of annual recurring income through concession fees. However, higher expectation of upfront payment by BR may discourage investors. Hence, it is ideal that a reasonable amount of upfront payment to be kept as fixed with minimum annual concession fee as bid parameter.

12. Environmental Impact Assessment

12.1. Introduction & Objectives

Environmental impact assessment has been carried out for the project to assess the impact of the project on the surrounding natural set up at various stages of the project and to suggest mitigation measures & Environment Management Plan (EMP) for minimizing adverse impacts if any. The key objectives of this study include:

- Baseline studies/data collection and interpretation
- Review of applicable environmental regulations and necessary approvals required
- Review of surrounding environment to identify impacts that the proposed project activities could have upon the various environmental components;
- To assess the impacts of the project activities on physical environment, air quality and noise ;
- To suggest mitigation and management measures to be undertaken during project implementation to avoid, reduce, mitigate or compensate adverse impacts if any;

12.2. Applicable Regulation and project classification for Environment Clearance

As per Environment Conservation Rules of Bangladesh 1997, for the purpose of issuance of Environment Clearance Certificate, industrial units and projects are classified under four categories namely Green, Orange A, Orange B and Red. The type of industrial units and projects classified under each of these categories as per Environment Conservation Rules of Bangladesh 1997 are summarized as below:

Green Category: The projects/industrial units under this category include assembling and manufacturing of electronics goods like TV, radio, clocks, watches, telephones, toys etc., book binding, rope, mats, bamboo and cane goods, assembling of motorcycles, bicycles and toy cycles, musical instruments, tea packaging (excluding processing), re-packing of milk powder (excluding production), artificial flower (excluding plastic made items), pen and ball pen, scientific and mathematical instruments (ex. manufacturing), sports goods, gold ornaments (shops only), candle, factory of production of cork items, medical and surgical instruments (excluding production) and laundry (excluding washing).

Orange A: The projects/industrial units falling under this category include dairy firm 10 (ten) cattle heads or below in urban areas and 25 cattle heads or below in rural areas, Poultry (up to 250 in urban areas and up to 1000 in rural areas), Grinding/husking of wheat, rice, turmeric, pepper, pulses ((up to 20 Horse Power), Weaving and Handloom, Shoes and Leather goods (capital up to 5 hundred thousand Taka), Saw mill/wood sawing, furniture of wood/iron, aluminum etc. (capital up to 5 hundred thousand Taka), Printing press, Plastic and rubber goods, Dry cleaning, Restaurant, cartoon/box manufacturing/printing packaging, cinema hall, Production of Salt, Agricultural Machinery and equipment, factory of Bread, Biscuit, Chocolate (capital up to 5 hundred thousand Taka)

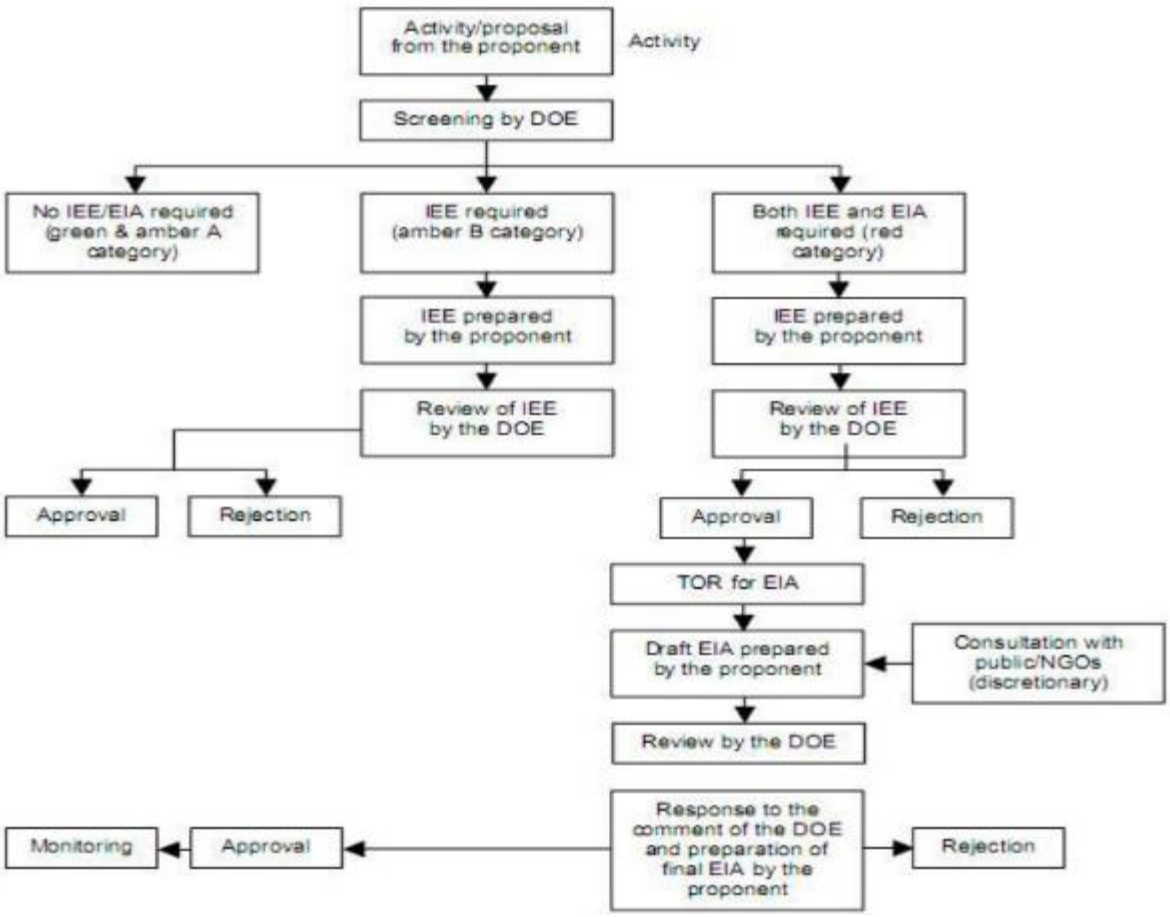
Orange B: The type of projects/industrial units classified under this category include PVC items, artificial fiber, glass factory, lifesaving drug, edible oil, jute mill, hotel & multi-storied commercial building & apartment, aluminum products, galvanizing, glue, bricks/tiles, lime, plastic products, processing and bottling of drinking water, perfumes & cosmetics, carbon rod, re rolling, clinic and

pathological lab, soap, engineering works, cold storage, garments and sweater production, ship breaking, etc.

Red Category: The type of projects/industrial units falling under this category include tannery, urea, TSP fertilizer, chemical dyes, polish, varnish, enamel, power plant, mining projects (coal, limestone, natural gas, mineral oil etc.), cement, fuel or refinery, paper and pulp, sugar, explosives, asbestos, pesticides, fungicides and herbicides, battery, **hospital,** tobacco etc.

The process for granting environment clearance (EC) for projects under each of the above category is shown in the following diagram:

Figure 42 : Flow Chart diagram for granting EC



Source: Ahammed R and Harvey N(2004). Evaluation of Environmental Impact Assessment Procedures and Practices in Bangladesh. Impact Assessment and project Appraisal: 22: pp.63-78

The proposed project falls under Red category. Hence for the purpose of environment clearance, project proponent is required to prepare both Initial Environment Examination (IEE) report and Environment Impact Assessment (EIA) report. As first step, the IEE prepared by the project proponent shall be reviewed by Department of Environment (DOE), Government of Bangladesh. Upon approval of IEE, based on the standard TOR for EIA, project proponent shall submit a Draft EIA to DOE. Upon review of EIA by DOE and based on the comments/suggestions of DOE if any, the project proponent shall submit the final EIA to DOE. Upon approval of final EIA, environment clearance shall be granted for the project.

12.3. Baseline Data Analysis

This section establishes the baseline environmental status of the proposed project area to determine the project influence area within which the impacts of the project are to be assessed. Establishing baseline helps in understanding the prevailing environmental status of the study area. It provides the background environmental conditions for anticipating the future environmental characteristics of the area based on

the project operations. It also helps in environmental management planning and strategy to minimize any potential impact due to the project activities on surrounding environment.

The baseline information with respect to surrounding environmental characteristics were analyzed as below:

i) ***Location & Accessibility of the site***: Accessibility is one of the major considerations for a hospital project. The proposed site is adjacent to the CRB (Central Railway Bhavan), a very well-known landmark in Chittagong. There are roads leading to CRB (CRB road) from all sides. Hence it is well connected, well known and within the reach of the users. It is centrally located within the city and easily accessible to the users as well as service providers and suppliers of material and man power. In case of any emergency due to fire or natural calamity, relief and rescue operations can be launched within a short time. Further it is close to land marks such the Premier University, Open University, Chittagong Stadium, Radisson Blue Hotel, Chittagong Railway Station and many others around. The site proposed for the project are not located in a congested area. The entire area is a like an island of trees amidst concrete jungle. It is undoubtedly one of the most suitable places for the proposed Hospital.

ii) ***Source of Water:*** It is proposed to use ground water from the bore wells on the site and in future as and when the need arises, water shall be obtained from WASA of the Chittagong Municipal Corporation. The water obtained from deep tube wells is potable and used for drinking. There is no evidence of any arsenic or fluoride or toxic heavy metal contamination. The water quality is good and suitable for drinking as evident from groundwater monitoring results provided in the table below. Rain water harvesting and ground water recharge should be proposed making use of the gradient to minimize the adverse impact on groundwater in future.

Table 39 : Chemical Constitution of Ground Water

Sl. No.	Water Quality Parameter	Units	Concentration present	Bangladesh Standard for Drinking water (ECR'97)
1	pH	--	7.08	6.5 – 8.5
2	Color (Filtered)	Pt.Co. Unit	2	15
3	Turbidity	NTU	1.12	10
4	Carbon dioxide, CO2	mg/L	49	--
5	Total Alkalinity as CaCO3	mg/L	89	--
6	Total Hardness as CaCO3	mg/L	102	200-500
7	Iron, Fe	mg/L	<0.02	0.3 -1.0
8	Manganese, Mn	mg/L	0.024	0.1
9	Arsenic, As	mg/L	0.003	0.05
10	Chloride, Cl	mg/L	27	150-600
11	Fluoride, F	mg/L	0.18	1
12	Nitrate Nitrogen, NO3-N	mg/L	2.3	10
13	Total dissolved Solids (TDS)	mg/L	201	1000
14	Total Coliform (TC)	#/100ml	Nil	00TC/100 ml
15	Fecal Coliform (FC)	#/100ml	Nil	00FC/100 ml

***Physical, Chemical and Bacteriological Analysis of Bore well water from the Chittagong Railway Hospital by the Department of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka*

Though the water table is falling as in other parts of Bangladesh and rest of the world, the situation is not alarming in Chittagong in general and in the hospital premises in particular (as discussed with BR officials at Chittagong). The depth of the existing bore well is about 70 to 90 m and its yield during the dry period is 6 to 7 Cum. or KL per hour. It is considered as Superlative Yield. According to the Interim

Report - I of Ministry of Local Government, Rural Development & Cooperatives: Local Government Division Ground Water Task Force, Geological Setting of the Areas of Arsenic Safe Aquifers, the average depth of the bore well in Chittagong is 70m and the water is free from arsenic contamination. According to the report, the long term average rainfall in Chittagong is 2741 mm the potential evapotranspiration is 1573 mm. Thus there is surplus rainfall (1168 mm) more than adequate for ground water recharge.

For a 250 bedded Hospital, the total water requirement shall be about 250 KLD (1 KLD per bed). The exact quantity shall be based on the Detailed Project Report (DPR) to be prepared by the Concessionaire.

iii) ***Ambient Air Quality:*** The ambient air quality data for particulate matter as well as criteria of gaseous pollutants were collected during December 2006 to December 2008 at the Continuous Air Quality Monitoring Station (CAMS) located at TV center, Pahartoli, Chittagong. It was observed that during April- October, 24 hour average concentration of PM10 and PM2.5 were within the National Ambient Air Quality Standard (NAAQS) level but it increased occasionally by more than two and a half times during the whole non-monsoon period (November-March). The highest values found of PM2.5 were 327 µg/m3 and 254.9 µg/m3 in January 2007 and December 2008 respectively. The highest alarming concentration of PM10 was reported as 545 µg/m3 in January 2007. The other gaseous pollutants such as SO2, NO2, O3, CO and hydrocarbons remain well within the permissible limit except dry winter.

It is evident from the above that only during the dry season, the PM10 and PM 2.5 values were higher mainly because of fugitive emissions from traffic on road and automobile exhaust. Unlike most of the urban local bodies, the site and its immediate vicinity is relatively free from air pollution mainly because the site is surrounded by hillock covered with tall trees and low traffic. There are no major polluting industries and there are no brick making units within 5 Km from the site. A little bit of dust or suspended particulate matter is expected especially during the dry period. The proposed medical college and hospital are not going to make any significant change in the quality of the air. However a detailed estimates and projections have to be made by the Concessionaire based on the DPR at the time of preparation of EIA.

iv) ***Noise levels:*** The project site is surrounded by tall and large trees. They can attenuate noise very significantly. The allowable level as per Noise Quality Standards of Bangladesh for hospital area (silent zone) is 45dB in day time and 35 dB in night time (as shown in the table below). As measured by us, the day time noise level around the project site is largely within the allowable limit, however intermittently the noise level in the range of 55 dB to 60 dB is observed because of vehicle traffic along the CRB road. In the night time, the project site area has the noise level, within the allowable level. During the construction stage, the noise level shall be impacted due to construction works and machinery & heavy vehicle movement. During operation stage, the noise level will be impacted by increase in inflow of vehicles, ambulances, operation of DG sets etc. However higher noise level on account of this is expected to be intermittent.

Table 40 : Noise Quality Standards

Zone Class	Limits in dB	
	Day(6 am – 9 pm)	Night(9 pm-6 am)
Silent zone	45	35
Residential zone	50	40
Mixed(residential/commercial/industrial)zone	60	50
Commercial zone	70	60
Industrial zone	75	70

Note: Noise Quality Standards of Bangladesh by Zone and Time of Day (Vide: Ministry of Environment and Forest (MoEF). 1997. Environment Conservation Rules. Bangladesh Gazette. People's Republic of Bangladesh. pp. 208).
Source: Unnayan Shamannay, People's Report on Bangladesh Environment 2001. Reproduced from http://omnibangla.blogspot.in/2012/06/noise-pollution-in-bangladesh.html

v) **Bio medical waste management:** The management of waste poses to be major health care concern in most of the developing countries like Bangladesh, especially the hospital waste. It poses serious problem in healthcare industry. The main objective of a healthcare is to provide healthcare services to prevent disease and also cure people who are suffering from various kind of illness. Therefore, waste management is one of the key requirement for a health care institute. There may be minor variations in composition but the characteristics of the Medical waste or biomedical waste or the Hospital waste, by whatever name they are known and considered are essentially the same. When compared to the Municipal Solid Waste, Medical waste is more complex and hazardous.

The proposed 250 bed multispecialty hospital has the potential produce 107.25 Kg per day of hazardous medical waste @429 g/bed/ day. The biomedical waste should be managed as per Medical waste (management and processing) Rule, 2008 or any subsequent amendments as and when made effective for processing and management of medical waste in Bangladesh. Following steps should be following for handling biomedical waste:

- Collection of biomedical waste in different coloured bins in the hospital. For example – yellow, red, blue and black bags
- Separation of different categories of medical waste and packed for disposal using different colored bags.

The bio medical waste can be managed through either of the following options:

- Option 1: Having own bio medical waste management facility
- Option 2: Outsourcing the bio medical waste management to an authorized agency

Option1: Having own bio-medical waste management facility

In case, the proposed hospital establish medical waste treatment facility on-site then the following steps should be followed:

- Carry out Industrial autoclaving for sterilization of infectious / pathogenic wastes. After autoclaving, send the autoclave water to ETP for treatment. The sludge generated should be send to hazardous landfill.
- Once autoclaving is done, Shedder is used for crushing the needles / syringes, scalpels, blades etc. and then these materials are send to authorized recycler.
- The segregated incinerable waste should be incinerated onsite and the ash should be sent to secure landfill. All other wastes which cannot be recycled or incinerated after sterilization should also be sent to landfill. The secure landfill must meet the siting criteria and standards of Bangladesh. Air pollution control device should be installed to treat flue gases produced during incineration process.
- Appropriate health and safety measures should be taken while handling bio-medical waste. The workers should wear all required PPEs and be skilled in handling it.
- Only authorized personnel should be allowed to enter medical waste treatment facility.
- Periodic checkups should be conducted for personnel handling biomedical waste.

Option 2: Outsourcing the bio medical waste management to an licensed agency

In case if the proposed hospital engage a licensed agency for disposal, treatment process will be taken care by it.

vi) Trees, Shrubs & Perennial climbers: The vegetation of the area resembles a forest. The upper canopy is formed by the tall trees with shrubs and grasses at the lower level. But there are no forest trees and forest flora was uncommon. Rain tree (*Samanea saman*) is the most dominant tree with extensively wide canopy in the area. Kadamba or Kadama (*Anthocephalus chinensis*) and Mahagni (Swietenia macrophylla) (Endangered as per the IUCN Red data) are the most dominant and widely cultivated trees in the area. There are a wide range of fruit trees such as Mango (*Mangifera indica*), Chakotra (Citrus grandis), Jam (Syzygium cumini), Jujube (Zizyphus mauratiana), Guava (Psidium guava), Ramphal or Nona (Annona reticulata), Jack fruit or Kanthal (Artocarpus heterophyllus), Coconut (Cocos nucifera), Areca nut (Areca catechu), Tamarind (Tamarindus indica), Drum sticks or Shojne danta (Moringa oleifera) and others. Due to environmental significance and natural set up of the area, cutting of trees are recommended to be minimized as much as possible. A list of trees and shrubs found in the project site and nearby areas are given in Table 25 below. Similarly, a list of herbs and herbaceous species found on and near by project site is given under Table26 below:

Table 41 : List of trees, shrubs and perennial climbers found in and around the project site

Scientific name	Local / common name	Family
Acacia auriculiformis	Australian wattle	Mimosaceae
Albizia lebbeck	Indian Siris	Mimosaceae
Albizia odoratissima	Black Siris	Mimosaceae
Albizia procera	Karoi tree	Mimosaceae
Alocasia indica	Giant Taro	Araceae
Annona reticulata	Ramphal or Nona	Annonaceae
Anthocephalus chinensis	Kadamba or Kadama	Rubiaceae
Anthocephalus chinensis	Kadamba / Kadama	Rubiaceae
Antigonon leptopus	Coral Vine	Polygonaceae
Aphanamixis polystachya	Tiktaraj / Pithraj Tree	Meliaceae
Araucaria columnaris	Cook's pine / Christmas Tree	Arucariaceae
Areca catechu	Areca nut	Arecaceae
Artocarpus heterophyllus	Jack fruit or Kanthal	Moraceae
Azadirachta indica	Neem	Meliaceae
Bauhinia purpurea	Kachanar	Caesalpiniaceae
Bougainvillea spectabilis	Bougainvillea	Nyctaginaceae
Calamus rotang	Malacca cane	Poaceae
Cassia fistula	Shonalu Ful / Golden Shower	Caesalpiniaceae
Cassia nodosa	Pink Shower	Caesalpiniaceae
Cassia siamea	Yellow Cassia	Caesalpiniaceae
Casuarina equisetifolia	Australian Pine	Casuarinaceae
Cestrum nocturnum	Night queen	Solanaceae
Chuckrasia tabularis	Chittagong wood	Meliaceae
Chromolaena odorata	Siam weed	Asteraceae
Citrus grandis	Chakotra	Rutaceae
Cocos nucifera	Coconut	Arecaceae
Codiaeum variegatum	Mammy Croton	Euphorbiaceae
Cycas revoluta	Sago palm	Cycadaceae

Scientific name	Local / common name	Family
Dalbergia sissoo	Sissoo	Fabaceae
Duranta erecta	Duranta	Verbenaceae
Eucalyptus camaldulensis	Eucalyptus	Myrtaceae
Eucalyptus tereticornis	Eucalyptus	Myrtaceae
Eupatorium rugosum	White snake root	Asteraceae
Ficus benghalensis	Botumul / Banyan	Moraceae
Ficus benjamina	Weeping fig	Moraceae
Ficus religiosa	Pipal / Bo tree	Moraceae
Ficus tinctoria	Dye fig / Humped fig	Moraceae
Furcraea foetida	Cuba hemp	Agavaceae
Gigantochloa atroviolacea	Asian Bamboo	Poaceae
Gmelina arborea	Beech wood	Verbenaceae
Ixora singaporensis	Ixora	Rubiaceae
Lagerstroemia speciose	Queen's Flower / Pride of India	Lythraceae
Lantana camara	Lantana	Verbenaceae
Lawsonia inermis	Henna	Lythraceae
Leucaena leucocephala	Subabul	Mimosaceae
Mangifera indica	Mango	Anacardiaceae
Michelia champaca	Champak	Magnoliaceae
Moringa oleifera	Drum sticks or Shojne danta	Moringaceae
Musa paradisiaca	Banana	Musaceae
Nerium odorum	Oelander	Apocynaceae
Nyctanthes arbor-tristis	Night Jasmine	Nyctaginaceae
Peltophorum pterocarpum	Copper pod	Caesalpiniaceae
Phoenix sylvestris	Wild date palm	Arecaceae
Pithecellobium dulcis	Manila Tamarind	Mimosaceae
Plumeria alba	Frangipani	Apocynaceae
Plumeria pudica	Bridal bouquet / White Frangipani	Apocynaceae
Plumeria rubra	Rosegay / Frangipani	Apocynaceae
Roystonea regia	Royal palm	Arecaceae
Samanea saman	Rain tree	Mimosaceae
Solanum surattense	Kanteli	Solanaceae
Spathodea companulata	African Tulip Tree	Bignoniaceae
Swietenia macrophylla (VU)[16]	Mahagni	Meliaceae
Syzygium cumini	Jam	Myrtaceae
Tamarindus indica	Tamarind	Caesalpiniaeae
Tectona grandis	Teak	Verbenaceae
Terminalia catappa	Almond tree	Combretaceae
Thuja occidentalis	Thuja	Cupressaceae

[16] VU means Vulnerable

Table 42 : List of herbs and herbaceous plants found in and around the project site

Scientific name	Family	Remarks
Acalypha indica	Euphorbiaceae	Medicinal
Achyranthes aspera	Amaranthaceae	Medicinal
Alternanthera philoxeroides	Amaranthaceae	Alligator weed
Alternanthera sessilis	Amaranthaceae	Leafy vegetable
Alternanthera triandra	Amaranthaceae	Leafy vegetable
Asystasia gangetica	Acanthaceae	Ornamental weed
Axonopus compressus	Poaceae	Broadleaf turf grass
Bothriochloa pertusa	Poaceae	Fodder grass
Brachiaria distachya	Poaceae	Fodder grass
Brachiaria ramose	Poaceae	Fodder grass
Brachiaria reptans	Poaceae	Fodder grass
Bulbostylis barbata	Cyperaceae	Fodder sedge
Caladium bicolor	Araceae	Ornamental
Cassia occidentalis	Caesalpiniaceae	Coffee senna
Cassia tora	Caesalpiniaceae	Sickle pod
Cenchrus ciliaris	Poaceae	Fodder grass
Chloris barbata	Poaceae	Fodder grass
Commelina benghalensis	Commalinaceae	Soil binder
Commelina cristata	Commalinaceae	Soil binder
Cynodon dactylon	Poaceae	Turf grass
Cyperus compressus	Cyperaceae	Fodder sedge
Cyperus diffuses	Cyperaceae	Fodder sedge
Cyperus iria	Cyperaceae	Fodder sedge
Cyperus rotundus	Cyperaceae	Nut grass
Cyperus squarrosus	Cyperaceae	Fodder sedge
Cyperus triceps	Cyperaceae	Fodder sedge
Dactyloctenium aegyptium	Poaceae	Fodder grass
Digitaria longiflora	Poaceae	Fodder grass
Digitaria sanguinalis	Poaceae	Fodder grass
Echinochloa colona	Poaceae	Jungle rice
Echinochloa crusgalli	Poaceae	Jungle rice
Eclipta prostrata	Asteraceae	Medicinal
Eragrostis aspera	Poaceae	Fodder grass
Eragrostis ciliate	Poaceae	Fodder grass
Eragrostis maderaspatana	Poaceae	Fodder grass
Eragrostis tenella	Poaceae	Fodder grass
Eragrostis viscosa	Poaceae	Fodder grass
Fimbristylis dichotoma	Cyperaceae	Sedge
Fimbristylis miliacea	Cyperaceae	Sedge
Fimbristylis ovata	Cyperaceae	Sedge
Fimbristylis umbellate	Cyperaceae	Sedge
Gentelbua urens	Acanthaceae	Perennial herb
Imperata cylindrical	Poaceae	Common wetland grass
Indigofera ennaephylla	Fabaceae	Fodder legume

Scientific name	Family	Remarks
Indigofera tinctoria	Fabaceae	Medicinal
Indigofera trita	Fabaceae	Fodder legume
Iseilema laxum	Poaceae	Fodder grass
Iseilema prostratum	Poaceae	Fodder grass
Leucas aspera	Lamiaceae	Common forb
Leucas indica	Lamiaceae	Common forb
Neptunia triquestra	Mimosaceae	Sensitive to touch
Lippia nodiflora	Verbenaceae	Medicinal
Panicum maximum	Poaceae	Tall grass
Panicum psilopodium	Poaceae	Fodder grass
Panicum repens	Poaceae	Fodder grass
Philodendron domesticum	Araceae	Ornamental
Polygala arvensis	Polygalaceae	Common forb
Polygala chinensis	Polygalaceae	Common forb
Rungia repens	Acanthaceae	Common forb
Salvia splendens	Lamiaceae	Ornamental plant
Sida acuta	Malvaceae	Wireweed
Sida cordata	Malvaceae	Heart leaf Sida
Sporobolus coromandelianus	Poaceae	Fodder grass
Sporobolus indicus	Poaceae	Fodder grass
Sporobolus maderaspatanus	Poaceae	Fodder grass
Sporobolus tremulus	Poaceae	Fodder grass
Tephrosia procumbens	Fabaceae	Legume
Tridax procumbens	Asteraceae	Medicinal plant
Urtica dioica	Urticaceae	Common nettle
Vernonia albicans	Asteraceae	Weed
Vernonia cinerea	Asteraceae	Weed
Wedelia triloba	Asteraceae	Ornamental
Xanthium strumarium	Asteraceae	Weed

vii) Terrestrial fauna of the project area

Though the area is covered by trees, it is under human inhabitation. Hence, no major wild animals are expected. Both the domesticated animals like goats, cows, dogs and cats and animals usually associated with human habitations like rats, mice, bandicoots and squirrels were either found or most likely to be present. A few snakes, lizards, garden lizards and geckos were either found or most likely to be present. Among the amphibians, pond frog, tree frog and common toad were either found or most likely to be present. Birds were mostly represented by crows, sparrows, mynas, parrots and pigeons. Poultry was represented mostly by local breeds that appeared in different hues. There are no reports or indications of presence of any rare or endemic or threatened (RET) species of fauna. The area under consideration is not a part of a migratory corridor or breeding ground for any of the RET species. Hence, the area under consideration is not ecologically sensitive. The survival of none of the RET species either directly or indirectly is linked to the area under consideration.

viii) Ecology and Biodiversity of the project site: The site is not prone to flooding but erosion is a recurring problem because of heavy rain fall, gradient and thick surface soil. The depth of the degraded soil seems to extend up to a depth of 2 m or more. Soils are sandy loans. As mentioned

under section 12.3 (ii) above, Chittagong receives heavy rain fall with a long period average (LPA) of 2741 mm per annum. On an average there are 135 rainy days per year with more than 0.1 mm rain fall per day.

12.4. Environment Management Plan and Monitoring Plan

12.4.1. Environment Management Plan

The table below presents the proposed Environmental Management Plan (EMP) of the project containing the information of environmental issues, impacts of the project on these issues, suggested mitigation measures for the adverse impacts and actors responsible for implementation of the mitigation measures for these adverse impacts. It can be seen from the table that there are several environmental issues, which are relevant to the project, but project is not solely responsible for all overall environmental consequences, for example air pollution and noise pollution.

Table 43 : Proposed Environment Management Plan

Environmental Attributes	Sources of occurrence of impact	Environmental Impact	Suggested Mitigation measures	Actors Responsible for mitigation/their roles & responsibility/Institutional Arrangements
Air Pollution	Construction activities	Problem to public health	All reusable and recyclable materials shall be reclaimed. Iron/ steel and wood shall be disposed of to the recyclers. Inert waste would be used for land filling and road construction.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant
Cutting of trees	Clearing of sites	Impact on surrounding eco-system, environment	The proposed site for the project has mostly the settlements and few trees. There shall be no net loss of biodiversity on account of the proposed project. Care should be taken to avoid adverse effect on the trees around the project site.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.
Soil management and disposal	Excavation for basement and foundations	Soil pollution, inconvenience to public, impact on public health	Degraded top soil and the underlying course soil will be stacked separately. Top soils will be used for gardening, lawns and parks. Gravel will be used for back filling and raising the ground level of the buildings. Any surplus if available shall be used for filling the gullies.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.
Noise Pollution	Construction activities, machinery, vehicular movements for transportation of construction material	Problem to public health	Construction site can be isolated from its surrounding areas by tall partitions to minimize noise pollution. Heavy vehicles carrying the construction material can be brought to the site majorly in night time to minimize the noise pollution.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.
Solid waste & Sewage	Construction activities	Problem to public health	Construction waste such as steel scrap and empty cement bags can be sold locally. Broken or damaged wooded pieces shall	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of

Environmental Attributes	Sources of occurrence of impact	Environmental Impact	Suggested Mitigation measures	Actors Responsible for mitigation/their roles & responsibility/Institutional Arrangements
			be sold as firewood. The sewage generated during the construction period shall be diverted to an anaerobic tank and the supernatant water shall be disposed of in a soak pit.	independent engineer/supervision consultant.
Soil Erosion	Construction activities and heavy rains during construction	Problem to public health and deterioration of soil for loosing support for trees	Because of heavy rains and soils disturbances due to construction, soil erosion is likely to increase. During rainy season, the waste soil dumps need to be covered with HDPE liners and the rain water carrying washed out soils need to be diverted to a settling pond.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.
Depletion in ground water level	Usage of more ground water	Water scarcity in the locality	The level of ground water is not alarming in the project site. However appropriate rain water harvesting and ground water recharge should be proposed making use of the gradient to minimize the adverse impact on groundwater level in future.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.
Bio medical waste management	Operation of hospital	Deterrent impact on health of surrounding residents if not disposed-off properly.	The proposed hospital can either have its own facility for bio medical waste management or can outsource the bio medical waste management to a licensed agency. The biomedical waste should be managed as per Medical waste (management and processing) Rule, 2008 or any subsequent amendments as and when made effective for processing and management of medical waste in Bangladesh.	Concessionaire/Concessionaire appointed EPC contractor shall be responsible for taking proper action under the guidance/instruction of independent engineer/supervision consultant.

12.4.2. Proposed Monitoring Plan

It is important that the designed Environmental Management Plan to be implemented with fulfilling the targets. In this respect, monitoring of the EMP is required. Environmental monitoring will be required and done against a selected number of parameters. The below mentioned presents a list of parameters against the key environmental issues as already identified earlier. The table also points out the actors to be involved in the monitoring and frequency of monitoring and when to monitor.

Table 44 : Proposed Environmental Monitoring Plan

Key Environmental Issues	Key Indicators	Frequency of monitoring	When to monitor	Locations	Actors
During construction					
Air pollution	No2	4 times/year	Once in every three month and very 3 hrs in 9:am-9pm	The surroundings of the construction area	Concessionaire and Independent Engineer/Supervision consultant
Soil Management & Disposal	Disposal of excavated soil	Continuous throughout the construction stage	Throughout the construction period	Construction site	Independent Engineer/Supervision consultant
Noise and vibration	Noise level	4 times/year	Once in every three month and very 3 hrs in 9:am-9pm	The surroundings of the constructing area	Concessionaire and Independent Engineer/Supervision consultant
Solid Waste & Sewage	Disposal of solid waste and sewage	Continuous throughout the construction stage	Throughout the construction period	The surroundings of the constructing area	Independent Engineer/Supervision consultant
During operation					
Bio medical waste management	Management of bio medical waste	Continuous throughout the operation period	Throughout the operation period	Project site	Independent panel
Ground water	Rain water harvesting or ground water recharge measures	During operation period	During operation period	Project site	Independent panel

12.4.3. Institutional arrangement for implementation of Environment Management Plan and Monitoring Plan

Implementation of the aforesaid Environment Management Plan and its monitoring need to be done during the project life cycle to minimize any adverse impact on environment. The institutional framework

for implementation and monitoring of Environment Management Plan during construction and operation stage of the project is discussed below:

During Construction Stage

The concessionaire shall be the prime actor responsible for implementation of Environment Management Plan. The Independent Engineer/construction supervision consultant will guide/assist/monitor the concessionaire in meeting the environmental compliance requirement. The implementation process starts from the design stage, where the concessionaire shall incorporate the measures under Environment Management Plan in the project designs and submit to the Authority/Independent Engineer for approval. Upon approval of project designs, the construction of the project shall commence. Independent Engineer shall monitor the implementation of Environment Management Plan during construction period to ensure compliance with the approved project designs. In case any deficiency found by Authority, the Concessionaire shall be asked to rectify the same within a specified period. In case the deficiency is not rectified within the specified period, necessary action including applying penalties etc. will be taken by Authority.

During Operation Stage

The concessionaire shall be the prime actor responsible for implementation of Environment Management Plan during operation period. The Implementation of Environment Management Plan shall be monitored by the Independent Panel to be formed. The Independent Panel shall have an environment expert. In case any deficiency found by Authority, the Concessionaire shall be asked to rectify the same within a specified period. In case the deficiency is not rectified within the specified period, necessary action including applying penalties etc. will be taken by Authority.

In addition to the monitoring by Independent Engineer and Independent Panel as mentioned above, the Concessionaire shall also provide necessary support to the government authorities for any monitoring/auditing as and when required under the applicable regulations and statute or any special instruction of Government of Bangladesh.

13. Social Impact Assessment (SIA)

13.1. Introduction & Objectives

Social Impact Assessment (SIA) can be defined in terms of efforts to assess or estimate, in advance, the social consequences that are likely to follow specific policy actions and specific government actions. It is a process that provides a framework for prioritizing, gathering, analyzing, and incorporating social information and participation into the design and delivery of developmental interventions.

The SIA study has been undertaken with the following objectives:

- To identify the aspects of the project likely to result in significant impacts to social resources/receptors;
- To analyse and map stakeholders and document the stakeholder consultation during the study;
- Assessment of the socio-economic environment through collation of secondary information of the site, supplemented by consultations with the local communities to understand community perception with regard to the project and its activities.

13.2. Methodology followed for conducting SIA

Social Assessment is an iterative process that has to be organized in a phased manner in several stages. For the purpose of this project we have adapted our methodology comprising of following five distinct stages:

- Analyze project's context
- Identify stakeholders / conduct stakeholder analysis
- Identify Social Factors/variable
- Analyze baseline data and assess priorities
- Consult stakeholders and develop mitigation plans

13.3. Stakeholders identified in the Area of influence

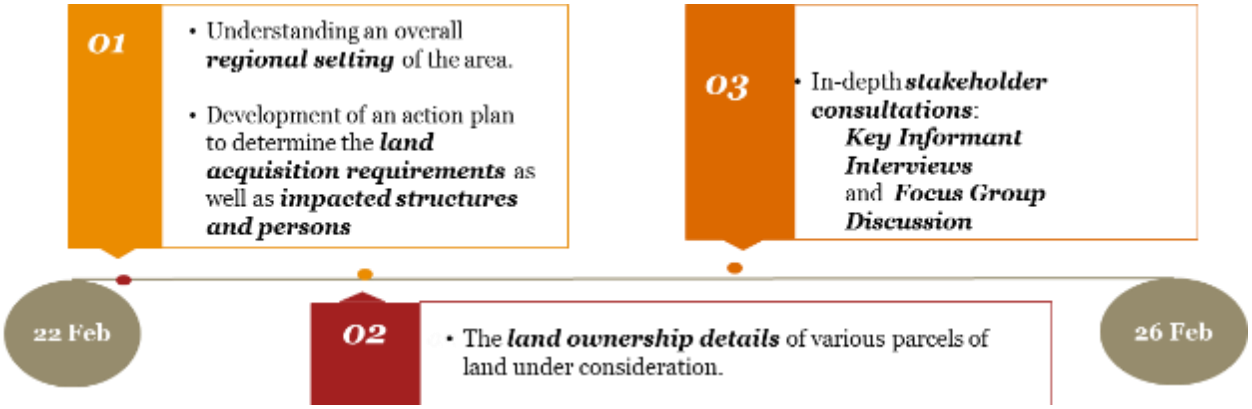
The stakeholders identified for the project include the project affected pesrons, project beneficiaries, BR officials especially the Project Director (PD) and CMO, Chittagong Railway Hospital.

The project affected persons have been identified based on the following parameters:

- Those directly exposed to construction impacts due to their proximity to the project area of influence.
- Those entitled to compensation due to physical relocation and displacement
- Those directly and indirectly affected due to loss of livelihood or income generation sources.
- Those along haul routes of construction materials

13.4. Stakeholder consultation

The stakeholder consultation was conducted with the objectives as described in figure below:



The types of consultation involved:

Table 45 : Nature of consultation for social impact assessment

Type of consultation	Key Participants
Key Informant Interviews	• People residing in the allotted residential quarters. • People residing in the extension of the allotted quarters • Commercial establishments
Focus Group Discussion	• Squatters in the slums
Meetings with Key officials	• Project Director (PD) and CMO, Chittagong Railway Hospital • Chief engineer, BR and • Divisional Railway Manager

13.5. Identified Establishments to be impacted

As per the details provided by BR, the identified site (2.55 acres) for hospital has 8 authorized structures and 6 unauthorized structures and the identified site (1.50 acres) for medical college has 41 authorized structures and 11 unauthorized structures. As per the proposed project structure, the establishments on 2.55 acres of site shall be demolished first for clearance of the land for development of hospital. The affected people shall be rehabilitated by Bangladesh Railway. As 1.50 acres of land for medical college shall be handed over upon compliance with regulatory requirements, the establishments under this land shall be rehabilitated prior to hand over. The details of establishments on these two lands are provided under Annexure VI.

13.6. Perceived impacts on the overall Socio – Economic environment

13.6.1. Impact during Construction Stage

The social impacts during the construction stage could result due to inflow of migrant workers and associated induced development etc. This will ensure a rise in the consumption of consumer goods in the local area, which will tend to boost up the local economy. Local people in the vicinity shall have the opportunity of employment during construction stage depending on their qualification.

13.6.2. Impact during Operationalization of the Project

Operationalization of the proposed multi-specialty hospital would have certain positive impacts as discussed below:

Availability & Accessibility of Healthcare Services: The project shall not only make the critical healthcare services available in the railway hospital but also cater to the quality health care needs of the general population of Chittagong. Railway employees will have the access to the critical healthcare services at discounted rate. The health care services in the existing railway hospital is minimal.

Physical Infrastructure: Owing to construction and operation of the proposed hospital, there would be a value addition to the existing railway hospital such as upgraded health infrastructure with improved basic infrastructure facilities like water supply, telecommunication, power, roads etc.

Employment: The operation of the project and other allied facilities will enhance the employment opportunities directly and indirectly. The employment will have positive impact on the local economy thereby improving the quality of life.

Increased Economic Activities: Operationalization of the multi-specialty hospital would trigger certain economic activities in the region such as food outlets, general stores, pharmacy, diagnostics centres, shopping centres etc. which will further improve the quality of life in the region.

13.7. Proposed Mitigation Measure

The only negative impact of the project is demolition of settlements existing on the project site. The people displaced due to this demolition need to be rehabilitated prior to handover of land for development of the project.

13.8. Implementation of Mitigation Measure

The rehabilitation of the affected persons due to demolition of existing structures on the project site shall be done by Bangladesh Railway as per applicable policies & regulations prior to the handover of land to the private partner for the project.

An indicative cost of rehabilitation & resettlement for both legal and illegal alottees has been worked out based on the Project Assessment and Valuation Committee (PAVC) rates approved for a World Bank funded project “Coastal Embankment Improvement Program” in Bangladesh and based on “Resettlement and Social Management Framework (RSMF), Bangladesh Economic Zones Authority”.

The assumptions considered for the estimation of the compensation includes:

- The cost of the structure for the legal allotees is considered as BDT 1100/sq.ft for the Semi-Pucca structure, based on the Project Assessment and Valuation Committee (PAVC) rates approved for a World Bank funded project “Coastal Embankment Improvement Program”. Additionally a transfer grant is considered as 1/8th of the structure cost.

- The House construction grant for the non-titleholders is considered as BDT 70/square feet as per the mentioned cost for Non-Shiftable Structures in the RSMF, BEZA, 2015. "In the RSMF, 2015 from BEZA, further, the upper limit of the compensation is BDT 6000.

Accordingly the indicative estimated compensation for the resettlement and rehabilitation of the project affected persons on the identified site of hospital (2.55 acers) comes to BDT 5,164,875. The indicative estimated compensation for the resettlement and rehabilitation of the project affected persons on the identified site of medical college (1.50 acers) comes to BDT 1,38,24,175. The detailed estimation of compensation is enclosed under Annexure VII.

The aforesaid estimation of compensation is indicative and Bangladesh Railway is free to undertake the rehabilitation & resettlement for the project as per applicable policies & regulations.

14. Conclusion and Recommendation

Based on the feasibility analysis under this report, following are the conclusions and recommendations for the project:

Table 46 : Recommendations

Sl. No.	Particulars	Remarks
1	Project Implementation	**Option 1: Hospital & Medical College** The Concessionaire shall construct and commence operation of hospital in the first phase on 2.55 acres of land within first 5 years of the concession period. Upon compliance with regulatory requirement of 70% occupancy as mentioned under section 6.2.1 of this report, the Concessionaire shall communicate to BR about its intent to establish medical college within 3 months from the date of achievement of 70% occupancy for continuous period of 2 years. Within 6 months from the date of communication of its intent, BR shall handover the 1.50 acres of land free from encumbrances to the Concessionaire for establishment of medical college. In case the concessionaire fails to provide its consent within the stipulated time period, the Authority would have the right to select another private partner for the medical college subject to the rules and regulations applicable at that time. In such case, the concessionaire would have the obligation to provide all necessary support to the private partner for smooth operation of medical college. BR shall obtain required approvals for establishment of medical college and the concessionaire shall support BR in this regard. A Viability Gap Funding (VGF) in the form of capital grant for only medical college component as per applicable rules would be required. **Option 2: Hospital & Nursing Institute** Hospital could be developed on 2.55 acres of land adjacent to the hospital and nursing institute could be developed on the 1.5 acres of land. BR shall make available the lands for the hospital and nursing institute. Concessionaire will have the responsibility to build, operate the hospital and nursing institute during the concession period and transfer the same upon expiry of the concession period. No VGF is required. **Option 3: Only Hospital** 2.55 acres of land is adequate for a 250 bed hospital and no additional land would be required. BR shall make available the lands for the hospital. Concessionaire will have the responsibility to build, operate the hospital and nursing institute during the concession period and transfer the same to BR after the concession period. The hospital project is self -sustainable and no VGF is required.
4	Concession Period	For Option 1 - 99 Years (40 years+33 years+26 years) For Option 2 and Option 3 - 40 Years
5	Annual Concession Fee payable by Concessionaire	BDT 2.50 Cr (Bid Parameter) with 5.85% annual escalation
6	Upfront payment payable by Concessionaire	BDT 5.00 Cr at the time of signing of concession agreement
7	Discount to BR employees	20% on market rate

15. Way forward

Upon approval of feasibility report, Phase II of the project i.e. Procurement process development and implementation shall commence and following activities will be undertaken:

- Finalization of deliverables and timelines of Phase II.
- Finalization of technical & financial eligibility criteria, key bid conditions and key terms of agreement.
- Quantification of affected people to be rehabilitated and finalization of rehabilitation plan for incorporation in the Concession Agreement. Support of BR is required in this regard.
- Preparation of draft RFP documents.
- Providing procurement and early operations support

Annexure

Annexure I: Discussion on Feasibility Held So Far

With regard to the project feasibility and PPP structuring, discussions were held and presentations were made to BR by the transaction advisor (PwCPL) since November 2015. The discussions held so far and observations/decisions taken have been summarized as below:

Table 47 : Presentations Held

Sl. No.	Particulars	Date
1	Presentation on project feasibility and structuring option	05.11.2015
2	Presentation on revised project feasibility and structuring option	04.02.2016
3	Revisit of the site based on discussion during 4th February 2016 presentation	23.02.2016 to 28.02.2016
4	Revised presentation on project implementation options, key challenges and recommendations	21.03.2016

Presentation on 5th November 2015

The first presentation of project feasibility covering project plan, project structuring options, financial feasibility, and social & environment impact assessment was presented on 5th November 2015. As part of the project structuring options, following options were presented:

- **Option 1: Existing healthcare services free of cost and remaining services at subsidized rates to BR employees -:** The concessionaire shall be responsible for design, build, finance, operate and transfer the project. BR employees shall get the existing healthcare services free of cost and other services at subsidized rate.

- **Option 2: Free Bed Days to BR Employees:** The concessionaire shall be responsible for design, build, finance, operate and transfer the project. Certain % of bed days shall be kept for providing free treatment to BR employees. This option has the risk of provision of low priced services to BR employees and high priced services to the other patients by the concessionaire.

- **Option 3: Annual Kitty for free treatment to BR Employees:** The concessionaire shall be responsible for design, build, finance, operate and transfer the project. A fixed kitty of annual amount shall be kept by the concessionaire for providing free treatment to BR employees. BR employees will have access to all healthcare services in the new hospital subject to maximum kitty value. Entitlements for BR employees for category of rooms and wards shall be specified by BR. The value of services to be adjusted from kitty shall be as per the rates applicable for wards irrespective of any treatment in rooms.

Out of the three options, Option 3 was recommended due to availability of all advanced healthcare services in the new hospital free of cost to BR employees and less complex monitoring requirement. Following observations were made by BR on the options presented:

Observation Made by Bangladesh Railways (BR)

- Healthcare services shall be provided at subsidized rate to BR employees and not free of cost.
- Project to be structured on commercial model with provision of revenue to BR
- Revenue to BR could be in form of annual concession fee and upfront payment
- Transaction Advisor to assess the provision for maximization of revenue to BR

Presentation on revised project feasibility on 4th Feb 2016

Based on the observation made by BR during the meeting held on 5th November 2016, the project was restructured and has been presented on 4th February 2016. The project was structured on the basis of commercial model with the objective of maximization of revenue to BR. The key features of the revised project structure were:

Key Features

- Concessionaire shall be responsible for design, build, finance, operate and transfer the project
- Right to use land and existing structures shall be provided by the Authority
- Concessionaire shall pay annual concession fee (bid parameter) and upfront payment to BR.
- Healthcare Services to BR employees shall be provided at discounted rate (20%) and to other patients at market rate.
- The existing OPD block to be operated as a referral clinic with observatory beds for BR employees

Observation Made by Bangladesh Railways (BR)

The observations made by BR during the discussion is as below:

- Space for shifting the existing infrastructure in the IPD block to the existing OPD and diagnostic block need to be assessed. Project Director was asked to check existing drawings of OPD block to check if foundation will have the capacity to support construction of additional floors
- Project Director was also asked to check the availability of additional land for a separate building for shifting the IPD facility during the construction period.
- Existing OPD and IPD services should continue during the construction stage. Hence shifting should be before commencement of demolition.
- PwC & BR team to conduct joint site visit to assess availability of space for shifting of existing IPD block (minimum 50 beds).
- BR shall clear the site from unauthorized slums and settlements and construct boundary wall prior to issue of bid documents

Findings of Site Visit during 23rd Feb 2016 to 28th Feb 2016

In view of discussions held on 4th Feb 2016, the project site was again visited along with the BR team during 23rd Feb 2016 to 28th Feb 2016 to assess the followings:

- Assessment of availability of land and feasibility of constructing a new block for shifting 50 beds IPD.
- Assessment of existing services especially in the IPD block, which are required to be shifted
- To conduct social impact survey in nearby slums/settlements to understand the impact of project development.
- Discussion with key stakeholders

During the site visit following challenges were triggered:

- Staff resistance on demolition of existing IPD block

- Local stakeholders mentioned that project should be structured with both commercial & social objectives. For instance, proposed hospital should provide benefit to BR employees (some free medical service) in addition to the revenue sharing.

- Local BR team at Chittagong suggested to consider another alternate plot of land on south eastern side since demolition of existing IPD block is not possible and BR would like to retain existing building for uninterrupted services to BR employees. The new site was found to be occupied by 214 unauthorized settlements, out of which 70 belongs to BR employees, 99 encroachers and 45 squatters, 1 temple and 1 graveyard. Clearance of this site will take approx. 3 to 4 years and leads to project delay.

- Also in case of construction of a new IPD block for shifting of existing services, the project will get delayed by 2 to 3 years.

Presentation on 21st March 2016

In view of the aforesaid challenges, PwC team has again restructured the project and presented the same to BR on 21st March 2016. The key challenges and revised project implementation options were discussed in detail and following decisions were taken during the meeting:

- The existing IPD and OPD block shall not be demolished and a new site is required to be identified for the project.

- A new site has been demarcated on the site map out of the site adjacent to the existing hospital (on the south-eastern side of the existing hospital) for the project. Project Director was asked to undertake a survey of the new site and provide to the Transaction Advisor, the details namely area of the site and the number of settlements & people (authorized settlements and encroachments) to be rehabilitated. Upon receiving the details, the Transaction Advisor shall assess the site and provide its recommendation for its suitability for the project.

- BR shall undertake the required rehabilitation & resettlement for authorized settlements as well as encroachers and make available the site free from any encumbrances for the project prior to issue of bid documents.

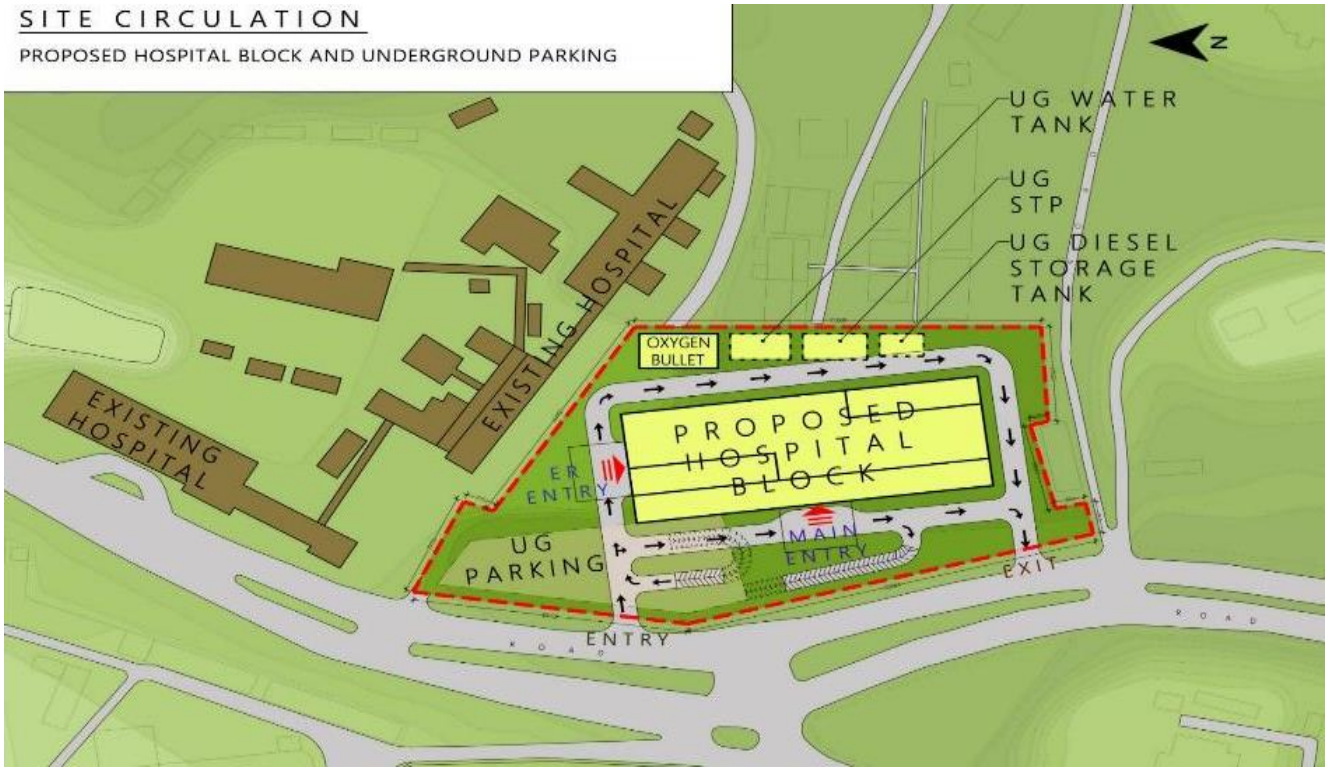
- The project is to be structured under commercial model with provision of revenue to BR in the project structure. It was agreed that the new hospital need not have any provision for free or subsidized treatment for BR employees.

- PPP Authority is requested to advice on the CCI approval for developing the project on the new site as the existing approval is for “Upgradation and modernization of existing railway hospital”

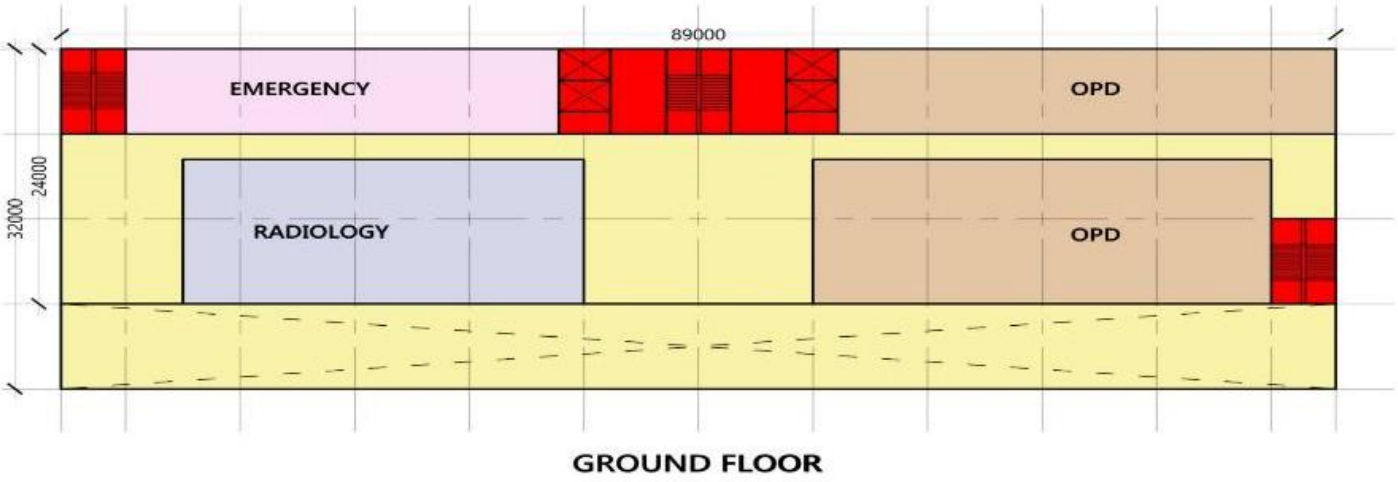
In addition to the above, it was also agreed that, PwC shall submit the draft feasibility report including its assessment of the new site and recommendations. Accordingly this feasibility report is based on our assessment with respect to the new site.

Annexure II- Project Layout Plans

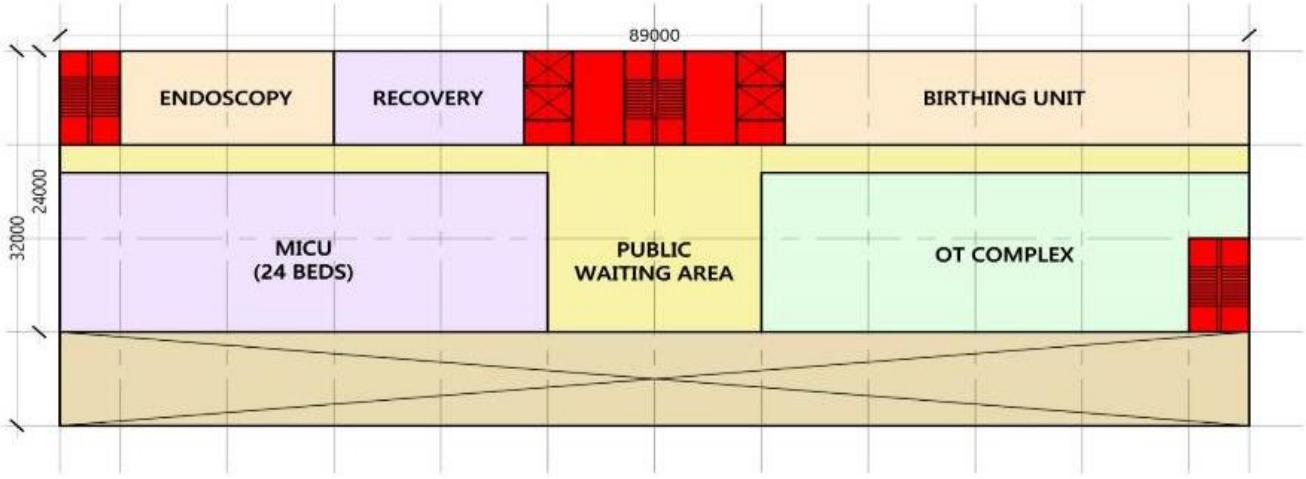
Site Layout



Floor Plan – Ground Floor

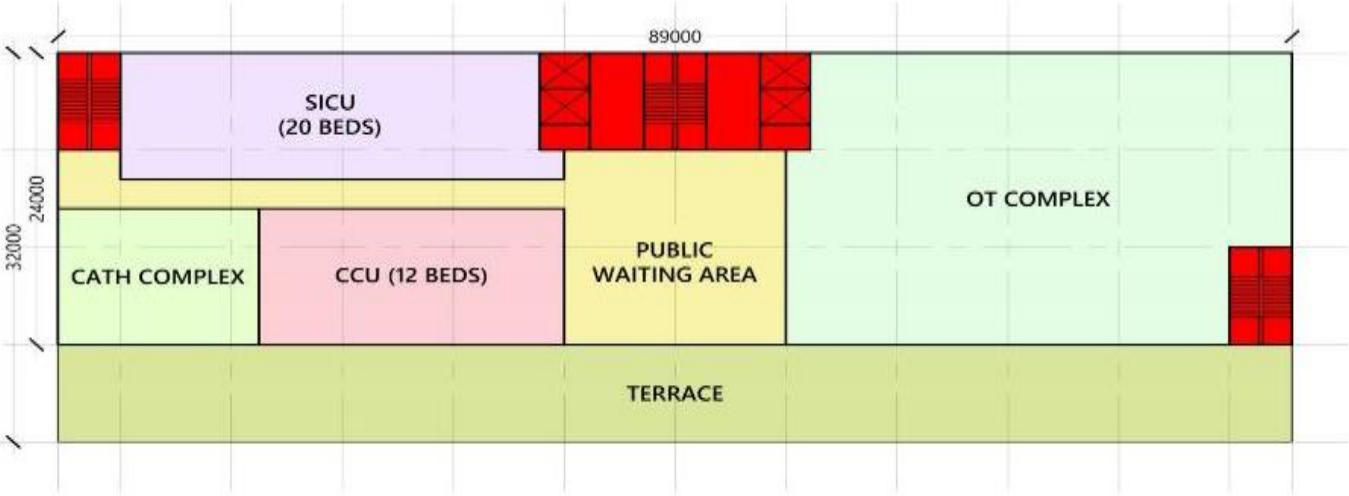


Floor Plan –First Floor



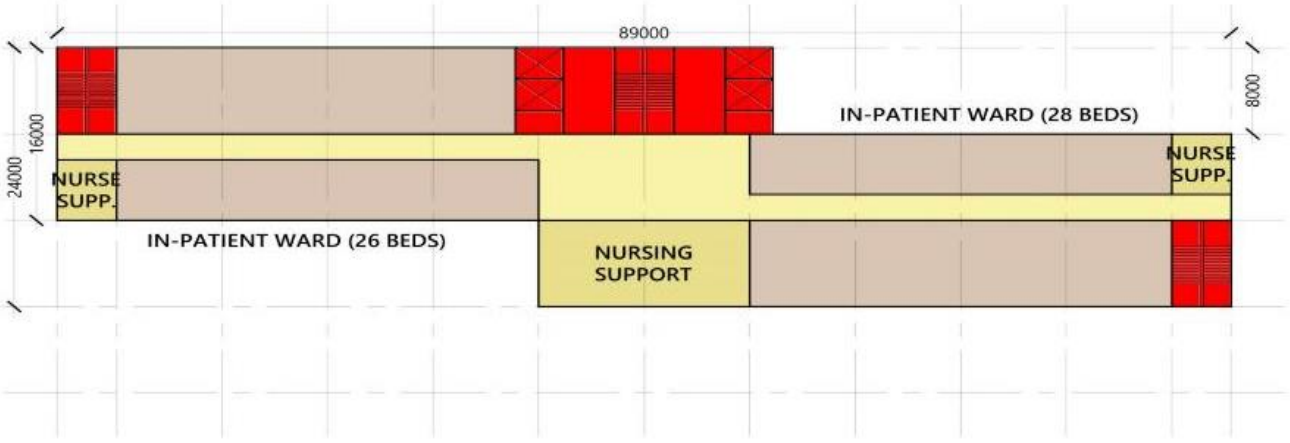
FIRST FLOOR

Floor Plan –Second Floor



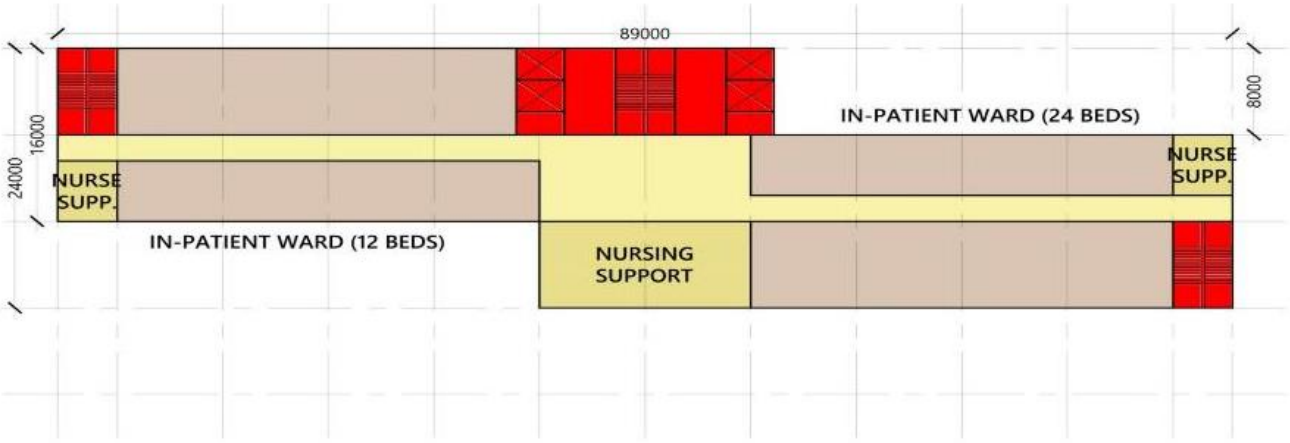
SECOND FLOOR

Typical Floor Plan – Third to Fifth Floor



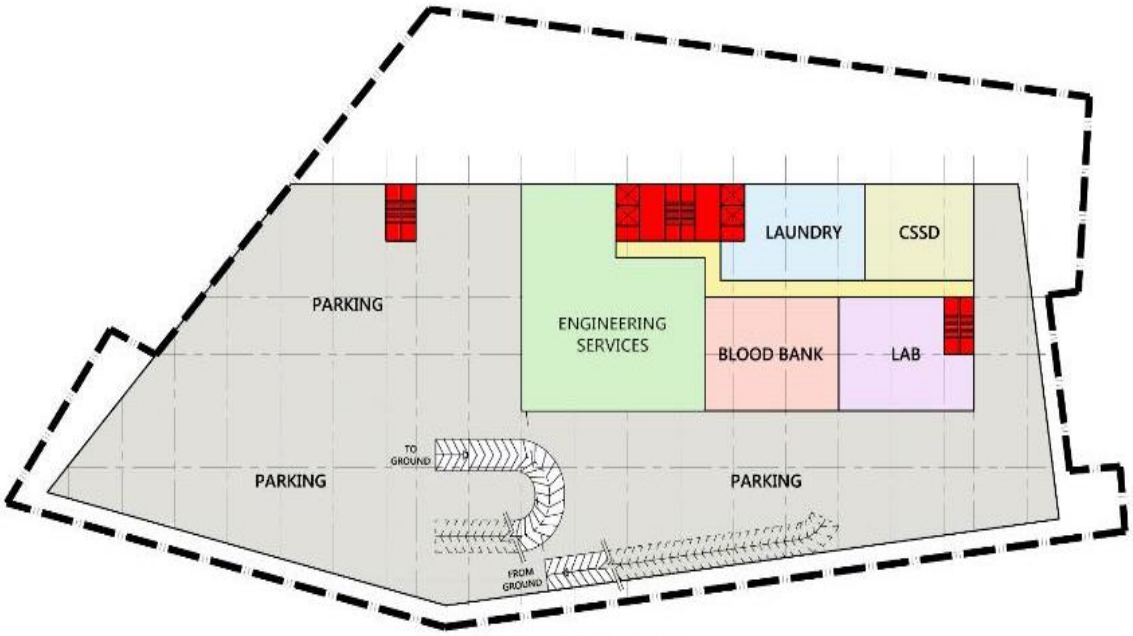
TYPICAL FLOOR PLAN -THIRD FLOOR TO FIFTH FLOOR

Floor Plan – Sixth Floor



SIXTH FLOOR

Concept Plan - Basement



1ST BASEMENT FLOOR

Annexure III – Details of Medical Equipment

Enclosed in following pages

Medical Equipment		
Sl.No.	**Department Wise Medical Equipment Cost**	**Cost (BDT Lacs)**
1	Beds	457.84
2	SICU	393.68
3	CCU	392.87
4	PICU	181.06
5	NICU	217.42
6	Labor room	58.19
7	Day care	1.74
8	Heart centre	362.61
9	Electrophysiology lab	193.87
10	CTVS OT	269.26
11	Neuro OT/Ortho OT	471.93
12	General OT (2)	332.02
13	Minor OT	30.96
14	Post-Operative Unit	32.69
15	Nephrology Centre	107.11
16	Radiology & Imaging	1553.18
17	Clinical Pathology	6.12
18	Biochemistry	70.87
19	Hematology	33.28
20	Microbiology	49.44
21	Serology	5.90
22	Histopathology	117.26
23	Wash and Sterilization	2.36
24	Endoscopy	128.47
25	Blood Bank(Transfusion Medicine)	134.87
26	Obstetrics + Gynaecology - OPD	11.95
27	Urology - OPD	12.98
28	Dental OPD	20.95
29	ENT - OPD	10.03
30	Ophthalmology - OPD	50.67
31	Rehabilitation Centre	91.57
32	Nurse station for wards	26.26
33	CSSD	247.80
34	Emergency care	57.89
35	Ambulance	59.00
	Sub Total	**6194.08**
	Add:Import Duty	309.70
	Total cost for Hospital Medical Equipment	**6503.78**

Details of Medical Equipment			
Sl. No.	**Beds**	**Cost/Unit (BDT lakhs)**	**No. of units**
1	Single	2.36	12
2	Twin sharing - Semi pvt/shared	1.48	24
3	General wards	1.18	184
4	Post op	5.90	20
5	Day care	5.90	10
6	**Total**	**457.84**	

Sl. No.	SICU	Cost /Unit (BDT lakhs)	No. of units
1	Multiparameter monitor	3.69	20
2	Central station	4.43	2
3	Ventilator	10.33	17
4	Transport ventilator	11.80	1
5	CPAP	2.95	2
6	Defibrillator	4.06	2
7	ECG machine	1.48	2
8	Pulse oximeter	0.74	2
9	Volumetric Pump	0.74	2
10	Syringe infusion pump	0.59	70
11	Suction machine	0.15	7
12	Fluid warmer	1.62	2
13	ICU pendants	0.96	20
14	Body Warmer	1.84	2
15	Beds	1.77	20
16	**Total**	**393.68**	

Sl. No.	CCU	Cost /Unit (BDT lakhs)	No. of units
1	Multiparameter monitor	3.69	12
2	Central station	4.43	1
3	Ventilator	11.80	12
4	Transport ventilator	11.80	1
5	Bi-pap	2.95	2
6	CPAP	5.90	2
7	ECMO	44.25	1
8	Dual chamber pacer	2.21	2
9	IABP	26.55	2
10	Defibrillator with pacer	5.16	1
11	ECG machine	1.55	1
12	Pulse oximeter	0.74	2
13	Syringe infusion pump	0.59	36
14	Volumetric pump	0.66	2
15	Fluid warmer	1.62	2
16	Suction machine	0.15	1
17	Body warmer	2.21	2
18	ICU pendants	0.96	12
19	Beds	1.77	12
20	**Total**	**392.87**	

Details of Medical Equipment			
Sl. No.	**PICU**	**Cost /Unit (BDT lakhs)**	**No. of units**
1	Multiparameter monitor	3.69	8
2	Ventilator	11.80	8
3	Transport ventilator	11.80	1
4	CPAP	2.95	1
5	Pulse oximeter	0.74	2

6	Syringe Infusion pump	0.59	24
7	Volumetric pump	0.66	2
8	Suction machine	0.15	1
9	Fluid warmer	1.62	1
10	Body Warmer	1.84	1
11	ICU pendants	0.96	8
12	Beds	1.77	8
13	**Total**	**181.06**	

Sl. No.	NICU	Cost /Unit (BDT lakhs)	No. of units
1	Multiparameter monitor	3.69	6
2	Neonatal Ventilator	14.75	5
3	Transport ventilator	11.80	1
4	Digital weighing scale(neonatal)	0.15	1
5	Bubble CPAP	4.43	2
6	Incubator	8.85	6
7	Open care System	1.48	9
8	Phototherapy Unit(dual surface)	2.95	2
9	Syringe infusion pumps	0.59	18
10	Pulse Oximeter	0.74	5
11	Beds	1.77	8
12	**Total**	**217.42**	

Sl. No.	Labor room	Cost /Unit (BDT lakhs)	No. of units
1	Delivery Table	2.95	6
2	Fetal monitor	2.95	6
3	NST	2.95	1
4	Portable Mounted Light	4.43	2
5	Complete Open care system(neonate)	1.48	1
6	Basinet	0.22	1
7	Newborn Weighing scale	0.15	1
8	USG	8.85	1
9	Suction Machine	0.15	2
10	**Total**	**58.19**	

Sl. No.	Day care	Cost /Unit (BDT lakhs)	No. of units
1	ECG machine	1.48	1
2	Nebuliser	0.06	2
3	suction machine	0.15	1
4	**Total**	**1.74**	

Details of Medical Equipment

Sl. No.	Heart centre	Cost /Unit (BDT lakhs)	No. of units
1	Cath Lab with flat panel	346.68	1
2	Multipara monitor	8.14	1
3	Biphasic Defib with Cardiac pacing	6.61	1
4	Syringe infusion pump	0.59	2
5	**Total**	**362.61**	

Sl. No.	Electrophysiology lab	Cost /Unit (BDT lakhs)	Cost/Unit (INR Lacs)
1	4D Echo	140.42	1
2	ECG machine	3.66	1
3	TMT machine	14.75	1
4	Defibrillator	4.01	1
5	Spirometry	4.48	1
6	Holter	8.85	3
7	**Total**	**193.87**	

Sl. No.	CTVS OT	Cost /Unit (BDT lakhs)	No. of units
1	O.T Table	17.70	1

2	Multiprameter Monitor	3.69	2
3	O.T Light	17.70	1
4	Anesthesia Machine with ventilator	13.28	1
5	Defibrillator with pacer	5.16	1
6	Electro-Cautery	8.85	1
7	Syringe infusion pumps	0.59	2
8	Heart lung machine	59.00	1
9	ACT machine	3.32	1
10	IABP	26.55	1
11	Patient warming blanket	1.92	1
12	Head light source	4.43	1
13	X-Ray film viewer	0.15	2
14	Surgical operation sets	29.50	2
15	Sternum Saw	8.85	1
16	Suction machine	0.22	2
17	OT Pendant	11.80	2
18	Furniture	2.36	1
19	scrub station	2.36	1
20	Miscellaneous	5.90	1
21	**Total**	**269.26**	

Details of Medical Equipment

Sl. No.	Neuro OT/Ortho OT	Cost /Unit (BDT lakhs)	No. of units
1	O.T Table	47.20	1
2	O.T Light	17.70	1
3	Defibrillator	4.72	1
4	Anesthesia Workstation	14.16	1
5	Multi-Parameter Monitor	9.44	1
6	Operating Microscope	59.00	1
7	Electrocautery	7.08	1
8	Syringe infusion pump	1.18	2
9	CUSA	82.60	1
10	neuroendoscopy	17.70	1
11	Pneumatic Drill Sets	4.43	1
12	Battery Operated Drill Sets	13.28	1
13	tourniquet	1.77	1
14	C Arm	51.63	1
15	surgical sets	17.70	4
16	Arthoscopy set	47.20	1
17	OT Pendant	2.95	2
18	suction machine	0.22	1
19	X ray view box	0.15	2
20	Furniture	2.36	1
21	scrub station	2.36	1
22	patient warming blanket	1.92	2
23	Miscellaneous	5.90	1
24	**Total**	**471.93**	

Sl. No.	General OT (2)	Cost /Unit (BDT lakhs)	No. of units
1	OT Table	23.60	2
2	OT light	11.80	2
3	Defibrillator	4.06	2
4	Anesthesia Workstation	11.80	2
5	Multiparameter monitor	2.21	2
6	Electrocautery	7.38	2
7	Syringe infusion pump	0.59	4
8	OT Pendant	5.90	2
9	Surgical sets	5.90	6
10	X-Ray film viewer	0.15	2
11	Furniture	2.36	2
12	scrub station	2.36	1
13	Miscellaneous	5.90	1
14	Urology set	88.50	1
15	Laproscopy trolley with equipment	59.00	1
16	**Total**	**332.02**	

Details of Medical Equipment

Sl. No.	Minor OT	Cost /Unit (BDT lakhs)	No. of units
1	OT Table	2.95	1
2	OT Light	4.43	1
3	Boyle Apparatus	1.48	1
4	Multi-Parameter Monitor	2.21	1
5	Electrocautery	7.38	1
6	Surgical sets	0.74	2
7	Plaster Cutter	0.06	1
8	suction machine	0.22	1
9	X-ray viewer	0.15	1
10	Furniture	2.36	1
11	scrub station	2.36	1
12	Miscellaneous	5.90	1
13	**Total**	**30.96**	

Sl. No.	Post-Operative Unit	Cost /Unit (BDT lakhs)	No. of units
1	Multiparameter monitor	2.24	11
2	Syringe infusion pump	0.59	11
3	PCA pump	1.53	1
4	**Total**	**32.69**	

Sl. No.	Nephrology Centre	Cost /Unit (BDT lakhs)	No. of units
1	Dialysis Machine	8.11	8
2	Multi-Parameter Monitor	2.21	8
3	Dialyser reprocessor	10.33	1
4	Defibrillator	4.06	1
5	RO Pump	8.85	1
6	Syringe pumps	0.15	4
7	Digital Weigh Balance	0.66	1
8	**Total**	**107.11**	

Sl. No.	Radiology & Imaging	Cost /Unit (BDT lakhs)	No. of units
1	CR with digitizer and Imager	29.50	1
2	MRI (1.5T)	663.75	1
3	CT (128slice)	590.00	1
4	Ultrasound machine(radiology & gynaec)	44.25	2
5	Mammography machine	29.50	1
6	BMD machine	29.50	1
7	X-ray machine (mobile)	11.80	1
8	X-ray machine (digital)	95.88	1
9	Orthopantomogram	14.75	1
10	**Total**	**1553.18**	

Details of Medical Equipment

	Laboratory Medicine	Cost /Unit (BDT lakhs)	No. of units
Sl. No.	**Clinical Pathology**		
1	Centrifuge	0.44	1
2	Urine Analyzer	2.21	1
3	VDRL Shaker	0.30	1
4	Hot Air Oven	0.74	1
5	Incubator	0.74	1
6	Refrigerator	0.37	1
7	Microscopes	0.59	2
8	Wax bath	0.15	1
9	**Total**	**6.12**	

Sl. No.	Biochemistry	Cost /Unit (BDT lakhs)	No. of units
1	Complete automatic Bio& immuno chemistry	59.00	1
2	Blood Gas analyzer	5.90	1

3	Electrolyte Analyzer	4.43	1
4	Centrifuge	0.44	1
5	water bath	0.37	1
6	refrigerator(2-4C)	0.37	2
7	**Total**	**70.87**	

Sl. No.	Hematology	Cost /Unit (BDT lakhs)	No. of units
1	Blood Cell counter -5 part	26.55	1
2	Microscope	0.71	4
3	ESR analyser	1.53	1
4	Centrifuge	0.59	1
5	Coagulometer	1.77	1
6	**Total**	**33.28**	

Sl. No.	Microbiology	Cost /Unit (BDT lakhs)	No. of units
1	Blood culture system	26.55	1
2	Bio safety cabinet	5.90	3
3	incubator	1.48	2
4	Hot air oven	0.71	1
5	Urine analyzer	1.53	1
6	**Total**	**49.44**	

Sl. No.	Serology	Cost /Unit (BDT lakhs)	No. of units
1	ELISA reader & washer	5.90	1
2	**Total**	**5.90**	

Details of Medical Equipment

Sl. No.	Histopathology	Cost /Unit (BDT lakhs)	No. of units
1	Automatic Tissue processor	23.60	1
2	Tissue embedding system	22.13	1
3	Auto Slide Stainer	17.70	1
4	Microtome	22.13	1
5	Cryostat	26.55	1
6	Microscope	1.77	2
7	Incubator	0.74	2
8	Wax bath	0.15	1
9	**Total**	**117.26**	

Sl. No.	Wash and Sterilization	Cost /Unit (BDT lakhs)	No. of units
1	Autoclave	0.74	1
2	Hot air oven	0.74	1
3	Ultrasonic Washer	0.89	1
4	**Total**	**2.36**	

Sl. No.	Endoscopy	Cost /Unit (BDT lakhs)	No. of units
1	Endoscopy Table	2.95	1
2	Flexible Endoscopy Sets	94.40	1
3	Argon Cautery	13.28	1
4	Ultrasonic washer	1.48	1
5	Anaestia work station	11.80	1
6	Scope Washer	4.43	1
7	Suction machine	0.15	1
8	**Total**	**128.47**	

Details of Medical Equipment

Sl. No.	Blood Bank(Transfusion Medicine)	Cost /Unit (BDT lakhs)	No. of units
1	Photometer / Automated equipment for Hemoglobin estimation	0.62	1

2	Donor Couches	2.21	2
3	Blood Mixer and Collector	1.49	2
4	Tube Sealer thermal	1.40	1
5	Needle Destroyer / Burner	0.15	1
6	Blood Bank Refrigerator	1.48	1
7	Cell Separator for platelets and plasmapharesis	41.30	1
8	Refrigerated Centrifuge	19.18	1
9	Plasma Expressor	0.74	1
10	Electronic Balance for bag weighing	0.52	1
11	Cryobath for thawing for cryoprecipitate	1.33	1
12	Laminar Flow hood	1.77	1
13	Tube Sealer	1.40	1
14	Centrifuge Table Model for 8 tubes	0.52	1
15	Water Bath / Air bath with temp range 37-56 degree centigrade	0.89	1
16	Incubator with Thermostatic Control	0.74	1
17	Microscopes Binocular	1.48	1
18	Refrigerators (Medicine Refrigerator) with temperature indicator	0.74	1
19	Automated Red Cell Washer	6.05	1
20	ELISA System (Automated washer with reader). Thermal printer, with interface capabilities to HIS	5.90	1
21	Centrifuge table top for 8 tubes	0.52	1
22	Incubator with temperature control and indicator	0.74	1
23	VDRL shaker	0.07	1
24	Refrigerator (Medicine Refrigerator) with temperature indicator	0.74	1
25	Autoclave (vertical) with temperature and pressure gage	1.48	1
26	Ultrasonic washer	8.85	1
27	Hotair Oven	0.74	1
28	Platelet incubator and shaker	5.90	1
29	Deep Freeze (-35 Degree)	8.85	1
30	Deep Freeze (-70 Degree)	10.33	1
31	Blood Bank Refrigerator	1.48	1
32	Tube Sealer	1.40	1
33	Insulated transport containers	0.22	1
34	**Total**	**134.87**	

Sl. No.	**Obstetrics + Gynaecology - OPD**	**Cost /Unit (BDT lakhs)**	**No. of units**
1	Gynaec Examination light	10.33	1
2	Gynaec Chair	1.40	1
3	Colposcope	0.22	1
4	**Total**	**11.95**	

Details of Medical Equipment

Sl. No.	**Urology - OPD**	**Cost /Unit (BDT lakhs)**	**No. of units**
1	Uroflowmetery	12.98	1
2	**Total**	**12.98**	

Sl. No.	**Dental OPD**	**Cost /Unit (BDT lakhs)**	**No. of units**
1	Dental Chair & Accessories	8.85	2
2	RVG	1.48	1
3	Oral Camera	1.77	1
4	**Total**	**20.95**	

Sl. No.	**ENT - OPD**	**Cost /Unit (BDT lakhs)**	**No. of units**
1	Audiometer	1.18	1
2	Audiometer booth	2.21	1
3	Impedance audiometry	6.64	1

4	**Total**	**10.03**

Sl. No.	Ophthalmology - OPD	Cost /Unit (BDT lakhs)	No. of units
1	Ophthalmic Chair & Examination Unit, Vision Drum & Doctor's Chair	1.11	1
2	Slit Lamp	2.95	1
3	A+B Scan	14.75	1
4	Direct Ophthalmoscope	0.22	1
5	Indirect Ophthalmoscope	1.48	1
6	Lensometer	1.18	1
7	Non-Contact Tonometer	0.59	1
8	Field Analyzer	7.38	1
9	Retinoscope	0.37	1
10	AutoRefractometer	5.90	1
11	Keratometer	2.95	1
12	OPD Miscellaneousaneous instruments	11.80	1
13	**Total**	**50.67**	

Details of Medical Equipment

Sl. No.	Rehabilitation Centre	Cost /Unit (BDT lakhs)	No. of units
1	Physiotherapy	7.38	1
2	Cervical cum lumbar traction	5.90	1
3	Cervical cum lumbar traction table	2.95	1
4	Ergo cycle	2.95	1
5	Examination table OPD couch	4.94	1
6	Exercise mattress (6*4 feet)	4.94	1
7	Floor model UV IR combined unit	4.06	1
8	High speed wheelchairs	5.90	1
9	Hot Pack (8 pack)	2.07	1
10	IFT	2.58	4
11	Microwave Diathermy	0.10	1
12	Muscle Stimulator	0.30	1
13	Paraffin Wax bath (16*12*10)	2.66	1
14	Parallel bar with mirror	0.37	1
15	Portable IR light	0.19	1
16	Portable UV light	4.06	2
17	Short wave diathermy	18.44	1
18	Suspension frame with couch	0.24	1
19	Swiss ball (100 cm diameter)	0.07	1
20	TENS	0.10	1
21	Ultrasound	0.22	1
22	Pulse oximeter	5.31	1
23	Miscellaneous	4.06	1
24	**Total**	**91.57**	

Sl. No.	Nurse station for wards	Cost /Unit (BDT lakhs)	No. of units
1	ECG machine	1.48	2
2	Defibrillator	4.06	4
3	Syringe pump	0.59	12
4	**Total**	**26.26**	

Sl. No.	CSSD	Cost /Unit (BDT lakhs)	No. of units
1	Steam sterilizer	36.88	2
2	Washer disinfector	17.70	2
3	ETO Sterilizer	26.55	1
4	Wash Sinks, counter tables, trolleys etc.	51.63	2
5	Ultrasonic instrument washer	4.43	2
6	**Total**	**247.80**	

Sl. No.	Emergency care	Cost /Unit (BDT lakhs)	No. of units
1	Beds	1.18	10

2	Monitors	2.36	10
3	Defibrillators	4.01	2
4	Stand alone spot lights	2.95	4
5	Suction machine	0.15	2
6	Crash cart	0.59	4
7	**Total**	**57.89**	

Sl. No.	Ambulance	Cost /Unit (BDT lakhs)	No. of units
1	Cardiac Ambulance	47.20	1
2	General Ambulance	11.80	1
3	**Total**	**59.00**	

	GRAND TOTAL	**6194.08**	

Annexure IV – Manpower Cost Projections

Enclosed in following pages

Manpower Requirement for Hosital

Number of Professionals

S No.	Positions	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Year Count	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	CEO	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
2	Medical Director	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
3	GM Finance	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
4	GM operations	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
5	GM marketing	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
6	HR Head	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Nurshing Staff															
1	Staff Nurses (one nurse per occupied bed with 30 nurses buffer)	0	0	0	90	120	155	180	205	205	205	205	205	205	205	205
2	Nurses Supervisors (one supervisor per ten nurses)	0	0	0	9	12	16	18	21	21	21	21	21	21	21	21
3	Nurse Superintendent	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
4	Asst. Nursing Superintendent	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
5	ICU nurses (1:1)	0	0	0	34	34	56	56	56	56	56	56	56	56	56	56
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	0	0	0	13	13	13	13	13	13	13	13	13	13	13	13
7	Cath lab Nurses (2 nurses per shift +30% buffer)	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5
8	Infection control	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2
9	Clinical Instructors	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2
10	Quality Nursing	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
11	Data entry operators (one operator per ward per shift +30% buffer)	0	0	0	18	18	18	18	18	18	18	18	18	18	18	18
	Medical Staff															
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	0	0	0	10	14	20	24	28	28	28	28	28	28	28	28
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	0	0	0	2	4	5	6	7	7	7	7	7	7	7	7
3	Junior Consultants (twice the senior residents)	0	0	0	4	8	10	12	14	14	14	14	14	14	14	14
4	Pathologist	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
5	Microbiologist	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
6	Radiologist	0	0	0	3	3	4	5	5	5	5	5	5	5	5	5
7	Anesthetist	0	0	0	5	6	7	9	9	9	9	9	9	9	9	9
8	Intensivist	0	0	0	4	5	6	7	7	7	7	7	7	7	7	7
9	Security	0	0	0	63	63	71	71	71	71	71	71	71	71	71	71
	Paramedical staff															
1	ECG/TMT/ECHO Technicians	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4
2	Physiotherapist	0	0	0	2	4	4	4	4	4	4	4	4	4	4	4
3	MRI Technician	0	0	0	2	2	3	3	3	3	3	3	3	3	3	3
4	CT Technicians	0	0	0	2	2	3	3	3	3	3	3	3	3	3	3
5	X-ray technicians	0	0	0	4	4	6	6	6	6	6	6	6	6	6	6
6	Anesthesia Technicians	0	0	0	4	5	8	8	8	8	8	8	8	8	8	8
7	Dialysis Technicians	0	0	0	3	3	4	4	4	4	4	4	4	4	4	4
8	Central Sterile Supply Dep. Tech.	0	0	0	3	3	6	6	6	6	6	6	6	6	6	6
9	Lab technicians	0	0	0	4	5	7	8	8	8	8	8	8	8	8	8
10	Microbiology Tech(M Sc.)	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2
11	Phlebotomist	0	0	0	1	2	2	2	2	2	2	1	1	1	1	1
12	Cath Lab Technicians	0	0	0	3	4	6	6	6	6	6	6	6	6	6	6
13	Lab. Asst.	0	0	0	2	3	3	4	4	4	4	4	4	4	4	4
14	Manager Medical Records	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
15	Medical Records supervisor	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
16	Medical records staff	0	0	0	2	4	4	4	4	4	4	4	4	4	4	4
17	Pharmacist	0	0	0	5	10	10	10	10	10	10	10	10	10	10	10
18	Dietician	0	0	0	2	3	5	6	6	6	6	6	6	6	6	6
19	Perfusionist	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
20	Ward boys (1ward boy on every 6 nurses)	0	0	0	15	20	26	30	34	34	34	34	34	34	34	34

Administrative staff

1	Manager HR	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
2	Manager - Marketing	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
3	Manager Operations	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
4	Manager Pharmacy	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
5	Manager Purchase	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
6	Manager IT	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
7	Manager - Engineering Services	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
8	Manager Security Services and Liasoning	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
9	Asst. Manager HR	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
10	Asst. Manager F&B	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
11	Asst. Manager Housekeeping	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
12	Asst. Manager Pharmacy	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
13	Asst. Manager Biomedical (Engineer)	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
14	Asst. Manager Administration/liasoning	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
15	Asst. Manager Customer care	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
16	Asst. Manager Maintenance	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
17	Asst. Material Purchase	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
18	Chief Accountant	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
19	Accountants	0	0	0	6	6	6	6	6	6	6	6	6	6	6	6
20	Cashiers	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2
21	Purchase Asst.	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2
22	Store In Charge	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
23	Stores Clerk	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
24	Patient Relations Officer	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3
25	Executive Pool	0	0	0	8	10	11	15	15	15	15	15	15	15	15	15
26	Front Office Executive	0	0	0	25	30	35	35	35	35	35	35	35	35	35	35
27	Front Office Supervisor	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
28	Telephone Operators	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5
29	Bio-medical Technician	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
30	Equipment Electrician	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
31	Asst. Manager IT	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
32	IT Executive	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
33	Maintenance Supervisor	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2
34	Electricians	0	0	0	2	3	4	4	4	4	4	4	4	4	4	4
35	Civil Maintenance Staff	0	0	0	2	3	4	4	4	4	4	4	4	4	4	4
36	HVAC Technician	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2
37	Water Treatment Plant & Plumbers	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2
Total		**0**	**0**	**0**	**429**	**506**	**620**	**670**	**709**	**709**	**709**	**708**	**708**	**708**	**708**	**708**

Manpower Requirement for Hospital

Number of Professionals

S No.	Positions	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
	Year Count	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	CEO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Medical Director	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	GM Finance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	GM operations	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	GM marketing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	HR Head	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Nurshing Staff															
1	Staff Nurses (one nurse per occupied bed with 30 nurses buffer)	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
2	Nurses Supervisors (one supervisor per ten nurses)	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
3	Nurse Superintendent	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Asst. Nursing Superintendent	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	ICU nurses (1:1)	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
7	Cath lab Nurses (2 nurses per shift +30% buffer)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8	Infection control	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	Clinical Instructors	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	Quality Nursing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	Data entry operators (one operator per ward per shift +30% buffer)	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Medical Staff															
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
3	Junior Consultants (twice the senior residents)	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
4	Pathologist	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	Microbiologist	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Radiologist	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
7	Anesthetist	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
8	Intensivist	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
9	Security	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
	Paramedical staff															
1	ECG/TMT/ECHO Technicians	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	Physiotherapist	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	MRI Technician	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	CT Technicians	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	X-ray technicians	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
6	Anesthesia Technicians	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
7	Dialysis Technicians	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
8	Central Sterile Supply Dep. Tech.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
9	Lab technicians	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
10	Microbiology Tech(M Sc.)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	Phlebotomist	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Cath Lab Technicians	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
13	Lab. Asst.	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	Manager Medical Records	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Medical Records supervisor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Medical records staff	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
17	Pharmacist	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
18	Dietician	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
19	Perfusionist	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Ward boys (1ward boy on every 6 nurses)	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34

Administrative staff

1	Manager HR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Manager - Marketing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Manager Operations	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Manager Pharmacy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Manager Purchase	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Manager IT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	Manager - Engineering Services	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	Manager Security Services and Liasoning	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	Asst. Manager HR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	Asst. Manager F&B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	Asst. Manager Housekeeping	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Asst. Manager Pharmacy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	Asst. Manager Biomedical (Engineer)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	Asst. Manager Administration/liasoning	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Asst. Manager Customer care	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
16	Asst. Manager Maintenance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	Asst. Material Purchase	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Chief Accountant	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	Accountants	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
20	Cashiers	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21	Purchase Asst.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
22	Store In Charge	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Stores Clerk	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	Patient Relations Officer	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
25	Executive Pool	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
26	Front Office Executive	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
27	Front Office Supervisor	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
28	Telephone Operators	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
29	Bio-medical Technician	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
30	Equipment Electrician	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
31	Asst. Manager IT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	IT Executive	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
33	Maintenance Supervisor	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
34	Electricians	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
35	Civil Maintenance Staff	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
36	HVAC Technician	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
37	Water Treatment Plant & Plumbers	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Total		**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**

Manpower Requirement for Hospital

Number of Professionals

S No.	Positions	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
	Year Count	31	32	33	34	35	36	37	38	39	40
1	CEO	1	1	1	1	1	1	1	1	1	1
2	Medical Director	1	1	1	1	1	1	1	1	1	1
3	GM Finance	1	1	1	1	1	1	1	1	1	1
4	GM operations	1	1	1	1	1	1	1	1	1	1
5	GM marketing	1	1	1	1	1	1	1	1	1	1
6	HR Head	1	1	1	1	1	1	1	1	1	1
	Nurshing Staff										
1	Staff Nurses (one nurse per occupied bed with 30 nurses buffer)	205	205	205	205	205	205	205	205	205	205
2	Nurses Supervisors (one supervisor per ten nurses)	21	21	21	21	21	21	21	21	21	21
3	Nurse Superintendent	1	1	1	1	1	1	1	1	1	1
4	Asst. Nursing Superintendent	2	2	2	2	2	2	2	2	2	2
5	ICU nurses (1:1)	56	56	56	56	56	56	56	56	56	56
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	13	13	13	13	13	13	13	13	13	13
7	Cath lab Nurses (2 nurses per shift +30% buffer)	5	5	5	5	5	5	5	5	5	5
8	Infection control	2	2	2	2	2	2	2	2	2	2
9	Clinical Instructors	2	2	2	2	2	2	2	2	2	2
10	Quality Nursing	1	1	1	1	1	1	1	1	1	1
11	Data entry operators (one operator per ward per shift +30% buffer)	18	18	18	18	18	18	18	18	18	18
	Medical Staff										
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	28	28	28	28	28	28	28	28	28	28
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	7	7	7	7	7	7	7	7	7	7
3	Junior Consultants (twice the senior residents)	14	14	14	14	14	14	14	14	14	14
4	Pathologist	2	2	2	2	2	2	2	2	2	2
5	Microbiologist	2	2	2	2	2	2	2	2	2	2
6	Radiologist	5	5	5	5	5	5	5	5	5	5
7	Anesthetist	9	9	9	9	9	9	9	9	9	9
8	Intensivist	7	7	7	7	7	7	7	7	7	7
9	Security	71	71	71	71	71	71	71	71	71	71
	Paramedical staff										
1	ECG/TMT/ECHO Technicians	4	4	4	4	4	4	4	4	4	4
2	Physiotherapist	4	4	4	4	4	4	4	4	4	4
3	MRI Technician	3	3	3	3	3	3	3	3	3	3
4	CT Technicians	3	3	3	3	3	3	3	3	3	3
5	X-ray technicians	6	6	6	6	6	6	6	6	6	6
6	Anesthesia Technicians	8	8	8	8	8	8	8	8	8	8
7	Dialysis Technicians	4	4	4	4	4	4	4	4	4	4
8	Central Sterile Supply Dep. Tech.	6	6	6	6	6	6	6	6	6	6
9	Lab technicians	8	8	8	8	8	8	8	8	8	8
10	Microbiology Tech(M Sc.)	2	2	2	2	2	2	2	2	2	2
11	Phlebotomist	1	1	1	1	1	1	1	1	1	1
12	Cath Lab Technicians	6	6	6	6	6	6	6	6	6	6
13	Lab. Asst.	4	4	4	4	4	4	4	4	4	4
14	Manager Medical Records	1	1	1	1	1	1	1	1	1	1
15	Medical Records supervisor	1	1	1	1	1	1	1	1	1	1
16	Medical records staff	4	4	4	4	4	4	4	4	4	4
17	Pharmacist	10	10	10	10	10	10	10	10	10	10
18	Dietician	6	6	6	6	6	6	6	6	6	6
19	Perfusionist	1	1	1	1	1	1	1	1	1	1
20	Ward boys (1ward boy on every 6 nurses)	34	34	34	34	34	34	34	34	34	34

Administrative staff

1	Manager HR	1	1	1	1	1	1	1	1	1	1
2	Manager - Marketing	1	1	1	1	1	1	1	1	1	1
3	Manager Operations	1	1	1	1	1	1	1	1	1	1
4	Manager Pharmacy	1	1	1	1	1	1	1	1	1	1
5	Manager Purchase	1	1	1	1	1	1	1	1	1	1
6	Manager IT	1	1	1	1	1	1	1	1	1	1
7	Manager - Engineering Services	1	1	1	1	1	1	1	1	1	1
8	Manager Security Services and Liasoning	1	1	1	1	1	1	1	1	1	1
9	Asst. Manager HR	1	1	1	1	1	1	1	1	1	1
10	Asst. Manager F&B	1	1	1	1	1	1	1	1	1	1
11	Asst. Manager Housekeeping	1	1	1	1	1	1	1	1	1	1
12	Asst. Manager Pharmacy	1	1	1	1	1	1	1	1	1	1
13	Asst. Manager Biomedical (Engineer)	1	1	1	1	1	1	1	1	1	1
14	Asst. Manager Administration/liasoning	1	1	1	1	1	1	1	1	1	1
15	Asst. Manager Customer care	2	2	2	2	2	2	2	2	2	2
16	Asst. Manager Maintenance	1	1	1	1	1	1	1	1	1	1
17	Asst. Material Purchase	1	1	1	1	1	1	1	1	1	1
18	Chief Accountant	1	1	1	1	1	1	1	1	1	1
19	Accountants	6	6	6	6	6	6	6	6	6	6
20	Cashiers	2	2	2	2	2	2	2	2	2	2
21	Purchase Asst.	2	2	2	2	2	2	2	2	2	2
22	Store In Charge	1	1	1	1	1	1	1	1	1	1
23	Stores Clerk	1	1	1	1	1	1	1	1	1	1
24	Patient Relations Officer	3	3	3	3	3	3	3	3	3	3
25	Executive Pool	15	15	15	15	15	15	15	15	15	15
26	Front Office Executive	35	35	35	35	35	35	35	35	35	35
27	Front Office Supervisor	2	2	2	2	2	2	2	2	2	2
28	Telephone Operators	5	5	5	5	5	5	5	5	5	5
29	Bio-medical Technician	2	2	2	2	2	2	2	2	2	2
30	Equipment Electrician	2	2	2	2	2	2	2	2	2	2
31	Asst. Manager IT	1	1	1	1	1	1	1	1	1	1
32	IT Executive	2	2	2	2	2	2	2	2	2	2
33	Maintenance Supervisor	2	2	2	2	2	2	2	2	2	2
34	Electricians	4	4	4	4	4	4	4	4	4	4
35	Civil Maintenance Staff	4	4	4	4	4	4	4	4	4	4
36	HVAC Technician	2	2	2	2	2	2	2	2	2	2
37	Water Treatment Plant & Plumbers	2	2	2	2	2	2	2	2	2	2
Total		**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**	**708**

Annual Salary (in BDT)

S No.	Positions	Annual Salary (in BDT)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Year Count		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	CEO	9,600,000	11386358	12052839	12758332	13505120	14295620	15132390	16018139	16955734	17948210	18998779	20110841	21287996	22534053	23853046	25249244
2	Medical Director	5,400,000	6404827	6779723	7176563	7596631	8041287	8511970	9010204	9537601	10095869	10686814	11312349	11974498	12675405	13417339	14202701
3	GM Finance	6,600,000	7828121	8286327	8771353	9284770	9828239	10403519	11012472	11657069	12339396	13061662	13826205	14635499	15492164	16398972	17358858
4	GM operations	2,040,000	2419601	2561228	2711145	2869837	3037818	3215632	3403854	3603093	3813994	4037240	4273553	4523698	4788485	5068771	5365463
5	GM marketing	6,000,000	7116474	7533025	7973958	8440700	8934762	9457743	10011336	10597333	11217630	11874235	12569274	13304996	14083782	14908153	15780777
6	HR Head	1,800,000	2134942	2259907	2392187	2532210	2680429	2837323	3003401	3179200	3365289	3562271	3770783	3991499	4225135	4472446	4734233
	Nurshing Staff																
1	Staff Nurses (one nurse per bed)	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
2	Nurses Supervisors (one supervisor per ten nurses)	480,000	569318	602642	637917	675256	714781	756620	800907	847787	897411	949939	1005542	1064400	1126703	1192653	1262463
3	Nurse Superintendent	1,200,000	1423295	1506605	1594792	1688140	1786952	1891548	2002267	2119466	2243525	2374846	2513854	2660998	2816755	2981629	3156154
4	Asst. Nursing Superintendent	780,000	925142	979294	1036615	1097292	1161520	1229508	1301475	1377655	1458294	1543653	1634008	1729652	1830894	1938062	2051503
5	ICU nurses (1:1)	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	288,000	341591	361585	382750	405154	428869	453972	480544	508672	538446	569963	603325	638640	676022	715592	757478
7	Cath lab Nurses (2 nurses per shift +30% buffer)	216,000	256193	271189	287063	303866	321652	340479	360408	381504	403835	427473	452494	478980	507016	536693	568107
8	Infection control	336,000	398523	421850	446542	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
9	Clinical Instructors	360,000	426988	451981	478437	506442	536086	567465	600681	635841	673059	712455	754157	798300	845027	894489	946846
10	Quality Nursing	384,000	455454	482113	510333	540204	571824	605295	640725	678229	717928	759951	804433	851519	901361	954121	1009969
11	Data entry operators (one operator per ward per shift +30% buffer)	84,000	99631	105463	111636	118170	125087	132409	140159	148363	157047	166239	175970	186270	197173	208714	220931
	Medical Staff																
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	420,000	498153	527312	558177	590849	625433	662042	700794	741814	785235	831197	879850	931351	985866	1043572	1104656
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	720,000	853977	903963	956875	1012884	1072171	1134929	1201360	1271680	1346116	1424909	1508314	1596601	1690055	1788980	1893695
3	Junior Consultants (twice the senior residents)	1,500,000	1779118	1883256	1993489	2110175	2233691	2364436	2502834	2649333	2804407	2968558	3142318	3326248	3520944	3727037	3945193
4	Pathologist	1,200,000	1423295	1506605	1594792	1688140	1786952	1891548	2002267	2119466	2243525	2374846	2513854	2660998	2816755	2981629	3156154
5	Microbiologist	1,020,000	1209801	1280615	1355574	1434920	1518911	1607818	1701929	1801549	1907000	2018623	2136780	2261853	2394247	2534390	2682736
6	Radiologist	3,000,000	3558237	3766512	3986979	4220350	4467381	4728872	5005669	5298667	5608816	5937119	6284638	6652499	7041892	7454077	7890389
7	Anesthetist	1,500,000	1779118	1883256	1993489	2110175	2233691	2364436	2502834	2649333	2804407	2968558	3142318	3326248	3520944	3727037	3945193
8	Intensivist	1,800,000	2134942	2259907	2392187	2532210	2680429	2837323	3003401	3179200	3365289	3562271	3770783	3991499	4225135	4472446	4734233
9	**Security**	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
	Paramedical staff																
1	ECG/TMT/ECHO Technicians	264,000	313125	331453	350854	371391	393130	416141	440499	466283	493576	522467	553049	585421	619688	655960	694356
2	Physiotherapist	300,000	355824	376652	398699	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
3	MRI Technician	300,000	355824	376652	398699	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
4	CT Technicians	300,000	355824	376652	398699	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
5	X-ray technicians	216,000	256193	271189	287063	303866	321652	340479	360408	381504	403835	427473	452494	478980	507016	536693	568107
6	Anesthesia Technicians	336,000	398523	421850	446542	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
7	Dialysis Technicians	252,000	298892	316387	334906	354509	375260	397225	420476	445088	471140	498717	527909	558809	591518	626142	662792
8	Central Sterile Supply Dep. Tech.	180,000	213494	225991	239219	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
9	Lab technicians	180,000	213494	225991	239219	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
10	Microbiology Tech(M Sc.)	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231

11	Phlebotomist	144,000	170795	180792	191374	202576	214433	226984	240270	254334	269221	284979	301660	319317	338008	357793	378736
12	Cath Lab Technicians	336,000	398523	421850	446542	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
13	Lab. Asst.	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
14	Manager Medical Records	420,000	498153	527312	558177	590849	625433	662042	700794	741814	785235	831197	879850	931351	985866	1043572	1104656
15	Medical Records supervisor	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
16	Medical records staff	144,000	170795	180792	191374	202576	214433	226984	240270	254334	269221	284979	301660	319317	338008	357793	378736
17	Pharmacist	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
18	Dietician	84,000	99631	105463	111636	118170	125087	132409	140159	148363	157047	166239	175970	186270	197173	208714	220931
19	Perfusionist	264,000	313125	331453	350854	371391	393130	416141	440499	466283	493576	522467	553049	585421	619688	655960	694356
20	Ward boys (1ward boy on every 6 nurses)	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496

Administrative staff

													0				
1	Manager HR	504,000	597784	632774	669812	709018	750519	794449	840951	890175	942280	997435	1055818	1117619	1183037	1252284	1325584
2	Manager - Marketing	660,000	782812	828633	877136	928478	982825	1040353	1101248	1165708	1233941	1306168	1382622	1463551	1549218	1639899	1735888
3	Manager Operations	540,000	640483	677973	717657	759664	804130	851198	901021	953761	1009588	1068683	1131237	1197452	1267543	1341737	1420273
4	Manager Pharmacy	384,000	455454	482113	510333	540204	571824	605295	640725	678229	717928	759951	804433	851519	901361	954121	1009969
5	Manager Purchase	456,000	540852	572510	606021	641493	679042	718789	760862	805398	852541	902443	955266	1011181	1070369	1133021	1199340
6	Manager IT	420,000	498153	527312	558177	590849	625433	662042	700794	741814	785235	831197	879850	931351	985866	1043572	1104656
7	Manager - Engineering Services	480,000	569318	602642	637917	675256	714781	756620	800907	847787	897411	949939	1005542	1064400	1126703	1192653	1262463
8	Manager Security Services and Liasoning	360,000	426988	451981	478437	506442	536086	567465	600681	635841	673059	712455	754157	798300	845027	894489	946846
9	Asst. Manager HR	336,000	398523	421850	446542	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
10	Asst. Manager F&B	300,000	355824	376652	398699	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
11	Asst. Manager Housekeeping	216,000	256193	271189	287063	303866	321652	340479	360408	381504	403835	427473	452494	478980	507016	536693	568107
12	Asst. Manager Pharmacy	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
13	Asst. Manager Biomedical (Engineer)	300,000	355824	376652	398699	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
14	Asst. Manager Administration/liasoning	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
15	Asst. Manager Customer care	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
16	Asst. Manager Maintenance	180,000	213494	225991	239219	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
17	Asst. Material Purchase	180,000	213494	225991	239219	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
18	Chief Accountant	336,000	398523	421850	446542	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
19	Accountants	168,000	199261	210924	223270	236339	250173	264816	280317	296725	314093	332478	351939	372539	394345	417427	441860
20	Cashiers	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
21	Purchase Asst.	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
22	Store In Charge	156,000	185028	195858	207322	219457	232303	245900	260293	275529	291657	308729	326800	345929	366177	387611	410299
23	Stores Clerk	72,000	85398	90397	95688	101289	107218	113494	120137	127169	134613	142492	150833	159662	169008	178901	189373
24	Patient Relations Officer	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
25	Executive Pool	264,000	313125	331453	350854	371391	393130	416141	440499	466283	493576	522467	553049	585421	619688	655960	694356
26	Front Office Executive	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
27	Front Office Supervisor	192,000	227727	241057	255167	270103	285913	302648	320363	339115	358965	379976	402217	425760	450681	477061	504985
28	Telephone Operators	84,000	99631	105463	111636	118170	125087	132409	140159	148363	157047	166239	175970	186270	197173	208714	220931
29	Bio-medical Technician	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
30	Equipment Electrician	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
31	Asst. Manager IT	192,000	227727	241057	255167	270103	285913	302648	320363	339115	358965	379976	402217	425760	450681	477061	504985
32	IT Executive	240,000	284659	301321	318958	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
33	Maintenance Supervisor	192,000	227727	241057	255167	270103	285913	302648	320363	339115	358965	379976	402217	425760	450681	477061	504985
34	Electricians	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
35	Civil Maintenance Staff	120,000	142329	150660	159479	168814	178695	189155	200227	211947	224353	237485	251386	266100	281676	298163	315615
36	HVAC Technician	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
37	Water Treatment Plant & Plumbers	96,000	113864	120529	127584	135052	142957	151325	160183	169559	179484	189990	201111	212883	225344	238534	252496
38	Ambulance / Drivers	144,000	170795	180792	191374	202576	214433	226984	240270	254334	269221	284979	301660	319317	338008	357793	378736

Annual Salary (in BDT)

S No.	Positions	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
	Year Count	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	CEO	26727166	28291596	29947597	31700530	33556068	35520217	37599334	39800148	42129783	44595780	47206120	49969252	52894119	55990188	59267480
2	Medical Director	15034032	15914024	16845525	17831550	18875290	19980124	21149627	22387585	23698005	25085128	26553444	28107706	29752944	31494483	33337960
3	GM Finance	18374930	19450476	20588977	21794118	23069800	24420152	25849545	27362605	28964229	30659602	32454211	34353864	36364710	38493258	40746397
4	GM operations	5679521	6011962	6363862	6736360	7130662	7548043	7989855	8457528	8952575	9476599	10031296	10618461	11239995	11897909	12594333
5	GM marketing	16704478	17682247	18717248	19812831	20972542	22200135	23499583	24875092	26331114	27872362	29503824	31230781	33058823	34993866	37042174
6	HR Head	5011343	5304674	5615174	5943849	6291762	6660040	7049874	7462527	7899334	8361708	8851147	9369234	9917646	10498159	11112651
	Nurshing Staff															
1	Staff Nurses (one nurse per bed)	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
2	Nurses Supervisors (one supervisor per ten nurses)	1336359	1414581	1497381	1585028	1677805	1776013	1879969	1990010	2106492	2229792	2360309	2498466	2644710	2799514	2963379
3	Nurse Superintendent	3340894	3536448	3743448	3962564	4194506	4440024	4699913	4975015	5266219	5574468	5900760	6246151	6611759	6998767	7408428
4	Asst. Nursing Superintendent	2171584	2298694	2433244	2575670	2726433	2886020	3054948	3233764	3423047	3623409	3835499	4060004	4297650	4549206	4815486
5	ICU nurses (1:1)	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	801816	848749	898429	951017	1006683	1065608	1127982	1194007	1263896	1337876	1416186	1499080	1586826	1679708	1778027
7	Cath lab Nurses (2 nurses per shift +30% buffer)	601360	636560	673820	713261	755011	799204	845984	895502	947919	1003404	1062137	1124307	1190116	1259777	1333516
8	Infection control	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
9	Clinical Instructors	1002268	1060934	1123034	1188769	1258352	1332008	1409975	1492506	1579867	1672342	1770230	1873847	1983530	2099633	2222532
10	Quality Nursing	1069086	1131663	1197903	1268020	1342241	1420807	1503972	1592004	1685189	1783829	1888242	1998767	2115761	2239604	2370695
11	Data entry operators (one operator per ward per shift +30% buffer)	233863	247552	262042	277380	293616	310802	328994	348251	368635	390212	413052	437229	462821	489911	518587
	Medical Staff															
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	1169315	1237759	1310209	1386900	1468080	1554012	1644974	1741260	1843182	1951070	2065273	2186160	2314123	2449576	2592958
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	2004539	2121871	2246071	2377541	2516706	2664017	2819951	2985012	3159735	3344685	3540461	3747696	3967061	4199266	4445063
3	Junior Consultants (twice the senior residents)	4176118	4420560	4679310	4953206	5243134	5550032	5874894	6218771	6582776	6968088	7375953	7807692	8264702	8748463	9260540
4	Pathologist	3340894	3536448	3743448	3962564	4194506	4440024	4699913	4975015	5266219	5574468	5900760	6246151	6611759	6998767	7408428
5	Microbiologist	2839765	3005986	3181936	3368185	3565336	3774027	3994933	4228770	4476294	4738306	5015655	5309238	5620005	5948963	6297176
6	Radiologist	8352240	8841124	9358624	9906415	10486270	11100066	11749790	12437544	13165555	13936179	14751910	15615388	16529409	17496930	18521084
7	Anesthetist	4176118	4420560	4679310	4953206	5243134	5550032	5874894	6218771	6582776	6968088	7375953	7807692	8264702	8748463	9260540
8	Intensivist	5011343	5304674	5615174	5943849	6291762	6660040	7049874	7462527	7899334	8361708	8851147	9369234	9917646	10498159	11112651
9	**Security**	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
	Paramedical staff															
1	ECG/TMT/ECHO Technicians	734999	778021	823561	871767	922794	976808	1033984	1094507	1158572	1226387	1298172	1374158	1454592	1539734	1629860
2	Physiotherapist	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
3	MRI Technician	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
4	CT Technicians	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
5	X-ray technicians	601360	636560	673820	713261	755011	799204	845984	895502	947919	1003404	1062137	1124307	1190116	1259777	1333516
6	Anesthesia Technicians	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
7	Dialysis Technicians	701587	742653	786123	832137	880845	932404	986981	1044752	1105905	1170637	1239158	1311690	1388468	1469740	1555769
8	Central Sterile Supply Dep. Tech.	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
9	Lab technicians	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
10	Microbiology Tech(M Sc.)	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686

11	Phlebotomist	400905	424371	449211	475505	503338	532800	563987	596999	631943	668933	708088	749535	793408	839849	889008
12	Cath Lab Technicians	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
13	Lab. Asst.	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
14	Manager Medical Records	1169315	1237759	1310209	1386900	1468080	1554012	1644974	1741260	1843182	1951070	2065273	2186160	2314123	2449576	2592958
15	Medical Records supervisor	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
16	Medical records staff	400905	424371	449211	475505	503338	532800	563987	596999	631943	668933	708088	749535	793408	839849	889008
17	Pharmacist	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
18	Dietician	233863	247552	262042	277380	293616	310802	328994	348251	368635	390212	413052	437229	462821	489911	518587
19	Perfusionist	734999	778021	823561	871767	922794	976808	1033984	1094507	1158572	1226387	1298172	1374158	1454592	1539734	1629860
20	Ward boys (1ward boy on every 6 nurses)	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682

Administrative staff

1	Manager HR	1403175	1485308	1572248	1664277	1761693	1864811	1973965	2089508	2211814	2341279	2478322	2623386	2776942	2939486	3111544
2	Manager - Marketing	1837495	1945050	2058900	2179414	2306982	2442017	2584956	2736262	2896425	3065962	3245423	3435388	3636473	3849328	4074642
3	Manager Operations	1503406	1591405	1684555	1783158	1887532	1998016	2114967	2238763	2369805	2508518	2655350	2810776	2975300	3149454	3333802
4	Manager Pharmacy	1069086	1131663	1197903	1268020	1342241	1420807	1503972	1592004	1685189	1783829	1888242	1998767	2115761	2239604	2370695
5	Manager Purchase	1269541	1343851	1422511	1505775	1593913	1687210	1785968	1890507	2001165	2118300	2242291	2373540	2512471	2659534	2815205
6	Manager IT	1169315	1237759	1310209	1386900	1468080	1554012	1644974	1741260	1843182	1951070	2065273	2186160	2314123	2449576	2592958
7	Manager - Engineering Services	1336359	1414581	1497381	1585028	1677805	1776013	1879969	1990010	2106492	2229792	2360309	2498466	2644710	2799514	2963379
8	Manager Security Services and Liasoning	1002268	1060934	1123034	1188769	1258352	1332008	1409975	1492506	1579867	1672342	1770230	1873847	1983530	2099633	2222532
9	Asst. Manager HR	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
10	Asst. Manager F&B	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
11	Asst. Manager Housekeeping	601360	636560	673820	713261	755011	799204	845984	895502	947919	1003404	1062137	1124307	1190116	1259777	1333516
12	Asst. Manager Pharmacy	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
13	Asst. Manager Biomedical (Engineer)	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
14	Asst. Manager Administration/liasoning	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
15	Asst. Manager Customer care	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
16	Asst. Manager Maintenance	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
17	Asst. Material Purchase	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
18	Chief Accountant	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
19	Accountants	467724	495101	524081	554757	587229	621601	657985	696499	737267	780422	826103	874458	925643	979824	1037176
20	Cashiers	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
21	Purchase Asst.	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
22	Store In Charge	434315	459737	486647	515132	545284	577201	610986	646749	684605	724677	767095	811996	859525	909836	963092
23	Stores Clerk	200458	212191	224611	237758	251675	266406	282000	298506	315979	334474	354052	374776	396713	419934	444514
24	Patient Relations Officer	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
25	Executive Pool	734999	778021	823561	871767	922794	976808	1033984	1094507	1158572	1226387	1298172	1374158	1454592	1539734	1629860
26	Front Office Executive	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
27	Front Office Supervisor	534543	565832	598952	634011	671122	710405	751987	796003	842596	891916	944123	999386	1057883	1119804	1185350
28	Telephone Operators	233863	247552	262042	277380	293616	310802	328994	348251	368635	390212	413052	437229	462821	489911	518587
29	Bio-medical Technician	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
30	Equipment Electrician	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
31	Asst. Manager IT	534543	565832	598952	634011	671122	710405	751987	796003	842596	891916	944123	999386	1057883	1119804	1185350
32	IT Executive	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
33	Maintenance Supervisor	534543	565832	598952	634011	671122	710405	751987	796003	842596	891916	944123	999386	1057883	1119804	1185350
34	Electricians	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
35	Civil Maintenance Staff	334089	353644	374344	396256	419450	444002	469991	497501	526621	557446	590075	624614	661175	699876	740842
36	HVAC Technician	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
37	Water Treatment Plant & Plumbers	267275	282919	299479	317009	335565	355207	375998	398006	421303	445963	472067	499699	528948	559909	592682
38	Ambulance / Drivers	400905	424371	449211	475505	503338	532800	563987	596999	631943	668933	708088	749535	793408	839849	889008

Annual Salary (in BDT)

S No.	Positions	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
	Year Count	31	32	33	34	35	36	37	38	39	40
1	CEO	62736603	66408785	70295913	74410567	78766066	83376506	88256811	93422776	98891122	104679549
2	Medical Director	35289342	37354945	39541454	41855947	44305915	46899288	49644460	52550316	55626261	58882251
3	GM Finance	43131419	45656045	48328446	51157271	54151677	57321355	60676565	64228167	67987656	71967200
4	GM operations	13331521	14111859	14937873	15812236	16737779	17717497	18754561	19852328	21014351	22244391
5	GM marketing	39210376	41505490	43934945	46506604	49228791	52110316	55160506	58389234	61806950	65424717
6	HR Head	11763112	12451646	13180482	13951980	14768636	15633093	16548150	17516768	18542083	19627413
	Nurshing Staff										
1	Staff Nurses (one nurse per bed)	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
2	Nurses Supervisors (one supervisor per ten nurses)	3136835	3320444	3514801	3720534	3938309	4168831	4412847	4671146	4944564	5233986
3	Nurse Superintendent	7842068	8301090	8786980	9301311	9845748	10422052	11032089	11677834	12361377	13084930
4	Asst. Nursing Superintendent	5097352	5395717	5711546	6045862	6399746	6774344	7170869	7590604	8034907	8505217
5	ICU nurses (1:1)	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	1882101	1992267	2108881	2232321	2362986	2501299	2647708	2802687	2966738	3140391
7	Cath lab Nurses (2 nurses per shift +30% buffer)	1411571	1494195	1581655	1674235	1772234	1875969	1985776	2102010	2225048	2355287
8	Infection control	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
9	Clinical Instructors	2352624	2490331	2636098	2790398	2953729	3126621	3309633	3503357	3708420	3925486
10	Quality Nursing	2509460	2656347	2811832	2976418	3150638	3335055	3530267	3736905	3955639	4187176
11	Data entry operators (one operator per ward per shift +30% buffer)	548942	581073	615085	651088	689198	729539	772241	817443	865291	915939
	Medical Staff										
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	2744732	2905390	3075452	3255468	3446021	3647728	3861242	4087253	4326494	4579738
2	Senior residents (0.5 doctor for 15 beds +20% buffer)	4705247	4980661	5272196	5580795	5907458	6253241	6619264	7006712	7416838	7850970
3	Junior Consultants (twice the senior residents)	9802590	10376368	10983731	11626645	12307191	13027572	13790119	14597301	15451730	16356171
4	Pathologist	7842068	8301090	8786980	9301311	9845748	10422052	11032089	11677834	12361377	13084930
5	Microbiologist	6665771	7055941	7468949	7906131	8368903	8858763	9377296	9926180	10507192	11122213
6	Radiologist	19605185	20752742	21967469	23253298	24614391	26055153	27580248	29194612	30903470	32712353
7	Anesthetist	9802590	10376368	10983731	11626645	12307191	13027572	13790119	14597301	15451730	16356171
8	Intensivist	11763112	12451646	13180482	13951980	14768636	15633093	16548150	17516768	18542083	19627413
9	**Security**	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
	Paramedical staff										
1	ECG/TMT/ECHO Technicians	1725261	1826246	1933142	2046295	2166071	2292858	2427067	2569131	2719511	2878693
2	Physiotherapist	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
3	MRI Technician	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
4	CT Technicians	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
5	X-ray technicians	1411571	1494195	1581655	1674235	1772234	1875969	1985776	2102010	2225048	2355287
6	Anesthesia Technicians	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
7	Dialysis Technicians	1646833	1743228	1845265	1953275	2067607	2188631	2316739	2452345	2595889	2747835
8	Central Sterile Supply Dep. Tech.	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
9	Lab technicians	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
10	Microbiology Tech(M Sc.)	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984

11	Phlebotomist	941045	996128	1054435	1116155	1181487	1250643	1323847	1401336	1483361	1570187
12	Cath Lab Technicians	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
13	Lab. Asst.	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
14	Manager Medical Records	2744732	2905390	3075452	3255468	3446021	3647728	3861242	4087253	4326494	4579738
15	Medical Records supervisor	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
16	Medical records staff	941045	996128	1054435	1116155	1181487	1250643	1323847	1401336	1483361	1570187
17	Pharmacist	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
18	Dietician	548942	581073	615085	651088	689198	729539	772241	817443	865291	915939
19	Perfusionist	1725261	1826246	1933142	2046295	2166071	2292858	2427067	2569131	2719511	2878693
20	Ward boys (1ward boy on every 6 nurses)	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809

Administrative staff

1	Manager HR	3293673	3486463	3690537	3906556	4135220	4377268	4633484	4904697	5191785	5495677
2	Manager - Marketing	4313144	4565607	4832847	5115730	5415171	5732139	6067660	6422820	6798769	7196724
3	Manager Operations	3528941	3735502	3954153	4185603	4430600	4689938	4964456	5255042	5562637	5888237
4	Manager Pharmacy	2509460	2656347	2811832	2976418	3150638	3335055	3530267	3736905	3955639	4187176
5	Manager Purchase	2979988	3154417	3339056	3534502	3741388	3960384	4192198	4437581	4697327	4972277
6	Manager IT	2744732	2905390	3075452	3255468	3446021	3647728	3861242	4087253	4326494	4579738
7	Manager - Engineering Services	3136835	3320444	3514801	3720534	3938309	4168831	4412847	4671146	4944564	5233986
8	Manager Security Services and Liasoning	2352624	2490331	2636098	2790398	2953729	3126621	3309633	3503357	3708420	3925486
9	Asst. Manager HR	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
10	Asst. Manager F&B	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
11	Asst. Manager Housekeeping	1411571	1494195	1581655	1674235	1772234	1875969	1985776	2102010	2225048	2355287
12	Asst. Manager Pharmacy	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
13	Asst. Manager Biomedical (Engineer)	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
14	Asst. Manager Administration/liasoning	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
15	Asst. Manager Customer care	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
16	Asst. Manager Maintenance	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
17	Asst. Material Purchase	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
18	Chief Accountant	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
19	Accountants	1097885	1162148	1230172	1302178	1378399	1459081	1544486	1634890	1730586	1831883
20	Cashiers	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
21	Purchase Asst.	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
22	Store In Charge	1019465	1079138	1142304	1209167	1279944	1354863	1434168	1518115	1606975	1701037
23	Stores Clerk	470533	498075	527229	558089	590756	625335	661938	700683	741696	785110
24	Patient Relations Officer	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
25	Executive Pool	1725261	1826246	1933142	2046295	2166071	2292858	2427067	2569131	2719511	2878693
26	Front Office Executive	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
27	Front Office Supervisor	1254732	1328176	1405919	1488212	1575322	1667531	1765137	1868456	1977823	2093592
28	Telephone Operators	548942	581073	615085	651088	689198	729539	772241	817443	865291	915939
29	Bio-medical Technician	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
30	Equipment Electrician	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
31	Asst. Manager IT	1254732	1328176	1405919	1488212	1575322	1667531	1765137	1868456	1977823	2093592
32	IT Executive	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
33	Maintenance Supervisor	1254732	1328176	1405919	1488212	1575322	1667531	1765137	1868456	1977823	2093592
34	Electricians	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
35	Civil Maintenance Staff	784206	830108	878697	930130	984574	1042204	1103208	1167782	1236136	1308491
36	HVAC Technician	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
37	Water Treatment Plant & Plumbers	627374	664096	702968	744115	787671	833776	882580	934240	988924	1046809
38	Ambulance / Drivers	941045	996128	1054435	1116155	1181487	1250643	1323847	1401336	1483361	1570187

Total Manpower Cost (in BDT)

S No.	Positions	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Year Count	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	CEO	0	0	0	13505120	14295620	15132390	16018139	16955734	17948210	18998779	20110841	21287996	22534053	23853046	25249244
2	Medical Director	0	0	0	7596631	8041287	8511970	9010204	9537601	10095869	10686814	11312349	11974498	12675405	13417339	14202701
3	GM Finance	0	0	0	9284770	9828239	10403519	11012472	11657069	12339396	13061662	13826205	14635499	15492164	16398972	17358858
4	GM operations	0	0	0	2869837	3037818	3215632	3403854	3603093	3813994	4037240	4273553	4523698	4788485	5068771	5365463
5	GM marketing	0	0	0	8440700	8934762	9457743	10011336	10597333	11217630	11874235	12569274	13304996	14083782	14908153	15780777
6	HR Head	0	0	0	2532210	2680429	2837323	3003401	3179200	3365289	3562271	3770783	3991499	4225135	4472446	4734233
	Nurshing Staff															
1	Staff Nurses (one nurse per	0	0	0	15193260	21443400	29319025	36040860	43449135	45992365	48684425	51534130	54550500	57743580	61123415	64701075
2	Nurses Supervisors (one supervisor per ten nurses)	0	0	0	6077304	8577372	11727610	14416326	17379633.5	18396925.5	19473749.5	20613611	21820200	23097411.5	24449386.5	25880491.5
3	Nurse Superintendent	0	0	0	1688140	1786952	1891548	2002267	2119466	2243525	2374846	2513854	2660998	2816755	2981629	3156154
4	Asst. Nursing	0	0	0	2194584	2323040	2459016	2602950	2755310	2916588	3087306	3268016	3459304	3661788	3876124	4103006
5	ICU nurses (1:1)	0	0	0	11479352	12151260	21185304	22425368	23738008	25127480	26598264	28155176	29803200	31547656	33394256	35348936
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	0	0	0	5267002	5575297	5901636	6247072	6612736	6999798	7409519	7843225	8302320	8788286	9302696	9847214
7	Cath lab Nurses (2 nurses per shift +30% buffer)	0	0	0	1519330	1608260	1702395	1802040	1907520	2019175	2137365	2262470	2394900	2535080	2683465	2840535
8	Infection control	0	0	0	472680	500348	1059270	1121272	1186904	1256378	1329918	1407762	1490164	1577388	1669718	1767452
9	Clinical Instructors	0	0	0	506442	536086	1134930	1201362	1271682	1346118	1424910	1508314	1596600	1690054	1788978	1893692
10	Quality Nursing	0	0	0	540204	571824	605295	640725	678229	717928	759951	804433	851519	901361	954121	1009969
11	Data entry operators (one operator per ward per shift +30% buffer)	0	0	0	2150694	2276583	2409844	2550893.8	2700206.6	2858255.4	3025549.8	3202654	3390114	3588548.6	3798594.8	4020944.2
	Medical Staff															
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	0	0	0	5908490	8756062	13240840	16819056	20770792	21986580	23273516	24635800	26077828	27604248	29220016	30930368
2	Senior residents (.5 doctor for 15 beds +20% buffer)	0	0	0	2025768	4288684	5674645	7208160	8901760	9422812	9974363	10558198	11176207	11830385	12522860	13255865
3	Junior Consultants (twice the senior residents)	0	0	0	8440700	17869528	23644360	30034008	37090662	39261698	41559812	43992452	46567472	49293216	52178518	55232702
4	Pathologist	0	0	0	3376280	3573904	3783096	4004534	4238932	4487050	4749692	5027708	5321996	5633510	5963258	6312308
5	Microbiologist	0	0	0	2869840	3037822	3215636	3403858	3603098	3814000	4037246	4273560	4523706	4788494	5068780	5365472
6	Radiologist	0	0	0	12661050	14518988	18915488	25028345	26493335	28044080	29685595	31423190	33262495	35209460	37270385	39451945
7	Anesthetist	0	0	0	10550875	13067092	17023939.2	22525506	23843997	25239663	26717022	28280862	29936232	31688496	33543333	35506737
8	Intensivist	0	0	0	10128840	12195952	15889008.8	21023807	22254400	23557023	24935897	26395481	27940493	29575945	31307122	33139631
9	Security	0	0	0	8508276	9006291	10744075	11372993	12038689	12743364	13489290	14278881	15114693	15999424	16935914	17927216
	Paramedical staff															
1	ECG/TMT/ECHO	0	0	0	1485564	1572520	1664564	1761996	1865132	1974304	2089868	2212196	2341684	2478752	2623840	2777424
2	Physiotherapist	0	0	0	844072	1786956	1891552	2002272	2119472	2243532	2374852	2513860	2661004	2816760	2981636	3156160
3	MRI Technician	0	0	0	844072	893925	1418664	1501704	1589604	1682649	1781139	1885395	1995753	2112570	2236227	2367120
4	CT Technicians	0	0	0	844072	893925	1418664	1501704	1589604	1682649	1781139	1885395	1995753	2112570	2236227	2367120
5	X-ray technicians	0	0	0	1215464	1286608	2042874	2162448	2289024	2423010	2564838	2714964	2873880	3042096	3220158	3408642
6	Anesthesia Technicians	0	0	0	1890720	2669857	4237080	4485088	4747616	5025512	5319672	5631048	5960656	6309552	6678872	7069808
7	Dialysis Technicians	0	0	0	1063527	1000693	1588900	1681904	1780352	1884560	1994868	2111636	2235236	2366072	2504568	2651168
8	Central Sterile Supply Dep.	0	0	0	759663	804129	1702392	1802040	1907520	2019174	2137362	2262468	2394900	2535084	2683470	2840544
9	Lab technicians	0	0	0	1012884	1430277	1891547	2402720	2543360	2692232	2849816	3016624	3193200	3380112	3577960	3787392
10	Microbiology Tech(M Sc.)	0	0	0	337628	476758	630515	800906	847786	897410	949938	1005542	1064400	1126702	1192652	1262462
11	Phlebotomist	0	0	0	202576	428866	453968	480540	508668	538442	569958	301660	319317	338008	357793	378736
12	Cath Lab Technicians	0	0	0	1418040	2002393	3177810	3363816	3560712	3769134	3989754	4223286	4470492	4732164	5009154	5302356
13	Lab. Asst.	0	0	0	270104	419341	524795	640732	678236	717936	759960	804444	851532	901376	954136	1009984
14	Manager Medical Records	0	0	0	590849	625433	662042	700794	741814	785235	831197	879850	931351	985866	1043572	1104656
15	Medical Records supervisor	0	0	0	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
16	Medical records staff	0	0	0	405152	857732	907936	961080	1017336	1076884	1139916	1206640	1277268	1352032	1431172	1514944
17	Pharmacist	0	0	0	844070	1786950	1891550	2002270	2119470	2243530	2374850	2513860	2661000	2816760	2981630	3156150
18	Dietician	0	0	0	236340	375261	662045	840954	890178	942282	997434	1055820	1117620	1183038	1252284	1325586
19	Perfusionist	0	0	0	371391	393130	416141	440499	466283	493576	522467	553049	585421	619688	655960	694356
20	Ward boys (1ward boy on every 6 nurses)	0	0	0	2025780	2859140	3909229	4805490	5793265.833	6132370	6491325	6871292.5	7273502.5	7699253.333	8149911.667	8626946.667
	Administrative staff															
1	Manager HR	0	0	0	709018	750519	794449	840951	890175	942280	997435	1055818	1117619	1183037	1252284	1325584
2	Manager - Marketing	0	0	0	928478	982825	1040353	1101248	1165708	1233941	1306168	1382622	1463551	1549218	1639899	1735888
3	Manager Operations	0	0	0	759664	804130	851198	901021	953761	1009588	1068683	1131237	1197452	1267543	1341737	1420273
4	Manager Pharmacy	0	0	0	540204	571824	605295	640725	678229	717928	759951	804433	851519	901361	954121	1009969
5	Manager Purchase	0	0	0	641493	679042	718789	760862	805398	852541	902443	955266	1011181	1070369	1133021	1199340
6	Manager IT	0	0	0	590849	625433	662042	700794	741814	785235	831197	879850	931351	985866	1043572	1104656
7	Manager - Engineering	0	0	0	675256	714781	756620	800907	847787	897411	949939	1005542	1064400	1126703	1192653	1262463
8	Manager Security Services and Liasoning	0	0	0	506442	536086	567465	600681	635841	673059	712455	754157	798300	845027	894489	946846

9	Asst. Manager HR	0	0	0	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
10	Asst. Manager F&B	0	0	0	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
11	Asst. Manager	0	0	0	303866	321652	340479	360408	381504	403835	427473	452494	478980	507016	536693	568107
12	Asst. Manager Pharmacy	0	0	0	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
13	Asst. Manager Biomedical (Engineer)	0	0	0	422036	446739	472888	500568	529868	560883	593713	628465	665251	704190	745409	789040
14	Asst. Manager Administration/liasoning	0	0	0	337628	357390	378309	400453	423893	448705	474969	502771	532200	563351	596326	631231
15	Asst. Manager Customer	0	0	0	675256	714780	756618	800906	847786	897410	949938	1005542	1064400	1126702	1192652	1262462
16	Asst. Manager Maintenance	0	0	0	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
17	Asst. Material Purchase	0	0	0	253221	268043	283732	300340	317920	336529	356227	377078	399150	422514	447245	473424
18	Chief Accountant	0	0	0	472680	500348	529635	560636	593452	628189	664959	703881	745082	788694	834859	883726
19	Accountants	0	0	0	1418034	1501038	1588896	1681902	1780350	1884558	1994868	2111634	2235234	2366070	2504562	2651160
20	Cashiers	0	0	0	168814	357390	378310	400454	423894	448706	474970	502772	532200	563352	596326	631230
21	Purchase Asst.	0	0	0	225198	357390	378310	400454	423894	448706	474970	502772	532200	563352	596326	631230
22	Store In Charge	0	0	0	219457	232303	245900	260293	275529	291657	308729	326800	345929	366177	387611	410299
23	Stores Clerk	0	0	0	101289	107218	113494	120137	127169	134613	142492	150833	159662	169008	178901	189373
24	Patient Relations Officer	0	0	0	405156	428871	453975	480549	508677	538452	569970	603333	638649	676032	715602	757488
25	Executive Pool	0	0	0	2971128	3833018	4369481	6607485	6994245	7403640	7837005	8295735	8781315	9295320	9839400	10415340
26	Front Office Executive	0	0	0	4220350	5378720	6620425	7007945	7418145	7852355	8311975	8798510	9313500	9858660	10435705	11046525
27	Front Office Supervisor	0	0	0	540206	571826	605296	640726	678230	717930	759952	804434	851520	901362	954122	1009970
28	Telephone Operators	0	0	0	590850	625435	662045	700795	741815	785235	831195	879850	931350	985865	1043570	1104655
29	Bio-medical Technician	0	0	0	270104	285914	302650	320366	339118	358968	379980	402222	425766	450688	477068	504992
30	Equipment Electrician	0	0	0	270104	285914	302650	320366	339118	358968	379980	402222	425766	450688	477068	504992
31	Asst. Manager IT	0	0	0	270103	285913	302648	320363	339115	358965	379976	402217	425760	450681	477061	504985
32	IT Executive	0	0	0	675256	714780	756618	800906	847786	897410	949938	1005542	1064400	1126702	1192652	1262462
33	Maintenance Supervisor	0	0	0	540206	571826	605296	640726	678230	717930	759952	804434	851520	901362	954122	1009970
34	Electricians	0	0	0	270104	457462	605300	640732	678236	717936	759960	804444	851532	901376	954136	1009984
35	Civil Maintenance Staff	0	0	0	337628	571824	756620	800908	847788	897412	949940	1005544	1064400	1126704	1192652	1262460
36	HVAC Technician	0	0	0	135052	228731	302650	320366	339118	358968	379980	402222	425766	450688	477068	504992
37	Water Treatment Plant &	0	0	0	135052	228731	302650	320366	339118	358968	379980	402222	425766	450688	477068	504992
38	Ambulance / Drivers	0	0	0	607728	643299	680952	720810	763002	807663	854937	904980	957951	1014024	1073379	1136208
Total Manpower Cost for Hospital (BDT lakhs)		0	**0**	**0**	**1965**	**2409**	**3033**	**3542**	**3926**	**4156**	**4399**	**4654**	**4926**	**5214**	**5520**	**5843**

Total Manpower Cost (in BDT)

S No.	Positions	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
	Year Count	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	CEO	26727166	28291596	29947597	31700530	33556068	35520217	37599334	39800148	42129783	44595780	47206120	49969252	52894119	55990188	59267480
2	Medical Director	15034032	15914024	16845525	17831550	18875290	19980124	21149627	22387585	23698005	25085128	26553444	28107706	29752944	31494483	33337960
3	GM Finance	18374930	19450476	20588977	21794118	23069800	24420152	25849545	27362605	28964229	30659602	32454211	34353864	36364710	38493258	40746397
4	GM operations	5679521	6011962	6363862	6736360	7130662	7548043	7989855	8457528	8952575	9476599	10031296	10618461	11239995	11897909	12594333
5	GM marketing	16704478	17682247	18717248	19812831	20972542	22200135	23499583	24875092	26331114	27872362	29503824	31230781	33058823	34993866	37042174
6	HR Head	5011343	5304674	5615174	5943849	6291762	6660040	7049874	7462527	7899334	8361708	8851147	9369234	9917646	10498159	11112651
	Nurshing Staff															
1	Staff Nurses (one nurse per occupied bed with 30 nurses buffer)	68488245	72497020	76740520	81232480	85987250	91020410	96348155	101987705	107957305	114276430	120965375	128045870	135540875	143474580	151872610
2	Nurses Supervisors (one supervisor per ten nurses)	27395359.5	28998910.5	30696310.5	32493074	34395002.5	36408266.5	38539364.5	40795205	43183086	45710736	48386334.5	51218553	54216555	57390037	60749269.5
3	Nurse Superintendent	3340894	3536448	3743448	3962564	4194506	4440024	4699913	4975015	5266219	5574468	5900760	6246151	6611759	6998767	7408428
4	Asst. Nursing	4343168	4597388	4866488	5151340	5452866	5772040	6109896	6467528	6846094	7246818	7670998	8120008	8595300	9098412	9630972
5	ICU nurses (1:1)	37418024	39608240	41926640	44380728	46978456	49728280	52639048	55720168	58981664	62434064	66088512	69956880	74051712	78386224	82974416
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	10423608	11033737	11679577	12363221	13086879	13852904	14663766	15522091	16430648	17392388	18410418	19488040	20628738	21836204	23114351
7	Cath lab Nurses (2 nurses per shift +30% buffer)	3006800	3182800	3369100	3566305	3775055	3996020	4229920	4477510	4739595	5017020	5310685	5621535	5950580	6298885	6667580
8	Infection control	1870906	1980416	2096336	2219042	2348930	2486420	2631958	2786016	2949090	3121710	3304434	3497854	3702596	3919322	4148732
9	Clinical Instructors	2004536	2121868	2246068	2377538	2516704	2664016	2819950	2985012	3159734	3344684	3540460	3747694	3967060	4199266	4445064
10	Quality Nursing	1069086	1131663	1197903	1268020	1342241	1420807	1503972	1592004	1685189	1783829	1888242	1998767	2115761	2239604	2370695
11	Data entry operators (one operator per ward per shift +30% buffer)	4256306.6	4505446.4	4769164.4	5048316	5343811.2	5656596.4	5987690.8	6338168.2	6709157	7101858.4	7517546.4	7957567.8	8423342.2	8916380.2	9438283.4
	Medical Staff															
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	32740820	34657252	36685852	38833200	41106240	43512336	46059272	48755280	51609096	54629960	57827644	61212480	64795444	68588128	72602824
2	Senior residents (.5 doctor for 15 beds +20% buffer)	14031773	14853097	15722497	16642787	17616942	18648119	19739657	20895084	22118145	23412795	24783227	26233872	27769427	29394862	31115441
3	Junior Consultants (twice the senior residents)	58465652	61887840	65510340	69344884	73403876	77700448	82248516	87062794	92158864	97553232	103263342	109307688	115705828	122478482	129647560
4	Pathologist	6681788	7072896	7486896	7925128	8389012	8880048	9399826	9950030	10532438	11148936	11801520	12492302	13223518	13997534	14816856
5	Microbiologist	5679530	6011972	6363872	6736370	7130672	7548054	7989866	8457540	8952588	9476612	10031310	10618476	11240010	11897926	12594352
6	Radiologist	41761200	44205620	46793120	49532075	52431350	55500330	58748950	62187720	65827775	69680895	73759550	78076940	82647045	87484650	92605420
7	Anesthetist	37585062	39785040	42113790	44578854	47188206	49950288	52874046	55968939	59244984	62712792	66383577	70269228	74382318	78736167	83344860
8	Intensivist	35079401	37132718	39306218	41606943	44042334	46620280	49349118	52237689	55295338	58531956	61958029	65584638	69423522	73487113	77788557
9	Security	18976525	20087249	21263009	22507639	23825115	25219697	26695858	28258426	29912513	31663373	33516757	35478629	37555308	39753539	42080422
	Paramedical staff															
1	ECG/TMT/ECHO	2939996	3112084	3294244	3487068	3691176	3907232	4135936	4378028	4634288	4905548	5192688	5496632	5818368	6158936	6519440
2	Physiotherapist	3340900	3536456	3743456	3962572	4194516	4440036	4699928	4975032	5266236	5574488	5900780	6246172	6611780	6998788	7408452
3	MRI Technician	2505675	2652342	2807592	2971929	3145887	3330027	3524946	3731274	3949677	4180866	4425585	4684629	4958835	5249091	5556339
4	CT Technicians	2505675	2652342	2807592	2971929	3145887	3330027	3524946	3731274	3949677	4180866	4425585	4684629	4958835	5249091	5556339
5	X-ray technicians	3608160	3819360	4042920	4279566	4530066	4795224	5075904	5373012	5687514	6020424	6372822	6745842	7140696	7558662	8001096
6	Anesthesia Technicians	7483624	7921664	8385344	8876168	9395720	9945680	10527832	11144064	11796360	12486840	13217736	13991416	14810384	15677288	16594928
7	Dialysis Technicians	2806348	2970612	3144492	3328548	3523380	3729616	3947924	4179008	4423620	4682548	4956632	5246760	5553872	5878960	6223076
8	Central Sterile Supply Dep.	3006810	3182808	3369108	3566316	3775062	3996030	4229928	4477518	4739604	5017026	5310690	5621544	5950590	6298896	6667590
9	Lab technicians	4009080	4243744	4492144	4755088	5033416	5328040	5639904	5970024	6319472	6689368	7080920	7495392	7934120	8398528	8890120
10	Microbiology Tech(M Sc.)	1336358	1414580	1497380	1585026	1677802	1776010	1879966	1990006	2106488	2229788	2360304	2498460	2644704	2799508	2963372
11	Phlebotomist	400905	424371	449211	475505	503338	532800	563987	596999	631943	668933	708088	749535	793408	839849	889008
12	Cath Lab Technicians	5612718	5941248	6289008	6657126	7046790	7459260	7895874	8358048	8847270	9365130	9913302	10493562	11107788	11757966	12446196
13	Lab. Asst.	1069100	1131676	1197916	1268036	1342260	1420828	1503992	1592024	1685212	1783852	1888268	1998796	2115792	2239636	2370728
14	Manager Medical Records	1169315	1237759	1310209	1386900	1468080	1554012	1644974	1741260	1843182	1951070	2065273	2186160	2314123	2449576	2592958
15	Medical Records supervisor	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
16	Medical records staff	1603620	1697484	1796844	1902020	2013352	2131200	2255948	2387996	2527772	2675732	2832352	2998140	3173632	3359396	3556032
17	Pharmacist	3340890	3536440	3743440	3962560	4194500	4440020	4699910	4975010	5266210	5574460	5900750	6246140	6611750	6998760	7408420
18	Dietician	1403178	1485312	1572252	1664280	1761696	1864812	1973964	2089506	2211810	2341272	2478312	2623374	2776926	2939466	3111522
19	Perfusionist	734999	778021	823561	871767	922794	976808	1033984	1094507	1158572	1226387	1298172	1374158	1454592	1539734	1629860
20	Ward boys (1ward boy on every 6 nurses)	9131896	9666399	10232199	10831141	11465138	12136239	12846598	13598538	14394519	15237069	16128956	17073049	18072390	19130224	20249968

Administrative staff

1	Manager HR	1403175	1485308	1572248	1664277	1761693	1864811	1973965	2089508	2211814	2341279	2478322	2623386	2776942	2939486	3111544
2	Manager - Marketing	1837495	1945050	2058900	2179414	2306982	2442017	2584956	2736262	2896425	3065962	3245423	3435388	3636473	3849328	4074642
3	Manager Operations	1503406	1591405	1684555	1783158	1887532	1998016	2114967	2238763	2369805	2508518	2655350	2810776	2975300	3149454	3333802
4	Manager Pharmacy	1069086	1131663	1197903	1268020	1342241	1420807	1503972	1592004	1685189	1783829	1888242	1998767	2115761	2239604	2370695
5	Manager Purchase	1269541	1343851	1422511	1505775	1593913	1687210	1785968	1890507	2001165	2118300	2242291	2373540	2512471	2659534	2815205
6	Manager IT	1169315	1237759	1310209	1386900	1468080	1554012	1644974	1741260	1843182	1951070	2065273	2186160	2314123	2449576	2592958
7	Manager - Engineering	1336359	1414581	1497381	1585028	1677805	1776013	1879969	1990010	2106492	2229792	2360309	2498466	2644710	2799514	2963379
8	Manager Security Services and Liasoning	1002268	1060934	1123034	1188769	1258352	1332008	1409975	1492506	1579867	1672342	1770230	1873847	1983530	2099633	2222532
9	Asst. Manager HR	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
10	Asst. Manager F&B	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
11	Asst. Manager	601360	636560	673820	713261	755011	799204	845984	895502	947919	1003404	1062137	1124307	1190116	1259777	1333516
12	Asst. Manager Pharmacy	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
13	Asst. Manager Biomedical (Engineer)	835225	884114	935864	990643	1048629	1110009	1174982	1243758	1316559	1393622	1475195	1561543	1652945	1749697	1852113
14	Asst. Manager Administration/liasoning	668179	707290	748690	792513	838901	888005	939983	995003	1053244	1114894	1180152	1249230	1322352	1399754	1481686
15	Asst. Manager Customer	1336358	1414580	1497380	1585026	1677802	1776010	1879966	1990006	2106488	2229788	2360304	2498460	2644704	2799508	2963372
16	Asst. Manager Maintenance	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
17	Asst. Material Purchase	501135	530468	561518	594386	629177	666005	704988	746253	789934	836171	885115	936924	991765	1049816	1111265
18	Chief Accountant	935453	990208	1048168	1109521	1174465	1243210	1315979	1393008	1474545	1560855	1652217	1748927	1851298	1959661	2074366
19	Accountants	2806344	2970606	3144486	3328542	3523374	3729606	3947910	4178994	4423602	4682532	4956618	5246748	5553858	5878944	6223056
20	Cashiers	668178	707288	748688	792512	838900	888004	939982	995002	1053242	1114892	1180150	1249228	1322350	1399752	1481684
21	Purchase Asst.	668178	707288	748688	792512	838900	888004	939982	995002	1053242	1114892	1180150	1249228	1322350	1399752	1481684
22	Store In Charge	434315	459737	486647	515132	545284	577201	610986	646749	684605	724677	767095	811996	859525	909836	963092
23	Stores Clerk	200458	212191	224611	237758	251675	266406	282000	298506	315979	334474	354052	374776	396713	419934	444514
24	Patient Relations Officer	801825	848757	898437	951027	1006695	1065621	1127994	1194018	1263909	1337889	1416201	1499097	1586844	1679727	1778046
25	Executive Pool	11024985	11670315	12353415	13076505	13841910	14652120	15509760	16417605	17378580	18395805	19472580	20612370	21818880	23096010	24447900
26	Front Office Executive	11693115	12377540	13102040	13868960	14680750	15540070	16449685	17412535	18431735	19510610	20652625	21861490	23141125	24495660	25929470
27	Front Office Supervisor	1069086	1131664	1197904	1268022	1342244	1420810	1503974	1592006	1685192	1783832	1888246	1998772	2115766	2239608	2370700
28	Telephone Operators	1169315	1237760	1310210	1386900	1468080	1554010	1644970	1741255	1843175	1951060	2065260	2186145	2314105	2449555	2592935
29	Bio-medical Technician	534550	565838	598958	634018	671130	710414	751996	796012	842606	891926	944134	999398	1057896	1119818	1185364
30	Equipment Electrician	534550	565838	598958	634018	671130	710414	751996	796012	842606	891926	944134	999398	1057896	1119818	1185364
31	Asst. Manager IT	534543	565832	598952	634011	671122	710405	751987	796003	842596	891916	944123	999386	1057883	1119804	1185350
32	IT Executive	1336358	1414580	1497380	1585026	1677802	1776010	1879966	1990006	2106488	2229788	2360304	2498460	2644704	2799508	2963372
33	Maintenance Supervisor	1069086	1131664	1197904	1268022	1342244	1420810	1503974	1592006	1685192	1783832	1888246	1998772	2115766	2239608	2370700
34	Electricians	1069100	1131676	1197916	1268036	1342260	1420828	1503992	1592024	1685212	1783852	1888268	1998796	2115792	2239636	2370728
35	Civil Maintenance Staff	1336356	1414576	1497376	1585024	1677800	1776008	1879964	1990004	2106484	2229784	2360300	2498456	2644700	2799504	2963368
36	HVAC Technician	534550	565838	598958	634018	671130	710414	751996	796012	842606	891926	944134	999398	1057896	1119818	1185364
37	Water Treatment Plant &	534550	565838	598958	634018	671130	710414	751996	796012	842606	891926	944134	999398	1057896	1119818	1185364
38	Ambulance / Drivers	1202715	1273113	1347633	1426515	1510014	1598400	1691961	1790997	1895829	2006799	2124264	2248605	2380224	2519547	2667024
Total Manpower Cost for Hospital (BDT lakhs)		**6185**	**6547**	**6930**	**7335**	**7765**	**8219**	**8700**	**9210**	**9749**	**10319**	**10923**	**11563**	**12240**	**12956**	**13714**

Total Manpower Cost (in BDT)

S No.	Positions	2033	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
	Year Count	16	31	32	33	34	35	36	37	38	39	40
1	CEO	26727166	62736603	66408785	70295913	74410567	78766066	83376506	88256811	93422776	98891122	104679549
2	Medical Director	15034032	35289342	37354945	39541454	41855947	44305915	46899288	49644460	52550316	55626261	58882251
3	GM Finance	18374930	43131419	45656045	48328446	51157271	54151677	57321355	60676565	64228167	67987656	71967200
4	GM operations	5679521	13331521	14111859	14937873	15812236	16737779	17717497	18754561	19852328	21014351	22244391
5	GM marketing	16704478	39210376	41505490	43934945	46506604	49228791	52110316	55160506	58389234	61806950	65424717
6	HR Head	5011343	11763112	12451646	13180482	13951980	14768636	15633093	16548150	17516768	18542083	19627413
	Nurshing Staff											
1	Staff Nurses (one nurse per occupied bed with 30 nurses buffer)	68488245	160762230	170172140	180132885	190676650	201837670	213651820	226157640	239395310	253407880	268240655
2	Nurses Supervisors (one supervisor per ten nurses)	27395359.5	64305117.5	68069102	72053420.5	76270947	80735334.5	85461035.5	90463363.5	95758493	101363562	107296713
3	Nurse Superintendent	3340894	7842068	8301090	8786980	9301311	9845748	10422052	11032089	11677834	12361377	13084930
4	Asst. Nursing Superintendent	4343168	10194704	10791434	11423092	12091724	12799492	13548688	14341738	15181208	16069814	17010434
5	ICU nurses (1:1)	37418024	87831184	92972208	98414176	104174672	110272344	116726960	123559352	130791696	138447344	146551104
6	OT Nurses (2 Nurses per OT per shift +30% buffer)	10423608	24467313	25899471	27415453	29020173	30718818	32516887	34420204	36434931	38567594	40825083
7	Cath lab Nurses (2 nurses per shift +30% buffer)	3006800	7057855	7470975	7908275	8371175	8861170	9379845	9928880	10510050	11125240	11776435
8	Infection control	1870906	4391572	4648626	4920726	5208752	5513638	5836370	6177992	6539610	6922396	7327586
9	Clinical Instructors	2004536	4705248	4980662	5272196	5580796	5907458	6253242	6619266	7006714	7416840	7850972
10	Quality Nursing	1069086	2509460	2656347	2811832	2976418	3150638	3335055	3530267	3736905	3955639	4187176
11	Data entry operators (one operator per ward per shift +30% buffer)	4256306.6	9990744.4	10575528.6	11194547	11849801.6	12543403.6	13277609.8	14054786.2	14877462.6	15748296.2	16670089.8
	Medical Staff											
1	Residents (MBBS) (1 doctor for 15 occupied beds + two shifts +20% buffer)	32740820	76852496	81350920	86112656	91153104	96488588	102136384	108114776	114443084	121141832	128232664
2	Senior residents (.5 doctor for 15 beds +20% buffer)	14031773	32936729	34864627	36905372	39065565	41352206	43772687	46334848	49046984	51917866	54956790
3	Junior Consultants (twice the senior residents)	58465652	137236260	145269152	153772234	162773030	172300674	182386008	193061666	204362214	216324220	228986394
4	Pathologist	6681788	15684136	16602180	17573960	18602622	19691496	20844104	22064178	23355668	24722754	26169860
5	Microbiologist	5679530	13331542	14111882	14937898	15812262	16737806	17717526	18754592	19852360	21014384	22244426
6	Radiologist	41761200	98025925	103763710	109837345	116266490	123071955	130275765	137901240	145973060	154517350	163561765
7	Anesthetist	37585062	88223310	93387312	98853579	104639805	110764719	117248148	124111071	131375709	139065570	147205539
8	Intensivist	35079401	82341784	87161522	92263374	97663860	103380452	109431651	115837050	122617376	129794581	137391891
9	Security	18976525	44543554	47150816	49910728	52832165	55924641	59198096	62663180	66331040	70213604	74323439
	Paramedical staff											
1	ECG/TMT/ECHO Technicians	2939996	6901044	7304984	7732568	8185180	8664284	9171432	9708268	10276524	10878044	11514772
2	Physiotherapist	3340900	7842092	8301116	8787008	9301340	9845780	10422088	11032128	11677876	12361420	13084976
3	MRI Technician	2505675	5881569	6225837	6590256	6976005	7384335	7816566	8274096	8758407	9271065	9813732
4	CT Technicians	2505675	5881569	6225837	6590256	6976005	7384335	7816566	8274096	8758407	9271065	9813732
5	X-ray technicians	3608160	8469426	8965170	9489930	10045410	10633404	11255814	11914656	12612060	13350288	14131722
6	Anesthesia Technicians	7483624	17566288	18594504	19682904	20835008	22054552	23345480	24711968	26158440	27689584	29310344
7	Dialysis Technicians	2806348	6587332	6972912	7381060	7813100	8270428	8754524	9266956	9809380	10383556	10991340
8	Central Sterile Supply Dep.	3006810	7057866	7470984	7908288	8371188	8861184	9379860	9928896	10510068	11125260	11776458
9	Lab technicians	4009080	9410488	9961312	10544384	11161584	11814912	12506480	13238528	14013424	14833680	15701944
10	Microbiology Tech(M Sc.)	1336358	3136828	3320436	3514792	3720524	3938298	4168820	4412834	4671132	4944548	5233968
11	Phlebotomist	400905	941045	996128	1054435	1116155	1181487	1250643	1323847	1401336	1483361	1570187
12	Cath Lab Technicians	5612718	13174716	13945878	14762178	15626256	16540914	17509110	18533976	19618830	20767188	21982758
13	Lab. Asst.	1069100	2509496	2656384	2811872	2976460	3150684	3335104	3530320	3736960	3955696	4187236
14	Manager Medical Records	1169315	2744732	2905390	3075452	3255468	3446021	3647728	3861242	4087253	4326494	4579738
15	Medical Records supervisor	668179	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
16	Medical records staff	1603620	3764180	3984512	4217740	4464620	4725948	5002572	5295388	5605344	5933444	6280748
17	Pharmacist	3340890	7842060	8301080	8786970	9301300	9845740	10422040	11032080	11677820	12361360	13084910
18	Dietician	1403178	3293652	3486438	3690510	3906528	4135188	4377234	4633446	4904658	5191746	5495634
19	Perfusionist	734999	1725261	1826246	1933142	2046295	2166071	2292858	2427067	2569131	2719511	2878693
20	Ward boys (1ward boy on every 6 nurses)	9131896	21435278	22689947	24018073	25423929	26912093	28487347	30154817	31919867	33788237	35765974

Administrative staff

1	Manager HR	1403175	3293673	3486463	3690537	3906556	4135220	4377268	4633484	4904697	5191785	5495677
2	Manager - Marketing	1837495	4313144	4565607	4832847	5115730	5415171	5732139	6067660	6422820	6798769	7196724
3	Manager Operations	1503406	3528941	3735502	3954153	4185603	4430600	4689938	4964456	5255042	5562637	5888237
4	Manager Pharmacy	1069086	2509460	2656347	2811832	2976418	3150638	3335055	3530267	3736905	3955639	4187176
5	Manager Purchase	1269541	2979988	3154417	3339056	3534502	3741388	3960384	4192198	4437581	4697327	4972277
6	Manager IT	1169315	2744732	2905390	3075452	3255468	3446021	3647728	3861242	4087253	4326494	4579738
7	Manager - Engineering	1336359	3136835	3320444	3514801	3720534	3938309	4168831	4412847	4671146	4944564	5233986
8	Manager Security Services and Liasoning	1002268	2352624	2490331	2636098	2790398	2953729	3126621	3309633	3503357	3708420	3925486
9	Asst. Manager HR	935453	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
10	Asst. Manager F&B	835225	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
11	Asst. Manager Housekeeping	601360	1411571	1494195	1581655	1674235	1772234	1875969	1985776	2102010	2225048	2355287
12	Asst. Manager Pharmacy	668179	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
13	Asst. Manager Biomedical (Engineer)	835225	1960523	2075279	2196752	2325335	2461445	2605522	2758032	2919469	3090355	3271244
14	Asst. Manager Administration/liasoning	668179	1568414	1660218	1757396	1860262	1969149	2084410	2206417	2335566	2472274	2616984
15	Asst. Manager Customer care	1336358	3136828	3320436	3514792	3720524	3938298	4168820	4412834	4671132	4944548	5233968
16	Asst. Manager Maintenance	501135	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
17	Asst. Material Purchase	501135	1176311	1245164	1318048	1395198	1476864	1563310	1654816	1751678	1854210	1962743
18	Chief Accountant	935453	2195786	2324313	2460363	2604376	2756819	2918185	3088996	3269805	3461198	3663793
19	Accountants	2806344	6587310	6972888	7381032	7813068	8270394	8754486	9266916	9809340	10383516	10991298
20	Cashiers	668178	1568412	1660216	1757394	1860260	1969148	2084408	2206416	2335564	2472272	2616982
21	Purchase Asst.	668178	1568412	1660216	1757394	1860260	1969148	2084408	2206416	2335564	2472272	2616982
22	Store In Charge	434315	1019465	1079138	1142304	1209167	1279944	1354863	1434168	1518115	1606975	1701037
23	Stores Clerk	200458	470533	498075	527229	558089	590756	625335	661938	700683	741696	785110
24	Patient Relations Officer	801825	1882122	1992288	2108904	2232345	2363013	2501328	2647740	2802720	2966772	3140427
25	Executive Pool	11024985	25878915	27393690	28997130	30694425	32491065	34392870	36406005	38536965	40792665	43180395
26	Front Office Executive	11693115	27447210	29053780	30754395	32554550	34460090	36477140	38612280	40872370	43264760	45797185
27	Front Office Supervisor	1069086	2509464	2656352	2811838	2976424	3150644	3335062	3530274	3736912	3955646	4187184
28	Telephone Operators	1169315	2744710	2905365	3075425	3255440	3445990	3647695	3861205	4087215	4326455	4579695
29	Bio-medical Technician	534550	1254748	1328192	1405936	1488230	1575342	1667552	1765160	1868480	1977848	2093618
30	Equipment Electrician	534550	1254748	1328192	1405936	1488230	1575342	1667552	1765160	1868480	1977848	2093618
31	Asst. Manager IT	534543	1254732	1328176	1405919	1488212	1575322	1667531	1765137	1868456	1977823	2093592
32	IT Executive	1336358	3136828	3320436	3514792	3720524	3938298	4168820	4412834	4671132	4944548	5233968
33	Maintenance Supervisor	1069086	2509464	2656352	2811838	2976424	3150644	3335062	3530274	3736912	3955646	4187184
34	Electricians	1069100	2509496	2656384	2811872	2976460	3150684	3335104	3530320	3736960	3955696	4187236
35	Civil Maintenance Staff	1336356	3136824	3320432	3514788	3720520	3938296	4168816	4412832	4671128	4944544	5233964
36	HVAC Technician	534550	1254748	1328192	1405936	1488230	1575342	1667552	1765160	1868480	1977848	2093618
37	Water Treatment Plant &	534550	1254748	1328192	1405936	1488230	1575342	1667552	1765160	1868480	1977848	2093618
38	Ambulance / Drivers	1202715	2823135	2988384	3163305	3348465	3544461	3751929	3971541	4204008	4450083	4710561
Total Manpower Cost for Hospital (BDT lakhs)		**6185**	**14517**	**15367**	**16266**	**17218**	**18226**	**19293**	**20422**	**21618**	**22883**	**24223**

Annexure V-Projected Financial Statements

Projected Profit and Loss Account (1st to 15th year)

in BDT Lakhs

Financial Year Ending 31st March	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Year Counter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gross Revenue	-	-	-	7,653	12,151	17,864	22,692	28,023	29,664	31,400	33,238	35,183	37,243	39,423	41,730
Other Revenue	-	-	-	-	-	-	-	-	135	355	564	925	1,196	1,382	1,608
Total Revenue	-	-	-	7,653	12,151	17,864	22,692	28,023	29,798	31,754	33,802	36,108	38,439	40,804	43,338
Total O&M Cost	-	-	-	8,346	11,608	15,388	18,105	20,870	21,787	22,748	24,077	25,486	26,978	28,557	30,229
Concession Fee	-	-	-		-	250	265	280	296	314	332	352	372	394	417
PBDIT	-	-	-	(694)	543	2,226	4,322	6,873	7,714	8,692	9,393	10,271	11,088	11,853	12,692
Depreciation	-	-	-	3,628	3,128	2,657	2,329	2,081	1,941	1,834	1,754	1,697	2,079	2,813	3,412
PBIT	-	-	-	(4,321)	(2,585)	(432)	1,994	4,792	5,773	6,858	7,639	8,573	9,009	9,040	9,281
Interest Cost on TL				1,538	1,479	1,276	1,038	801	564	326	89				
Interest Cost on WC				57	75	93	104	114	117	121	128	136	144	152	161
PBT	-	-	-	(5,916)	(4,138)	(1,801)	851	3,878	5,092	6,411	7,422	8,438	8,866	8,888	9,120
Tax	-	-	-	-	-	-	-	-	-	1,532	2,598	2,953	3,103	3,111	3,192
PAT	-	-	-	(5,916)	(4,138)	(1,801)	851	3,878	5,092	4,879	4,824	5,484	5,763	5,777	5,928

Projected Profit and Loss Account (16th to 30th year)

in BDT Lakhs

Financial Year Ending 31st March	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Year Counter	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Gross Revenue	44,173	46,758	49,495	52,392	55,459	58,705	62,141	65,779	69,629	73,705	78,019	82,586	87,420	92,537	97,953
Other Revenue	2,169	2,742	3,358	3,991	4,675	5,414	6,213	6,954	7,646	8,414	9,597	10,814	12,121	13,470	14,922
Total Revenue	**46,342**	**49,500**	**52,853**	**56,383**	**60,134**	**64,120**	**68,354**	**72,733**	**77,275**	**82,119**	**87,616**	**93,400**	**99,540**	**106,007**	**112,875**
Total O&M Cost	**31,998**	**33,871**	**35,853**	**37,952**	**40,174**	**42,525**	**45,014**	**47,649**	**50,438**	**53,390**	**56,516**	**59,824**	**63,325**	**67,032**	**70,955**
Concession Fee	441	467	495	524	554	587	621	657	696	736	779	825	873	924	978
PBDIT	**13,902**	**15,162**	**16,505**	**17,908**	**19,406**	**21,008**	**22,719**	**24,427**	**26,141**	**27,992**	**30,321**	**32,751**	**35,342**	**38,050**	**40,941**
Depreciation	2,889	2,569	2,322	2,241	2,194	2,176	2,184	2,631	3,431	4,098	3,511	3,217	3,005	3,044	3,111
PBIT	**11,013**	**12,593**	**14,183**	**15,667**	**17,213**	**18,832**	**20,536**	**21,796**	**22,709**	**23,894**	**26,810**	**29,534**	**32,337**	**35,007**	**37,831**
Interest Cost on TL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest Cost on WC	170	180	191	202	214	226	240	254	269	284	301	319	337	357	378
PBT	**10,843**	**12,413**	**13,992**	**15,465**	**16,999**	**18,605**	**20,296**	**21,543**	**22,441**	**23,609**	**26,509**	**29,215**	**31,999**	**34,650**	**37,453**
Tax	3,795	4,345	4,897	5,413	5,950	6,512	7,104	7,540	7,854	8,263	9,278	10,225	11,200	12,127	13,108
PAT	**7,048**	**8,069**	**9,095**	**10,052**	**11,049**	**12,093**	**13,193**	**14,003**	**14,587**	**15,346**	**17,231**	**18,990**	**20,800**	**22,522**	**24,344**

Projected Profit and Loss Account (31st to 40th year)

in BDT Lakhs

Financial Year Ending 31st March	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Year Counter	31	32	33	34	35	36	37	38	39	40
Gross Revenue	103,687	109,756	116,180	122,980	130,179	137,799	145,864	154,402	163,440	173,007
Other Revenue	16,484	18,164	19,848	21,548	23,396	25,641	28,044	30,618	33,375	36,328
Total Revenue	**120,171**	**127,920**	**136,028**	**144,529**	**153,574**	**163,439**	**173,909**	**185,021**	**196,815**	**209,335**
Total O&M Cost	**75,109**	**79,505**	**84,159**	**89,085**	**94,299**	**99,819**	**105,662**	**111,846**	**118,393**	**125,323**
Concession Fee	1,036	1,096	1,160	1,228	1,300	1,376	1,457	1,542	1,632	1,728
PBDIT	**44,026**	**47,318**	**50,709**	**54,215**	**57,975**	**62,244**	**66,790**	**71,632**	**76,790**	**82,284**
Depreciation	3,203	3,317	3,870	4,776	5,550	5,384	5,305	5,300	5,357	5,467
PBIT	**40,824**	**44,002**	**46,839**	**49,439**	**52,425**	**56,861**	**61,485**	**66,333**	**71,433**	**76,817**
Interest Cost on TL	-	-	-	-	-	-	-	-	-	-
Interest Cost on WC	400	423	448	474	502	531	563	596	630	667
PBT	**40,424**	**43,578**	**46,391**	**48,965**	**51,923**	**56,329**	**60,923**	**65,737**	**70,803**	**76,150**
Tax	14,148	15,252	16,237	17,138	18,173	19,715	21,323	23,008	24,781	26,652
PAT	**26,275**	**28,326**	**30,154**	**31,827**	**33,750**	**36,614**	**39,600**	**42,729**	**46,022**	**49,497**

Projected Cash Flow (1st to 15th year)

in BDT Lakhs

Financial Year Ending 31st March	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Year Counter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
INFLOW															
PAT	**-**	**-**	**-**	**(5,916)**	**(4,138)**	**(1,801)**	**851**	**3,878**	**5,092**	**4,879**	**4,824**	**5,484**	**5,763**	**5,777**	**5,928**
Depreciation	-	-	-	3,628	3,128	2,657	2,329	2,081	1,941	1,834	1,754	1,697	2,079	2,813	3,412
Equity	9,921	1,036	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt	-	6,405	6,028	706	706	-	-	-	-	-	-	-	-	-	-
Total	**9,921**	**7,441**	**6,028**	**(1,582)**	**(304)**	**857**	**3,180**	**5,958**	**7,033**	**6,713**	**6,578**	**7,182**	**7,842**	**8,590**	**9,339**
OUTFLOW															
Capex	9,921	7,441	6,028	706	706	-									
Civil Replacement	-	-	-	-	-	89	113	140	148	157	166	176	186	197	209
Equipment Replacement (minor)	-	-	-	-	-	179	454	560	890	942	997	1,055	1,117	1,183	1,252
Equipment Replacement (major)	-	-	-	-	-	-	-	-	-	-	-	-	2,093	4,185	4,185
Repayment of Debt					1,978	1,978	1,978	1,978	1,978	1,978	1,978				
Change in working capital	-	-	-	(476)	(145)	(154)	(91)	(81)	(30)	(31)	(59)	(63)	(66)	(70)	(74)
Total	**9,921**	**7,441**	**6,028**	**230**	**2,539**	**2,092**	**2,454**	**2,597**	**2,986**	**3,045**	**3,082**	**1,169**	**3,330**	**5,495**	**5,572**

Financial Year Ending 31st March	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Net Cash Surplus/(Deficit)	**-**	**-**	**-**	**(1,812)**	**(2,844)**	**(1,235)**	**726**	**3,361**	**4,048**	**3,667**	**3,496**	**6,013**	**4,512**	**3,095**	**3,768**
Net Cash Surplus/(Deficit) to Cash	**-**	**-**	**-**	**(1,812)**	**(2,844)**	**(1,235)**	**726**	**3,361**	**4,048**	**3,667**	**3,496**	**6,013**	**4,512**	**3,095**	**3,768**
Op. Bal Cash	-	-	-	-	(1,812)	(4,656)	(5,891)	(5,165)	(1,804)	2,243	5,911	9,407	15,420	19,932	23,027
Addition/(Reduction) to Cash	-	-	-	(1,812)	(2,844)	(1,235)	726	3,361	4,048	3,667	3,496	6,013	4,512	3,095	3,768
Closing Balance Cash	-	-	-	(1,812)	(4,656)	(5,891)	(5,165)	(1,804)	2,243	5,911	9,407	15,420	19,932	23,027	26,795

Projected Cash Flow (16th to 30th year)

in BDT Lakhs

Financial Year Ending 31st March	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Year Counter	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
INFLOW															
PAT	**7,048**	**8,069**	**9,095**	**10,052**	**11,049**	**12,093**	**13,193**	**14,003**	**14,587**	**15,346**	**17,231**	**18,990**	**20,800**	**22,522**	**24,344**
Depreciation	2,889	2,569	2,322	2,241	2,194	2,176	2,184	2,631	3,431	4,098	3,511	3,217	3,005	3,044	3,111
Equity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	9,993	10,703	11,494	12,382	13,345	14,386	15,508	16,783	18,186	19,633	20,953	22,443	24,067	25,858	27,779
OUTFLOW															
Capex															
Civil Replacement	221	234	247	262	277	294	311	329	348	369	390	413	437	463	490
Equipment Replacement (minor)	442	935	990	1,572	1,664	1,761	1,864	1,973	2,089	2,211	780	1,652	1,748	2,776	2,939
Equipment Replacement (major)	-	-	-	-	-	-	-	2,093	4,185	4,185	-	-	-	-	-
Repayment of Debt															
Change in working capital	(79)	(83)	(88)	(93)	(99)	(104)	(110)	(117)	(124)	(131)	(139)	(147)	(155)	(164)	(174)
Total	**584**	**1,086**	**1,149**	**1,741**	**1,842**	**1,950**	**2,065**	**4,278**	**6,498**	**6,634**	**1,032**	**1,918**	**2,030**	**3,074**	**3,254**

Financial Year Ending 31st March	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Net Cash Surplus/(Deficit)	**9,353**	**9,551**	**10,268**	**10,552**	**11,401**	**12,319**	**13,312**	**12,355**	**11,520**	**12,811**	**19,710**	**20,289**	**21,775**	**22,492**	**24,201**
Net Cash Surplus/(Deficit) to Cash	**9,353**	**9,551**	**10,268**	**10,552**	**11,401**	**12,319**	**13,312**	**12,355**	**11,520**	**12,811**	**19,710**	**20,289**	**21,775**	**22,492**	**24,201**
Op. Bal Cash	26,795	36,148	45,699	55,966	66,519	77,919	90,239	103,550	115,906	127,425	140,236	159,946	180,235	202,010	224,502
Addition/(Reduction) to Cash	9,353	9,551	10,268	10,552	11,401	12,319	13,312	12,355	11,520	12,811	19,710	20,289	21,775	22,492	24,201
Closing Balance Cash	**36,148**	**45,699**	**55,966**	**66,519**	**77,919**	**90,239**	**103,550**	**115,906**	**127,425**	**140,236**	**159,946**	**180,235**	**202,010**	**224,502**	**248,702**

Projected Cash Flow (31st to 40th year)

in BDT Lakhs

Financial Year Ending 31st March	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Year Counter	31	32	33	34	35	36	37	38	39	40
INFLOW										
PAT	**26,275**	**28,326**	**30,154**	**31,827**	**33,750**	**36,614**	**39,600**	**42,729**	**46,022**	**49,497**
Depreciation	3,203	3,317	3,870	4,776	5,550	5,384	5,305	5,300	5,357	5,467
Equity	-	-	-	-	-	-	-	-	-	-
Debt	-	-	-	-	-	-	-	-	-	-
Total	29,836	32,038	34,460	37,084	39,828	42,578	45,541	48,726	52,141	55,798
OUTFLOW										
Capex										
Civil Replacement	518	549	581	615	651	689	729	772	817	865
Equipment Replacement (minor)	3,111	3,293	3,485	3,689	3,905	4,134	4,376	4,632	4,903	5,190
Equipment Replacement (major)	-	-	2,093	4,185	4,185	-	-	-	-	-
Repayment of Debt										
Change in working capital	(184)	(195)	(206)	(219)	(231)	(245)	(259)	(274)	(290)	(307)
Total	**3,445**	**3,646**	**5,952**	**8,271**	**8,510**	**4,578**	**4,846**	**5,130**	**5,430**	**5,748**

Financial Year Ending 31st March	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Net Cash Surplus/(Deficit)	**26,033**	**27,996**	**28,072**	**28,332**	**30,790**	**37,419**	**40,059**	**42,899**	**45,949**	**49,217**
Net Cash Surplus/(Deficit) to Cash	**26,033**	**27,996**	**28,072**	**28,332**	**30,790**	**37,419**	**40,059**	**42,899**	**45,949**	**49,217**
Op. Bal Cash	248,702	274,736	302,732	330,804	359,136	389,926	427,345	467,404	510,303	556,252
Addition/(Reduction) to Cash	26,033	27,996	28,072	28,332	30,790	37,419	40,059	42,899	45,949	49,217
Closing Balance Cash	**274,736**	**302,732**	**330,804**	**359,136**	**389,926**	**427,345**	**467,404**	**510,303**	**556,252**	**605,469**

Projected Balance Sheet (1st to 15th year)

in BDT Lakhs

Financial Year Ending 31st March	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Year Counter	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Liabilities															
Equity	9921	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957
Balance Transferred from P&L	0	0	0	-5916	-10054	-11855	-11004	-7126	-2034	2845	7669	13153	18916	24693	30621
Debt	0	6405	12433	13139	11868	9890	7912	5934	3956	1978	0	0	0	0	0
Creditors	0	0	0	686	954	1265	1488	1715	1791	1870	1979	2095	2217	2347	2485
Total Liabilities	**9921**	**17362**	**23391**	**18867**	**13725**	**10257**	**9354**	**11481**	**14670**	**17650**	**20605**	**26206**	**32091**	**37998**	**44063**
Assets															
Net Fixed Assets	9921	17362	23391	20469	18048	15658	13897	12517	11614	10879	10288	9822	11139	13891	16125
Debtors	0	0	0	210	333	489	622	768	813	860	911	964	1020	1080	1143
Current Assets															
Cash Balances	0	0	0	-1812	-4656	-5891	-5165	-1804	2243	5911	9407	15420	19932	23027	26795
Total Assets	**9921**	**17362**	**23391**	**18867**	**13725**	**10257**	**9354**	**11481**	**14670**	**17650**	**20605**	**26206**	**32091**	**37998**	**44063**

Projected Balance Sheet (16th to 30th year)

in BDT Lakhs

Financial Year Ending 31st March	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Year Counter	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Liabilities															
Equity	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957
Balance Transferred from P&L	37669	45737	54832	64884	75933	88027	101219	115222	129809	145155	162386	181375	202175	224697	249042
Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Creditors	2630	2784	2947	3119	3302	3495	3700	3916	4146	4388	4645	4917	5205	5509	5832
Total Liabilities	**51256**	**59479**	**68736**	**78961**	**90193**	**102480**	**115877**	**130096**	**144912**	**160500**	**177988**	**197250**	**218337**	**241164**	**265831**
Assets															
Net Fixed Assets	13898	12499	11414	11007	10754	10632	10624	12388	15579	18245	15905	14752	13932	14127	14445
Debtors	1210	1281	1356	1435	1519	1608	1703	1802	1908	2019	2138	2263	2395	2535	2684
Current Assets															
Cash Balances	36148	45699	55966	66519	77919	90239	103550	115906	127425	140236	159946	180235	202010	224502	248702
Total Assets	**51256**	**59479**	**68736**	**78961**	**90193**	**102480**	**115877**	**130096**	**144912**	**160500**	**177988**	**197250**	**218337**	**241164**	**265831**

Projected Balance Sheet (31st to 40th year)

in BDT Lakhs

Financial Year Ending 31st March	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Year Counter	31	32	33	34	35	36	37	38	39	40
Liabilities										
Equity	10957	10957	10957	10957	10957	10957	10957	10957	10957	10957
Balance Transferred from P&L	249042	275317	303643	333797	365625	399374	435988	475588	518317	564339
Debt	0	0	0	0	0	0	0	0	0	0
Creditors	5832	6173	6535	6917	7322	7751	8204	8685	9193	9731
Total Liabilities	**265831**	**292448**	**321135**	**351672**	**383904**	**418082**	**455150**	**495230**	**538468**	**585027**
Assets										
Net Fixed Assets	14445	14871	15396	17685	21399	24590	24029	23830	23934	24298
Debtors	2684	2841	3007	3183	3369	3567	3775	3996	4230	4478
Current Assets										
Cash Balances	248702	274736	302732	330804	359136	389926	427345	467404	510303	556252
Total Assets	**265831**	**292448**	**321135**	**351672**	**383904**	**418082**	**455150**	**495230**	**538468**	**585027**

Annexure VI – Existing Establishments on the Land (As per the Details Provided by BR)

A. On Identified land for Hospital Project (2.55 acres)

List of Legal Alottees

Sl No	Name of Alottee	Quarter No.	Quarter area	Nature of Structure
1	2	5	6	8
1.	Md. Jiya-Ul Tagor	DSR/51-B	777 Sq.	Semi Pucca
2.	Md. Arshadul Islam	M/13-A	207 Sq.	Semi Pucca
3.	Md. Abul Khayer	M/13-B	459 Sq.	Semi Pucca
4.	Md. Monos Dhar	DSR/52-A	459 Sq.	Semi Pucca
5.	Shahinur Akter	DSR/52-B	459 Sq.	Semi Pucca
6.	Md. Ferdous Alam	S/22-A	493 Sq.	Semi Pucca
7.	Md. Shahidur Rahaman	S/22-B	513 Sq.	Semi Pucca
8.	Nurul Mostafa	PS/1	779 Sq.	Semi Pucca

List of Illegal Alottees

Sl No	Name of Illegal Alottee	Area Measurement	Illegal Structure
1	2	3	4
1.	Tasfia Garden [Md. Yeasin Akter] – (Issuing license of GM/East)	8000 Sq.	Semi Pucca
2.	Freedom Fighter Canteen	26' x 22'	Semi Pucca
3.	Sri Sri Radha Krisno Mitay Gowro Kunjo Asrom	2' x 30' x 20'	Semi Pucca
4.	Asrom Shop	15' x 15'	Semi Pucca
5.	Helal Driver	40' x 50'	Semi Pucca
6.	Late. Kalam	30' x 20'	Semi Pucca

B. On Identified land for Medical College (1.50 acres)

List of Legal Alottees

Sl No	Name of Alottee	House No.	House Area	Nature of Structure
1.	Sabura Khatun	M/9-A	236 Sft	Semi Pucca
2.	Joynal Abedin	M/9-B	236 Sft	Semi Pucca
3.	Abdul Malek	M/8-A	205 sft	Semi Pucca
4.	Shafiqur Rehman	M/8-B	205 sft	Semi Pucca
5.	Dulai Mali	M/8-C	205 sft	Semi Pucca
6.	Abdul Mannan	M/8-D	205 sft	Semi Pucca
7.	Md. Jahangir Alam	M/20	1066 sft	Semi Pucca
8.	Ferdous Alam	M/22-A	493 Sft	Semi Pucca
9.	Shahidur Rehman	M/22-B	513 Sft	Semi Pucca
10.	Abul Kalam	L/10-A	392 sft	Semi Pucca
11.	Md. Yasin	L/10-B	392 Sft	Semi Pucca
12.	Md Abdullah	L/11	614 Sft	Semi Pucca
13.	Md. Ismail Hossain	A/13-B	271 Sft	Semi Pucca
14.	Shafiqur Rehman	A/13-A	191 Sft	Semi Pucca
15.	Md Karim	A/13-1	191 Sft	Semi Pucca
16.	Nurul Amin	E/51-A	214 Sft	Semi Pucca
17.	Korban Ali	E/51-B	214 Sft	Semi Pucca
18.	Md Abdul Kader	E/51-C	214 Sft	Semi Pucca
19.	Mokram Ali	E/51-D	214 Sft	Semi Pucca
20.	Parimal Das	E/51-E	214 Sft	Semi Pucca
21.	Sunil Chandra Mali	E/20-A	272 Sft	Semi Pucca
22.	Kishore Chandra Nuha	E/20-B	272 Sft	Semi Pucca
23.	Sajal Singh	E/20-C	272 Sft	Semi Pucca
24.	Mizanur Rehman	E/20-D	272 Sft	Semi Pucca
25.	Shafi Ullah	E/20-E	272 Sft	Semi Pucca
26.	Ali Akbar	E/20-F	272 Sft	Semi Pucca
27.	Al-Amin	E/20-G	272 Sft	Semi Pucca
28.	Abul Kaseem	E/20-H	272 Sft	Semi Pucca
29.	Md Shahjalal	E/20-I	272 Sft	Semi Pucca
30.	Delowar Hossain	E/20-J	272 Sft	Semi Pucca
31.	Maqbul Ahmed	E/20-K	272 Sft	Semi Pucca
32.	Mohiuddin	E/20-L	272 Sft	Semi Pucca
33.	Md Azam	E/20-M	272 Sft	Semi Pucca
34.	Laxan Chandra Majumdar	M/4-A	173 Sft	Semi Pucca
35.	Md Ujjal	M/4-B	173 Sft	Semi Pucca

List of Illegal Alottees

Sl No	Name of Illegal Alottee	Area Measurement	Illegal Structure
7.	Sudhir	150	Semi Pucca
8.	Pradip Barua	100	Semi Pucca
9.	Jibon Sing	64	Semi Pucca
10.	Ayesha Begum	36	Semi Pucca
11.	Siraj	525	Semi Pucca
12.	Girish Sing	300	Semi Pucca

Annexure VII – Indicative Cost of Rehabilitation & Resettlement

A. For Identified land for Hospital (2.55 acres)

Legal Alottees

S No.	Name	Area (sq feet)	Replacement cost in BDT (BDT 1100/square feet)* -(A)	Transfer Grant (TG) (one eigth of the Replacement Cost (in BDT) – (B) = A/8	TOTAL for the Legal Alottees in BDT – (C) = A+B
1	Md. Jiya-Ul Tagor	777	854,700.00	106,837.50	961,537.50
2	Md. Arshadul Islam	207	227,700.00	28,462.50	256,162.50
3	Md. Abul Khayer	459	504,900.00	63,112.50	568,012.50
4	Md. Monos Dhar	459	504,900.00	63,112.50	568,012.50
5	Shahinur Akter	459	504,900.00	63,112.50	568,012.50
6	Md. Ferdous Alam	493	542,300.00	67,787.50	610,087.50
7	Md. Shahidur Rahaman	513	564,300.00	70,537.50	634,837.50
8	Nurul Mostafa	779	856,900.00	107,112.50	964,012.50
Total					**5,130,675**

Illegal Alottees

S No.	Name	House Area	Structure	Compensation in BDT (BDT 70/square feet) - A	Actual Compensation (Lower of A and BDT 6000)
1	Tasfia Garden [Md. Yeasin Akter]	8000	Semipucca	560,000.00	6,000.00
2	Freedom Fighter Canteen	572	Semipucca	40,040.00	6,000.00
3	Sri Sri Radha Krisno Mitay Gowro Kunjo Asrom	60	Semipucca	4,200.00	4,200.00
4	Asrom Shop	225	Semipucca	15,750.00	6,000.00
5	Helal Driver	2000	Semipucca	140,000.00	6,000.00
6	Late. Kalam	600	Semipucca	42,000.00	6,000.00
Total					**34,200**

Total Compensation = BDT 51,30,675 + BDT 34,200 = BDT 51,64,875

B. For Identified land for Medical College (1.50 acres)

Legal Alottees

SL	Name	House Area (sqft)	Structure	Replacement cost in BDT (BDT 1100/square feet)* -(A)	Transfer Grant (TG) (one eigth of the Replacement Cost (in BDT) – (B) = A/8	TOTAL for the Legal Alottees in BDT – (C) = A+B
1	Sabura Khatun	236	Semipucca	259,600.00	32,450.00	292,050.00
2	Joynal Abedin	236	Semipucca	259,600.00	32,450.00	292,050.00
3	Abdul Malek	205	Semipucca	225,500.00	28,187.50	253,687.50
4	Shafiqur Rehman	205	Semipucca	225,500.00	28,187.50	253,687.50
5	Dulai Mali	205	Semipucca	225,500.00	28,187.50	253,687.50
6	Abdul Mannan	205	Semipucca	225,500.00	28,187.50	253,687.50
7	Md. Jahangir Alam	1066	Semipucca	1,172,600.00	146,575.00	1,319,175.00
8	Ferdous Alam	493	Semipucca	542,300.00	67,787.50	610,087.50
9	Shahidur Rehman	513	Semipucca	564,300.00	70,537.50	634,837.50
10	Abul Kalam	392	Semipucca	431,200.00	53,900.00	485,100.00
11	Md. Yasin	392	Semipucca	431,200.00	53,900.00	485,100.00
12	Md Abdullah	614	Semipucca	675,400.00	84,425.00	759,825.00
13	Md. Ismail Hossain	271	Semipucca	298,100.00	37,262.50	335,362.50
14	Shafiqur Rehman	191	Semipucca	210,100.00	26,262.50	236,362.50
15	Md Karim	191	Semipucca	210,100.00	26,262.50	236,362.50
16	Nurul Amin	214	Semipucca	235,400.00	29,425.00	264,825.00
17	Korban Ali	214	Semipucca	235,400.00	29,425.00	264,825.00
18	Md Abdul Kader	214	Semipucca	235,400.00	29,425.00	264,825.00
19	Mokram Ali	214	Semipucca	235,400.00	29,425.00	264,825.00
20	Parimal Das	214	Semipucca	235,400.00	29,425.00	264,825.00
21	Sunil Chandra Mali	272	Semipucca	299,200.00	37,400.00	336,600.00
22	Kishore Chandra Nuha	272	Semipucca	299,200.00	37,400.00	336,600.00
23	Sajal Singh	272	Semipucca	299,200.00	37,400.00	336,600.00
24	Mizanur Rehman	272	Semipucca	299,200.00	37,400.00	336,600.00

SL	Name	House Area (sqft)	Structure	Replacement cost in BDT (BDT 1100/square feet)* -(A)	Transfer Grant (TG) (one eigth of the Replacement Cost (in BDT) – (B) = A/8	TOTAL for the Legal Alottees in BDT – (C) = A+B
25	Shafi Ullah	272	Semipucca	299,200.00	37,400.00	336,600.00
26	Ali Akbar	272	Semipucca	299,200.00	37,400.00	336,600.00
27	Al-Amin	272	Semipucca	299,200.00	37,400.00	336,600.00
28	Abul Kaseem	272	Semipucca	299,200.00	37,400.00	336,600.00
29	Md Shahjalal	272	Semipucca	299,200.00	37,400.00	336,600.00
30	Delowar Hossain	272	Semipucca	299,200.00	37,400.00	336,600.00
31	Maqbul Ahmed	272	Semipucca	299,200.00	37,400.00	336,600.00
32	Mohiuddin	272	Semipucca	299,200.00	37,400.00	336,600.00
33	Md Azam	272	Semipucca	299,200.00	37,400.00	336,600.00
34	Laxan Chandra Majumdar	173	Semipucca	190,300.00	23,787.50	214,087.50
35	Md Ujjal	173	Semipucca	190,300.00	23,787.50	214,087.50
			Total			12,829,162.5

Illegal Alottees

S No.	Name	House Area	Structure	Compensation in BDT (BDT 70/square feet) - A	Actual Compensation (Lower of A and BDT 6000)
1	Sudhir	150	Semipucca	10500	6000
2	Pradip Barua	100	Semipucca	7000	6000
3	Jibon Sing	64	Semipucca	4480	4480
4	Ayesha Begum	36	Semipucca	2520	2520
5	Siraj	525	Semipucca	36750	6000
6	Girish Sing	300	Semipucca	21000	6000
			Total		**31000**

Total Compensation = BDT 13,793,175 + BDT 31,000 = BDT 1,38,24,175

Note: The Compensation worked out in this Annexure is indicative. Bangladesh Railway is free to undertake the rehabilitation & resettlement for the project as per applicable policies & regulations

Disclaimer

This document has been prepared solely for PPP Authority, Government of Bangladesh, being the express addressee to this document and Bangladesh Railway. PwC does not accept or assume any liability, responsibility or duty of care for any use of or reliance on this document by anyone, other than (i) PPP Authority, Government of Bangladesh, to the extent agreed in the relevant contract for the matter to which this document relates (if any), or (ii) Bangladesh Railway or (iii) as expressly agreed by PwC in writing in advance.

This publication (and any extract from it) may not be copied, paraphrased, reproduced, or distributed in any manner or form, whether by photocopying, electronically, by internet, within another document or otherwise, without the prior written permission of PwC. Further, any quotation, citation, or attribution of this publication, or any extract from it, is strictly prohibited without PwC's prior written permission.

©2016 PricewaterhouseCoopers Private Limited. All rights reserved. In this document, "PwC" refers to PricewaterhouseCoopers Private Limited (a limited liability company in India), which is a member firm of PricewaterhouseCoopers International Limited (PwCIL), each member firm of which is a separate legal entity.