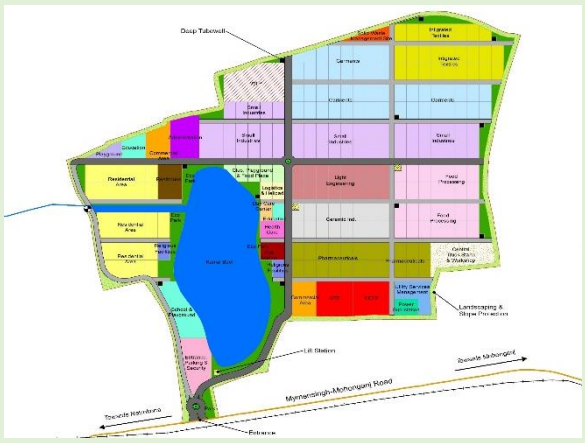
Bangladesh Economic Zones Authority
Prime Minister's Office

FEASIBILITY STUDY OF NETROKONA ECONOMIC ZONE



Final Report

Volume I: Main Report

January 2021

Water Environment & Climate

Institute of Water Modelling

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List of Acronyms and Abbreviations

API	Active Pharmaceuticals Ingredients
BBS	Bangladesh Bureau of Statistics
BCR	Benefit to Cost Ratio
BDT	Bangladeshi Taka
BEPZA	Bangladesh Export Processing Zone Authority
BEZA	Bangladesh Economic Zones Authority
BGS	British Geological Survey
BIDA	Bangladesh Investment Development Authority
BPDB	Bangladesh Power Development Board
BSCIC	Bangladesh Small and Cottage Industries Corporation
BWDB	Bangladesh Water Development Board
CAPEX	Capital Expenditure
CETP	Common Effluent Treatment Plant
DC	Deputy Commissioner
DI	Ductile Iron
DMA	District Metered Area
DoE	Department of Environment
DPHE	Department of Public Health Engineering
DTW	Deep Tubewell
ECA	Ecologically Critical Area
ECR	Environment Conservation Rule
EIA	Environmental Impact Assessment
EOI	Expression of Interest
EPZs	Export Processing Zones
ESMP	Environmental and Social Management Plan
ETP	Effluent Treatment Plant
EZ	Economic Zone
FC	Foreign Currency
FDI	Foreign Direct Investment
FY	Fiscal Year
GDP	Gross Domestic Product
GL	Ground Level
GNI	Gross National Income
GoB	Government of Bangladesh
GR	Game Reserve
GW	Groundwater
HDPE	High Density Polyethylene
HH	Household
ICT	Information and Communication technology
IEE	Initial Environmental Examination
ILO	International Labour Organization
IRR	Internal Rate of Return

IT	Information Technology
IWM	Institute of Water Modelling
IWMF	Integrated Waste Management Facilities
KV	Kilovolt
LDC	Least Developed Countries
LED	Light Emitting Diode
LMIC	Lower Middle-Income Country
LOQ	Limit of Quantification
LS	Lump Sum
MDF	Medium Density Fiber Board
MIM	Management Information & Monitoring
MLD	Million Litres Per Day
MW	Mega Watt
NCCI	Chamber of Commerce and Industry of Netrokona
NEZ	Netrokona Economic Zone
NGO	Non-government Organization
NP	National Park
NPV	Net Present Value
O&M	Operation and Maintenance
OPEX	Operating Expenditure
OSS	One Stop Service
PA	Protected area
PDB	Public Works Department
PGCB	Power Grid Company of Bangladesh
PM	Particulate Matter
PMO	Prime Minister's Office
ppb	Parts per Billion
PPP	Public-Private Partnership
REB	Rural Electrification Board
RMG	Readymade Garments
SIA	Social impact Assessment
SLS	Sewage Lift Station
STP	Sewage Treatment Plant
STS	Secondary Transfer Station
TC	Total Coliform
UK	United Kingdom
uPVC	Unplasticized Polyvinyl Chloride
USD	United States Dollar
VAT	Value Added Tax
WHO	World Health Organization
WRP	Water Resources Planning
WS	Wildlife Sanctuary
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

Bangladesh Economy

BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export. BEZA is not a profit-making organisation. BEZA is working for the development of the people of Bangladesh.

Bangladesh economy has been experiencing steady acceleration in economic growth over the last several decades. Starting at a slow pace in the 1970s the growth has picked up speed in the 1990s and beyond. Thus, the average growth rate of GDP rose from less than 4% per year during 1970-90 to 4.8% in 1990-2000; to 5.8% in 2001-2010, and then crossed the 6% threshold during 2011-2015. GDP growth averaged 6.3% for last few years.

Since the 80s the Government of Bangladesh has been successfully providing land, infrastructure, and a good business environment through its Export Processing Zones (EPZs) Program. EPZs have been used as a "strategic instrument" for attracting FDIs in Bangladesh and in dealing with the shortcomings in the overall investment climate in Bangladesh. The Bangladesh Export Processing Zone Authority (BEPZA) was established in 1980 and its first EPZ was built in Chattogram in 1983. The EPZ program was the first systematic initiative to provide fully serviced land and a better business environment for investors, targeting large scale, export-oriented manufacturing. Since 1993, EPZs have triggered impressive growth in exports, mainly in the RMG sector, at an average annual rate of 23 percent, reaching nearly US$5 billion by FY2018 and have created half a million jobs within the zones.

The Economic Zone Authority (BEZA) was established under the Prime Minister's Office (PMO) and governed by a Board chaired by the Prime Minister. The law provides the legal coverage for attracting and leveraging private investment in the development of zones as zone developers or operators, and in the provision of providing infrastructure services, such as power, effluent treatment, wastewater treatment etc. The law also allows for development of EZs and support infrastructure through a Public-Private Partnership (PPP) mechanism.

The government of Bangladesh intends to establish 100 such economic zones in different areas of Bangladesh. One of the probable EZ areas has been identified is in the Netrokona district, about 4km on the east of Netrokona Sadar. In this regard, BEZA has engaged Institute of Water Modelling (IWM) for conducting this feasibility study.

Approach and Methodology

A series of initial meetings with BEZA, local authorities, and key industry stakeholders were undertaken and visits were made to investigate and make assessment on the site, connectivity, availability of labour, existing industrial base, social infrastructure especially level of education, Industrial policy and business environment, fiscal levies and taxation policies, financial markets, trends of investments and exports and so on. The past trends of investment

in the relevant sectors in Netrokona, Mymensingh, Dhaka were also analysed and tried to assess the potential investment in the future that was required in estimating the demand for the land.

A long list of industrial sectors was prepared, that existed as 'manufacturing" under Bangladesh government economic sector classification and then the sectors were shortlisted based on labour availability; presence of raw materials/ backward linkage industries; presence of forward linkage industries as well; growth prospect/export competitiveness; and suitability with respect to existing local demand for the products. A scoring exercise of the short-listed sectors was carried out to prioritise the space allocation for each sector in the EZ based on suitability of the sector for the EZ. A separate demand projection was prepared for the site for each shortlisted sector. A detailed financial and economic analysis has been incorporated in this report as well.

Netrokona District & Netrokona Sadar Upazila

Netrokona is a district under Mymensingh division of Bangladesh. Government of Bangladesh converted it to Netrokona District on 17 January 1984. The land use pattern of the proposed EZ area falls under agriculture zone and aquaculture zone. The project site is situated adjacent to the Mymensingh – Mohonganj highway. Existing road may be improved and used as an access road to the project site. The Netrokona railway station is located at a distance of 5 km (approximate) from proposed EZ. The proposed site for the development of NEZ is located at Sadar Upazila of Netrokona district. Within Netrokona Sadar boundary, 99.04% area is land area and the rest are waterbodies. Out of total area, 37% is highland and 34%, 21% & 7% are medium highland, medium lowland & lowland respectively. The land types of proposed NEZ are medium lowland land.

The general topography of the NEZ is more or less flat with land elevation varying from 6.6 to 8.1 mPWD. There is a large beel area called Kamal Beel within the NEZ. The area of this beel is approximately 77.6 acres. The beel is connected to the Kangsha River in the north.

Climate, Hydrometeorology

Long-term average rainfall in this upazila is approx. 25% more compared to the national average annual rainfall. Around 78% of the annual rainfall occurs within the months Jun to Oct. Max. rainfall occurs in July. The annual average rainfall in Netrokona Sadar upazila is 3089mm. Average. potential ET (ETo) is less than effective rainfall in the months of Nov to Mar (05 months) and is higher in other (07) months. Approximately, 10.1% of the upazila area is homestead, 32.97% is of F0 category and around 1% is waterbodies (very low land). Hence, about 43% of the upazila area is above 8.4 mPWD. Annual maximum 5-year simulated Water level is 9.2 mPWD while mean annual peak water level is 8.8 mPWD. From Gumbel distribution, 100-year return period water level has been assessed as 10.9 mPWD. Based on gridded rainfall data for the period 1965 to 2012, it was observed that 15% of the years were dry: 1 extremely dry year, 1 severely dry year and 5 moderately dry years.

Water Resources Assessment

From the study of surface water and groundwater it is evident that, groundwater needs to be used as the source of water supply to the Netrokona EZ. Kangsha and Mogra rivers are not dependable source because of very low flow in the dry season. The Kamal Beel within the EZ could be a large storage of water. Sustainability and technical constraints of utilizing groundwater and the stored water in Kamal Beel needs to be carefully assessed for water supply to the economic zone.

Netrokona BSCIC

For promotion and extension of small and cottage industries in the private sector, Netrokona BSCIC (Bangladesh Small and Cottage Industries Corporation) industrial complex was established in 2005 on 15 acres of land but land leasing has been started from 2008. Most of the plot size is 4500-6000 sq. ft. In the present setup of BSCIC, the plot owners have to take electricity connection by their own effort which costs nearly about 0.3 million BDT for each plot. There is no gas supply in this BSCIC area. This industrial estate complex consists of various industries. Presently, BSCIC has industries of jute products, fuel, garments, pharmaceuticals, bakery products, processed food (puffed rice and flattened rice etc.), mosquito coil, plastic products, mineral water, aluminium products, furniture, fast food and parts of machines.

Competitiveness of Netrokona EZ

Competitiveness of the Netrokona Economic Zone has been assessed using the following perspective. We have assessed how competitive Bangladesh is from the perspective of an investor as many investors (foreign and domestic) might consider investing in countries like Vietnam, Sri Lanka, Pakistan, Cambodia, Myanmar, and others. As such, it is important to understand where Bangladesh stands out in terms of investment destination for domestic and foreign investors. It is worth to note that Bangladeshi investors are also actively looking outside the country to invest as they also want to remain competitive in their foreign markets.

Potential Industry Sectors for the Site

Identification of potential industries in the proposed NEZ has been made based on the opinion surveys and secondary data and reconnaissance field visits. The shortlisted industries have been presented below:

1. Integrated textile
2. Readymade garments
3. Pharmaceuticals
4. Ceramic industries
5. Food processing (Agro-based and fish processing)
6. Light engineering
7. Small industries

Master Plan

A master plan for the proposed Netrokona Economic Zone (NEZ) has been prepared based on field visits, analysis of industry data, opinion surveys among stakeholders and local people, secondary data on air, road, railways, water routes infrastructure at the local and regional and national levels, water availability, power supply, flooding condition, gas and telecommunication infrastructure, etc.

The economic zone has been divided into following four zones in accordance with the land use.

Zone A: Industrial zone

Zone B: Residential zone

Zone C: Recreational zone

Zone D: Administrative and service zone.

SN	Industry Type	Nos. of Plots
1	Integrated textile	26
2	Readymade garments	47
3	Pharmaceuticals	22
4	Ceramic industries	16
5	Food processing (Agro-based and fish processing)	28
6	Light engineering	16
7	Small industries	49
Total		**204**

Moreover, in **Chapter 8** of this report, detail description of plot, parking, gate system, land use plan, onsite infrastructures such as road network, electric lighting, power supply system, land development, source of water supply, provision of rainwater harvesting, water supply network, sewage treatment plant (STP), common effluent treatment plant (CETP), discharge route of STP and CETP, solid waste management, fire protection, administration and offsite infrastructures such as establishment of railway station adjacent to NEZ gate, data connectivity and dredging has been provided. Finished ground level of NEZ has been assesed as 10.9 mPWD.

Environmental and Social Review

The environmental and social baseline is the existing status of environment and society around the proposed area. It has been analysed through assessment of environmental components like air, water, land, noise, soil, etc. and environmental characteristics like physical, physico-chemical, biological and socio-economic status of the study area within the 10 km radial zone of the project site. Physical environment includes important physical structures, topography, land, soil. Physico-Chemical environment includes meteorology, air, water, noise, etc. and the biological environment includes flora and fauna. Socio-economic environment of the study area includes demography, ethnicity, religion, education and employment opportunity, occupation, income, poverty, social relations, etc. Baseline environmental conditions are based on the data collected from various related agencies and the secondary documents from

published sources and websites. The baseline provides the basis for assessment of impact (potential changes in the baseline conditions) due to the development of proposed Netrokona Economic Zone.

Socio-economic Condition

The total population of Netrokona Sadar Upazila is 372,785 with a population density of 1094 per square km. Among the total population 187,026 are male and 185,759 are female; the sex ratio (male/female) is 101. There are 81435 HHs with average size of a HH 4.54. Based on religious identity, 336754 are Muslim, 35819 are Hindu, 12 are Buddhist, 103 are Christian and 97 are of other religions.

There are various kinds of livelihood in the project area. However, most of the population of the project area is agriculture dependent. The order of occupations of Netrokona Sadar upazila is Agriculture (60.03%) > Commerce (13.51%) > Services (7.18%)> Others (7.78%)> Transport and communication (4.44%)> Non-agricultural labourer (4.18%)> Construction (1.62%)> Industry (0.78%)> Rent and remittance (0.29%)> Religious service (0.19%).

Financial Analysis

The estimated cost is Tk. 14,959 million. Detail of the cost estimate has been presented in **Table 9-1.** The Financial and Economic Analysis of the Netrokona Economic Zone (NEZ) is carried out under several assumptions. It is assumed that the zone will begin its operation in 2023 in a limited scale (25%). The year 2021 will be used mostly for land acquisition while 2022-2023 to develop the zone and infrastructure needed to make the zone operational.

Summary of Financial and Economic Analysis

Total investment by the Zone	**14,959**	**BDT m**
Total Revenue over 25 years	126,867.05	BDT m
Total Maintenance cost over 25 years	3,854.43	
	Financial	**Economic**
Discount rate	12%	12%
Net Present Value	1,098.19	66,577.09
Benefit to Cost ratio	1.09	6.50
Internal Rate of Return	12.7%	43.5%

Sensitivity Analysis

To understand the robustness of the financial and economic analysis, we have used a range of values against each of the assumptions used. Our findings are not sensitive to most of the assumptions except the tariff charges on land. We have used 1.80 USD as land lease charge per square meter. Our analysis further shows that if BEZA receives its investment fund at an interest rate below 9.2%, the project will become financially feasible.

Conclusion of Financial and Economic Analysis

The financial and economic analysis of investments are usually done to determine whether the investment is financially and economically feasible. For public investment projects, the crucial determinant is Economic Analysis because the economy benefits from the indirect benefits accrued to the economy and so it justifies public investment. For a private investment point of view, it is only the financial analysis of the project that is relevant for decision making.

Netrokona Economic Zone is a public investment venture and its primary objective is to stimulate the economy of Bangladesh and in particular to ensure that every corner of Bangladesh, in this case Netrokona District, gets economic boost from the investment. As such, the project must be economically feasible. It is expected to create approximately 100,000 jobs directly in the zone.

We suggest the following approach to management of the Netrokona Economic Zone.

Analysis shows the following.

a. The project is economically feasible with EIRR 43.5% under its current assumptions.
b. The project is financially feasible under both models and BEZA will have minimum of FIRR of 12.7%.

We, therefore, recommend the following

1. *The Netrokona Economic Zone be developed by BEZA who will need to invest a total of 14.9 billion taka. The project will have a positive economic impact and its Economic IRR is 43.5%.*
2. *If the project is initiated for PPP, the PPP investor will have to bear 50% of the total cost of the project and even if they receive 53% of the total revenue against their investment, financial IRR for them is only 3.72%. As such, it is not feasible (financially) for PPP investor.*
3. *Sensitivity analysis have been on several parameters assumed in the model. These are summarized below (under BEZA model)*
    a. *Even if the utility service charge is around 5%, the project still remains financially feasible.*
    b. *The analysis assumed 5% tariff escalation factor per year over the period of the project, the sensitivity analysis shows that even at no increase in tariff the project is financially feasible.*
    c. *The cost of escalation factor was 0% in the analysis. Sensitivity analysis shows up to 5% rise in cost it is still feasible.*
    d. *Zone service charge is assumed as 15% for operating the one stop centres by BEZA. However, even if it is 0%, the project is feasible.*

The project needs to be completed on time and it needs to plan to have investments in its plots by 2027.

Overall Conclusion

The strengths of NEZ are availability of labour with relatively low cost, low price of land, availability of raw materials, available transport connectivity (road, rail and river), no major settlement issue for the proposed boundary, etc. Moreover, Bangladesh is also providing high incentive in terms of tax holidays and there is a functional One Stop Service (OSS) within BEZA. On the contrary, there might be some obstacles which might hamper the establishment and operation of the NEZ such as uncertainty of insufficient gas and water, distance from the seaports, insufficient road width, etc. The opportunities may be in the forms of expansion of business, employment creation and use of domestic products (raw materials); while risks are associated with higher interest rate of bank loan for investors, weak and inadequate power and infrastructure facilities, dearth of skilled labour.

However, if investments are made to develop the proposed Netrokona Economic Zone, it will bring positive socio-economic changes in that region as well as to the country by adding value to the overall GDP, accumulation of FDI, income by BEZA authority, increase in land value in Netrokona, etc.

Recommendations

To make the project feasible, its necessary to establish some onsite and offsite infrastructures. These infrastructures are essential to establish this EZ. Without these infrastructures the project will not be feasible. These infrastructures are stated below:

- Adequate gas supply in the EZ should be ensured
- Adequate water supply in the EZ should be ensured
- Power supply should be ensured
- Road network should be upgraded as per future traffic demand
- A railway station should be established by Bangladesh railway adjacent to the site
- The works which are beyond BEZA's capacity such as gas and power supply, should be implemented as a deposit works
- The land level should be raised up to 10.9 mPWD to keep the site flood free
- The proposed Kamal beel will play a vital role in ensuring environmental sustainability by storing storm water and providing ecosystem services
- The proposed CETP and STP will be needed to reduce the chance of environmental degradation. The discharge and sludge from CETP and STP will have to be managed carefully
- The waste management facilities will be needed to ensure a better management of solid waste.

Chapter 1: Introduction

1 INTRODUCTION

Bangladesh Economic Zones Authority (BEZA) was officially initiated by the Government of People's Republic of Bangladesh on 9 November 2010 under BEZA Act, 2010. BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export'. BEZA is not a profit-making organisation. BEZA is working for the development of the people of Bangladesh.

Bangladesh economy has been experiencing steady acceleration in economic growth over the last several decades. Starting at a slow pace in the 1970s the growth has picked up speed in the 1990s and beyond. Thus, the average growth rate of GDP rose from less than 4% per year during 1970-90 to 4.8% in 1990-2000; to 5.8% in 2001-2010, and then crossed the 6% threshold during 2011-2015. GDP growth averaged 6.3% for last few years.

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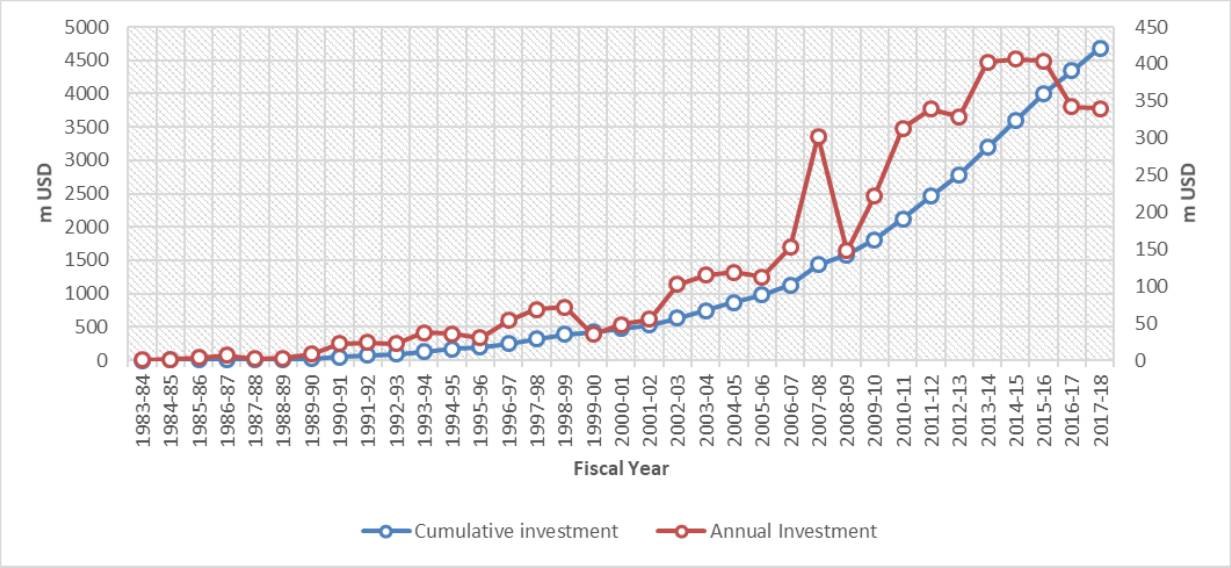

Figure 1-1: Investment in Export Processing Zones in Bangladesh

That said, Bangladesh's current EPZ model has had its limits, both in terms of cumulative impacts and spill over into the domestic economy. Realizing the success of EPZs, the

Government of Bangladesh initiated a new scheme of establishing Economic Zones to promote investments looking at the domestic as well as foreign demand for goods and services. Its objective is to maximize the potential direct and indirect impacts through a more modern regime called the Economic Zones (EZs).

As such, the Government has launched an effort to begin a paradigm for investment in Bangladesh drawing from numerous successful examples from around the world, as well as Bangladesh's own positive experience with the EPZ model. The GoB is expecting additional spill over effects to local firms stemming from new foreign direct investment and from investments within the value chains. This will in turn stimulate the procurement of more local products and produce better linkages between firms and educational institutions. A faster adaption to international environmental and social practices would also be encouraged through this new EZ policy regime.

The new EZ regime provides for a new approach both in management and investment. The policy allows the Government to develop and pilot an approach that is less reliant on Government and fiscal subsidies, while leveraging comparative advantages and private sector capability, where possible.

The Economic Zone Authority (BEZA) was established under the Prime Minister's Office (PMO) and governed by a Board chaired by the Prime Minister. The law provides the legal coverage for attracting and leveraging private investment in the development of zones as zone developers or operators, and in the provision of providing infrastructure services, such as power, effluent treatment, wastewater treatment etc. The law also allows for development of EZs and support infrastructure through a Public-Private Partnership (PPP) mechanism.

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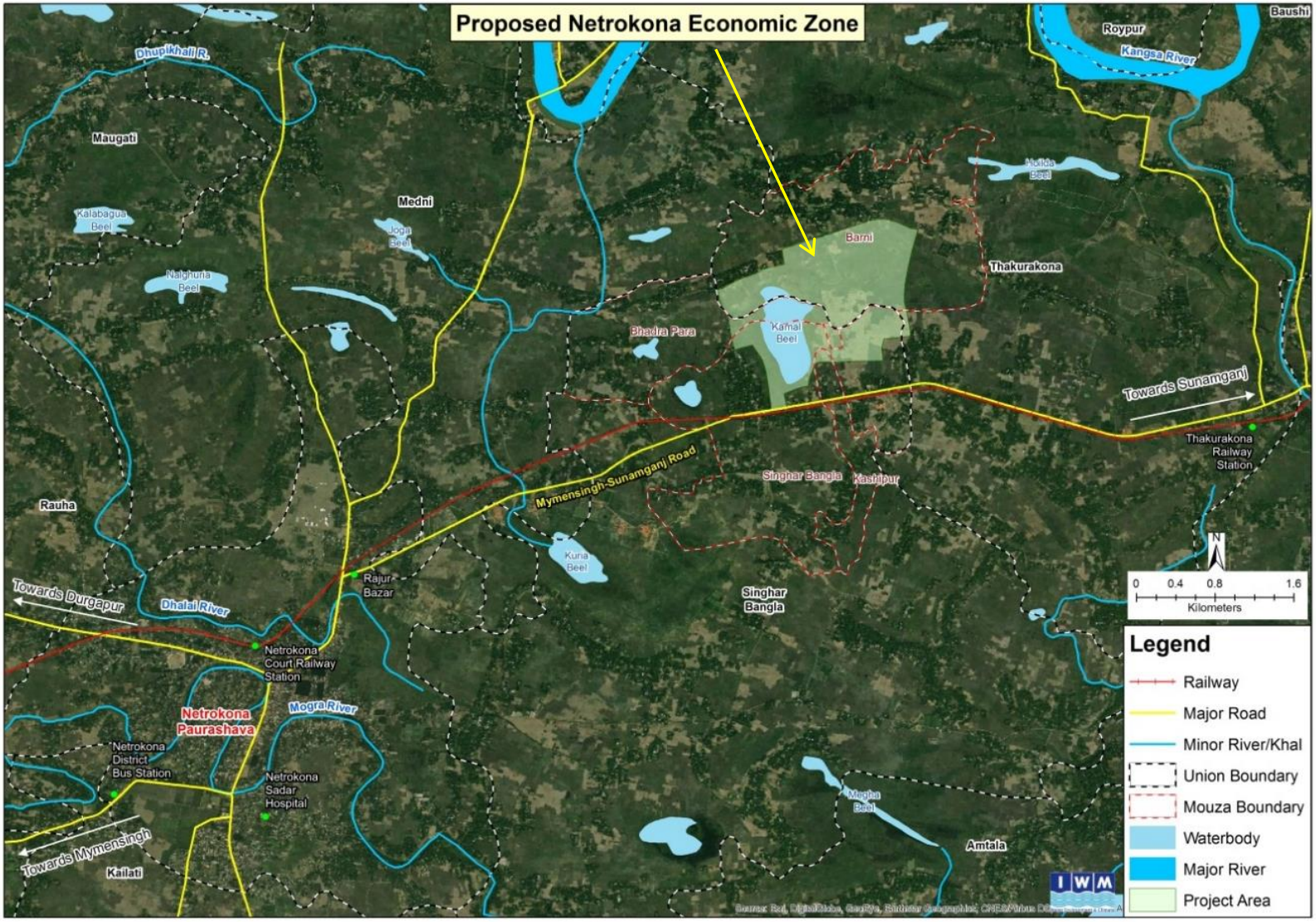


Figure 1-2: Proposed Netrokona Economic Zone

Major components and tasks for the feasibility study of Netrokona EZ have been illustrated in the work flow diagram presented in **Figure 1-3**. The flow of methodology considers the zone development study for integration with other developments in the region. It will provide an evaluation of the existing network of roads, power, telecommunication and ICT; the area development plan of local and national authorities; competitiveness of the zone in view of social, environmental, financial and economic considerations.

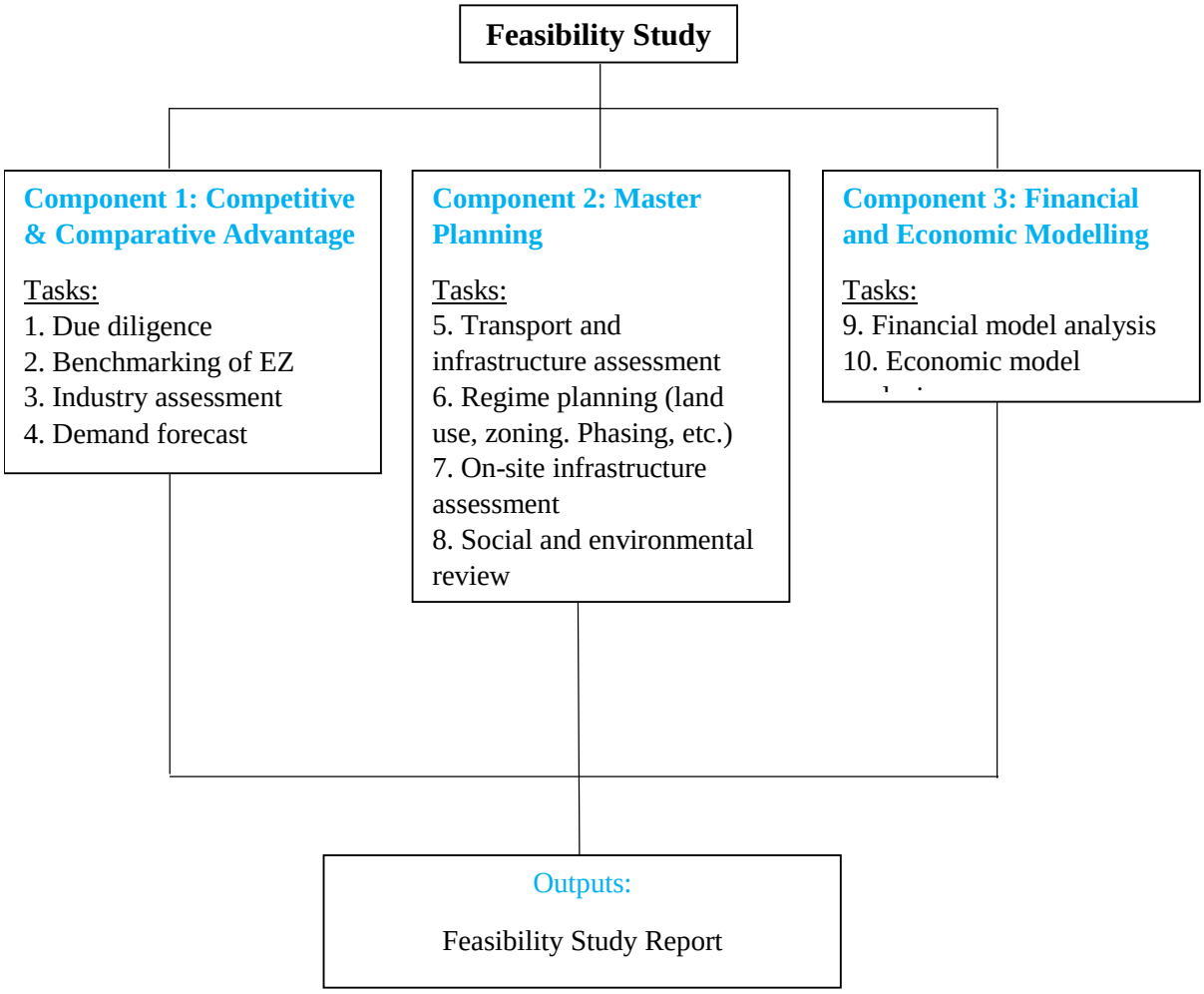


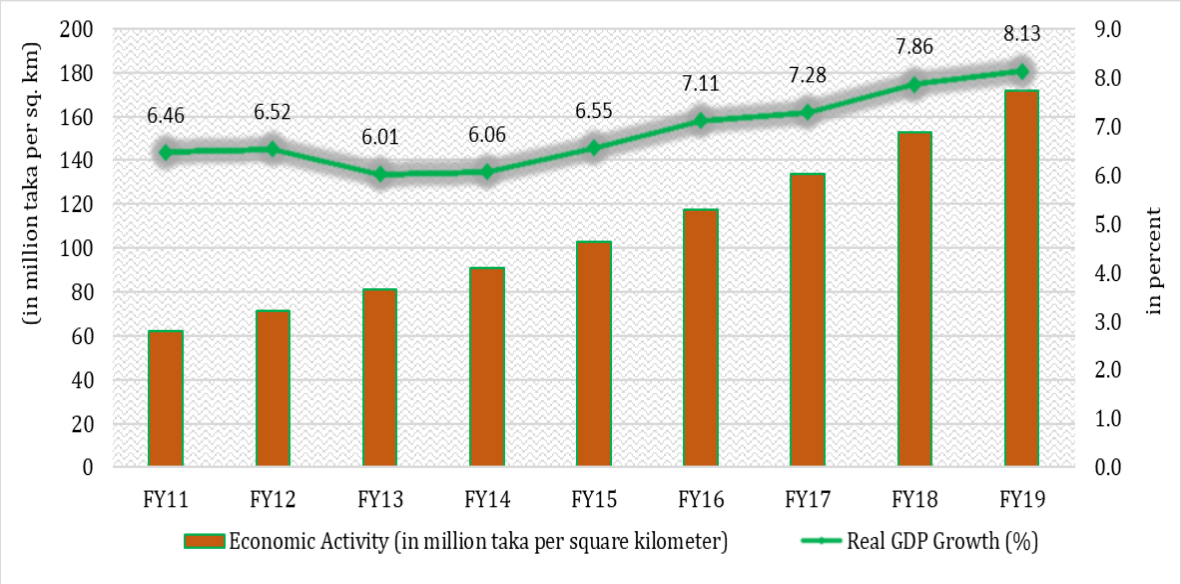
Figure 1-3: Flowchart of Methodology

Chapter 2: Overview of Bangladesh's economy

2 OVERVIEW OF BANGLADESH'S ECONOMY

2.1 Current Context of Bangladesh Economy

Bangladesh is one of the fastest growing economy in the world; registered 8.13% GDP growth in FY2018-19. Over last two decades, the GDP of the country has growing at a rate more than 6% consistently. Estimates also suggest that intensity of economic activities is increasing, whereas poverty has been declining consistently. Other macroeconomic indicators like inflation and unemployment are stable within the broad control of the government.



Source: Bangladesh Economic Review 2018

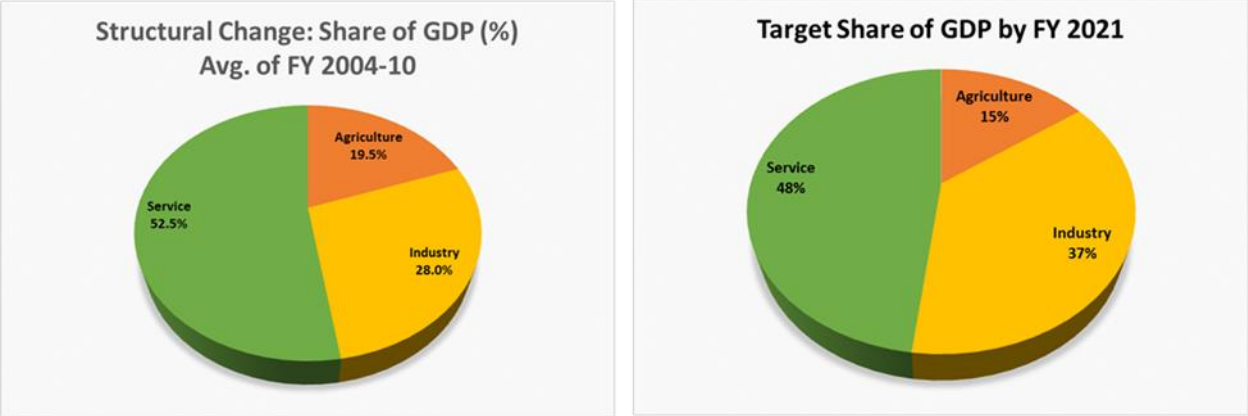
Figure 2-1: Growth of Economic Activities and GDP of Bangladesh

2.2 Vision 2021

The increase in per capita income despite widen income inequality has contributed Bangladesh to promote as lower-middle income country in 2016. In addition, Bangladesh has managed to improve its status in most of the standard socio-economic indicators. The combination of increased per capita GNI, improved human development index (for Bangladesh) and relatively higher resilience against natural and artificial shocks have bolster Bangladesh economy for the first time to meet eligibility criteria of graduation from the status of least developed countries (LDCs) in 2018. With the successful two triennial reviews processes in 2021 and in 2024, Bangladesh is expected to finally graduate to LMIC status by 2024. These are all critical strides for a country like Bangladesh which has an aspiration or a vision to become a high-income country by 2041.

This means that the economy maintains a steady growth between 8% to 10% per year. Achieving the target would require major investment particularly in the industry and service sectors and to introduce a major structural change in the economy. **Figure 2-2** shows that while the contribution of industries in the economy in 2004-10 was 28% (on average) and that of

agriculture was 19.5%, the target set by the Government for 2021 is to increase the share of industry in Bangladesh's GDP to 37%, while service sector should stay around 50%.

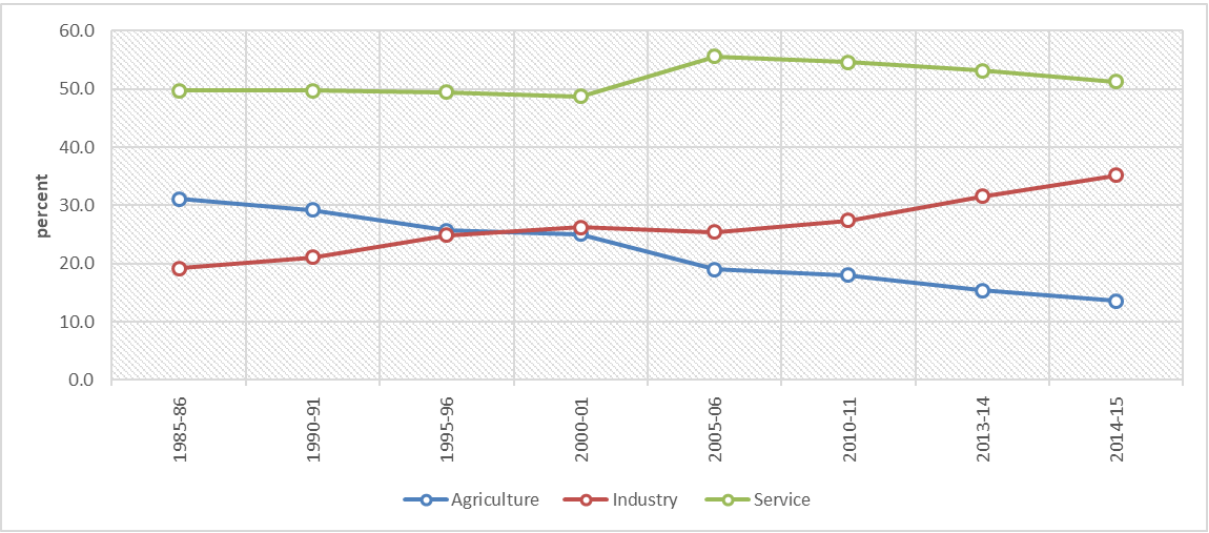


Source: Perspective Plan of Bangladesh

Figure 2-2: Structural Change of GDP

2.3 Economic Sectors

Agricultural sector is predominantly the most important sector for Bangladesh but its share in the GDP is declining. However, the contribution of agricultural sector is important as it employs more than 40% of labour force of Bangladesh. In contrast, the contribution of industrial sector in Bangladesh economy has increased over time and currently is about a third of GDP. On the other hand, the service sector still contributes the highest in terms of value addition in GDP.



Source: Bangladesh Economic Survey (selected years)

Figure 2-3: Sectoral Shares in GDP of Bangladesh

2.4 Current Macroeconomic Status

The size of Bangladesh economy is over 300 billion USD at the end of the fiscal year 2018-19 and it is growing at a rate above 8% while inflation rate stands less than 6%. Per capita income

is on rise and has reached close to 2K USD. Both the private and public investments are increasing; the overall investment is about one third of Bangladesh's GDP. Although fiscal deficit is contained within 5% as share of GDP, current account balance is showing negative trends in recent years. This negative current account balance can be explained through higher import demand for raw materials and accessories in the wake of high public investments for infrastructural development and capacity building. Both export earnings and remittance inflows have increased significantly in recent years for Bangladesh. The overall macroeconomic situation is stable and is favourable for future investments.

Table 2.1: Selected Macroeconomic Indicators of Bangladesh

Key Selected Macroeconomic Indicators	FY15	FY16	FY17	FY18	FY19
Real GDP (in billion USD)	195.16	221.40	249.72	274.11	302.43
Real GDP growth (%)	6.55	7.11	7.28	7.86	8.13
GNI per capita (in USD)	1316	1465	1610	1751	1909
Trade Openness (as % of GDP)	42.09	37.95	35.30	38.24	
Total Investment (in billion USD)	56.37	65.65	76.19	85.62	95.47
Private Investment	43.06	50.90	57.68	63.77	70.77
Public Investment	13.31	14.76	18.51	21.85	24.70
Inflation (Annual Average)	6.19	5.51	5.70	5.54	
Current account (as % of GDP)	1.79	1.93	-0.53	-3.57	-1.71
Fiscal Deficit (as % of GDP)	-4.7	-4.7	-4.8	-4.8	-4.8
Remittance Earnings (in billion USD)	15.32	14.93	12.77	14.98	16.42
Poverty Rate (%)		24.3			
Unemployment Rate (%)		4.20			
Gini Index (0 to 1 scale)		0.48			

Source: Bangladesh Economic Review 2019 and Bangladesh Bank Statistics

2.5 Economic Growth in Bangladesh

Bangladesh economy has been growing at a steady pace over the last decade. **Figure 2-4** presents the sector-wise growth over the years. It is apparent that while the agricultural sector has been steady, major growth occurred in the industries (particularly manufacturing) and in the service sectors.

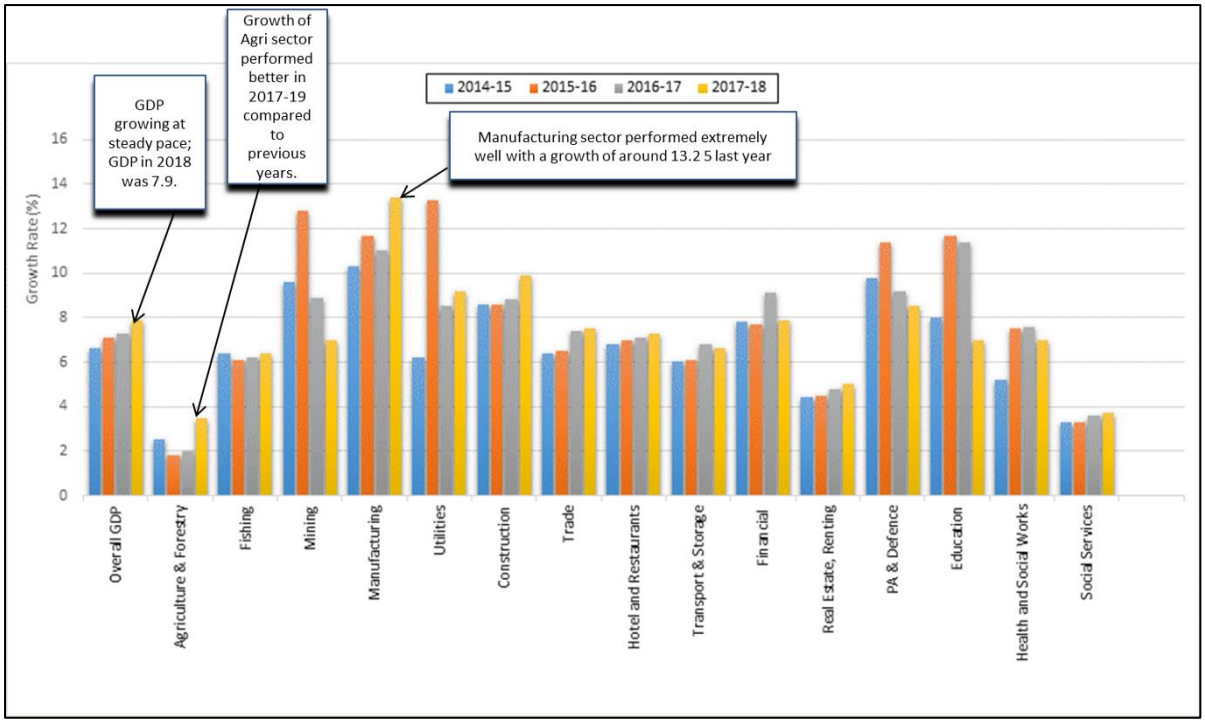
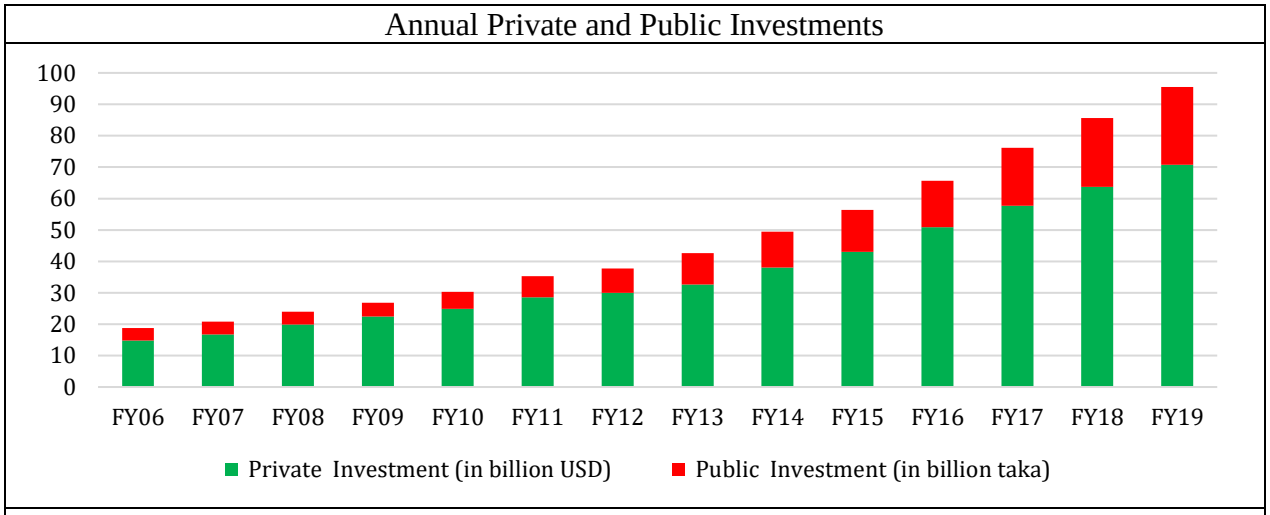


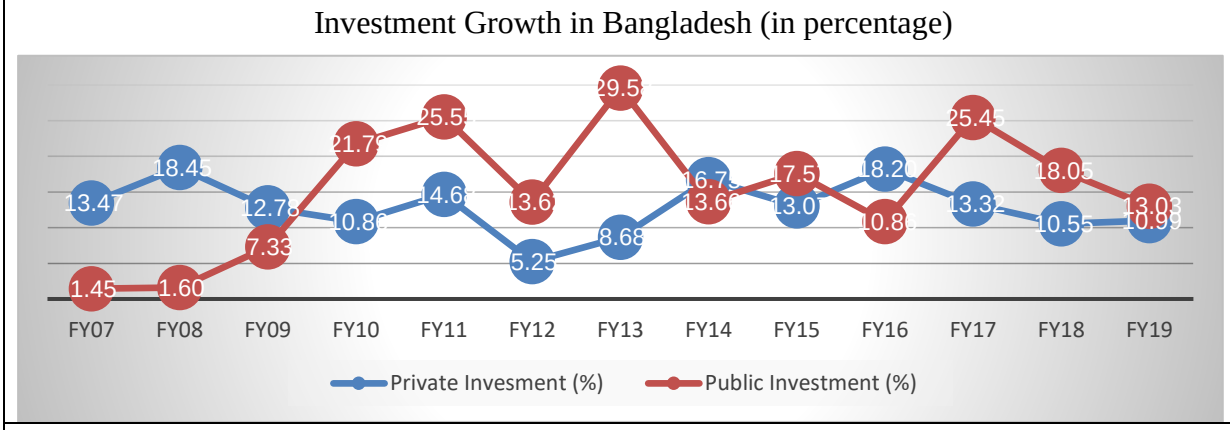
Figure 2-4: Sector-wise growth in Bangladesh

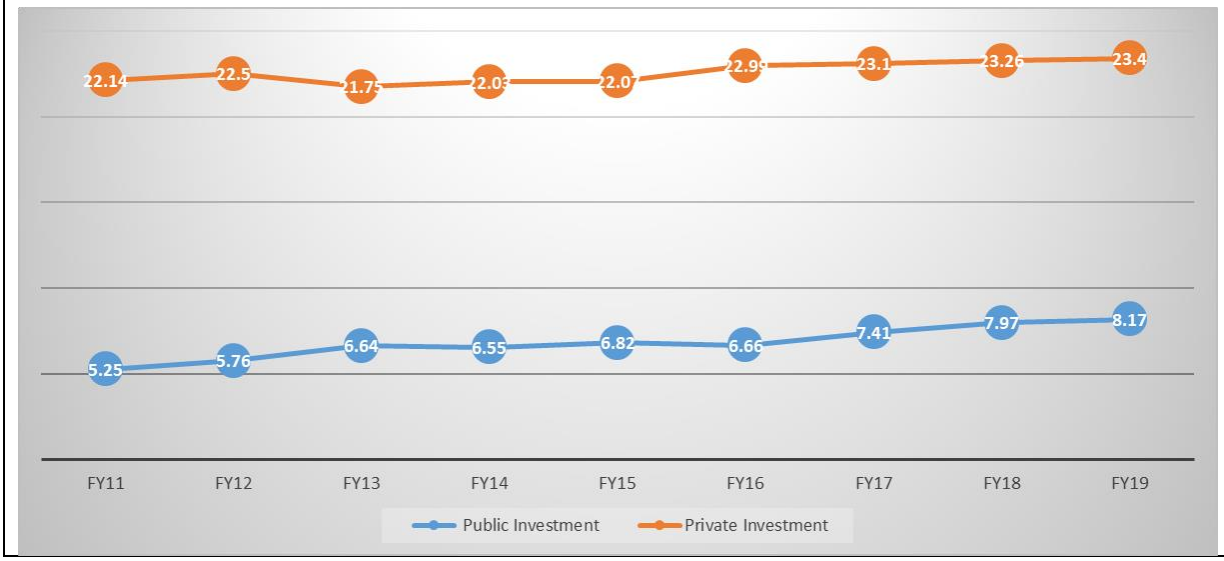
2.6 Investment Outlook of Bangladesh

In Bangladesh, the investment portfolio has been dominated by the private sector while public investment remained within 5% of the GDP. Compare to private investment, public investment for decades was less than 20% of total investment but in recent time it has registered a significant rise and has crossed 25% of total investment. This has happened because of the initiative of the government to invest in mega-projects to develop the much-needed public infrastructure. As a result, the country has also seen increase in private investment. Since 2006 private and public investment have seen five-fold and six-fold increase respectively. In FY2018-19, the private investment accounted for over 70 billion USD while public investment was nearly 25 billion USD.

Considering the developmental phase of Bangladesh, the public investment in infrastructure will bring a major change in the capacity of the country to absorb private investment (foreign and domestic) and these investments increases both connectivity within the economy. Trends in investment is shown in **Figure 2-5**.







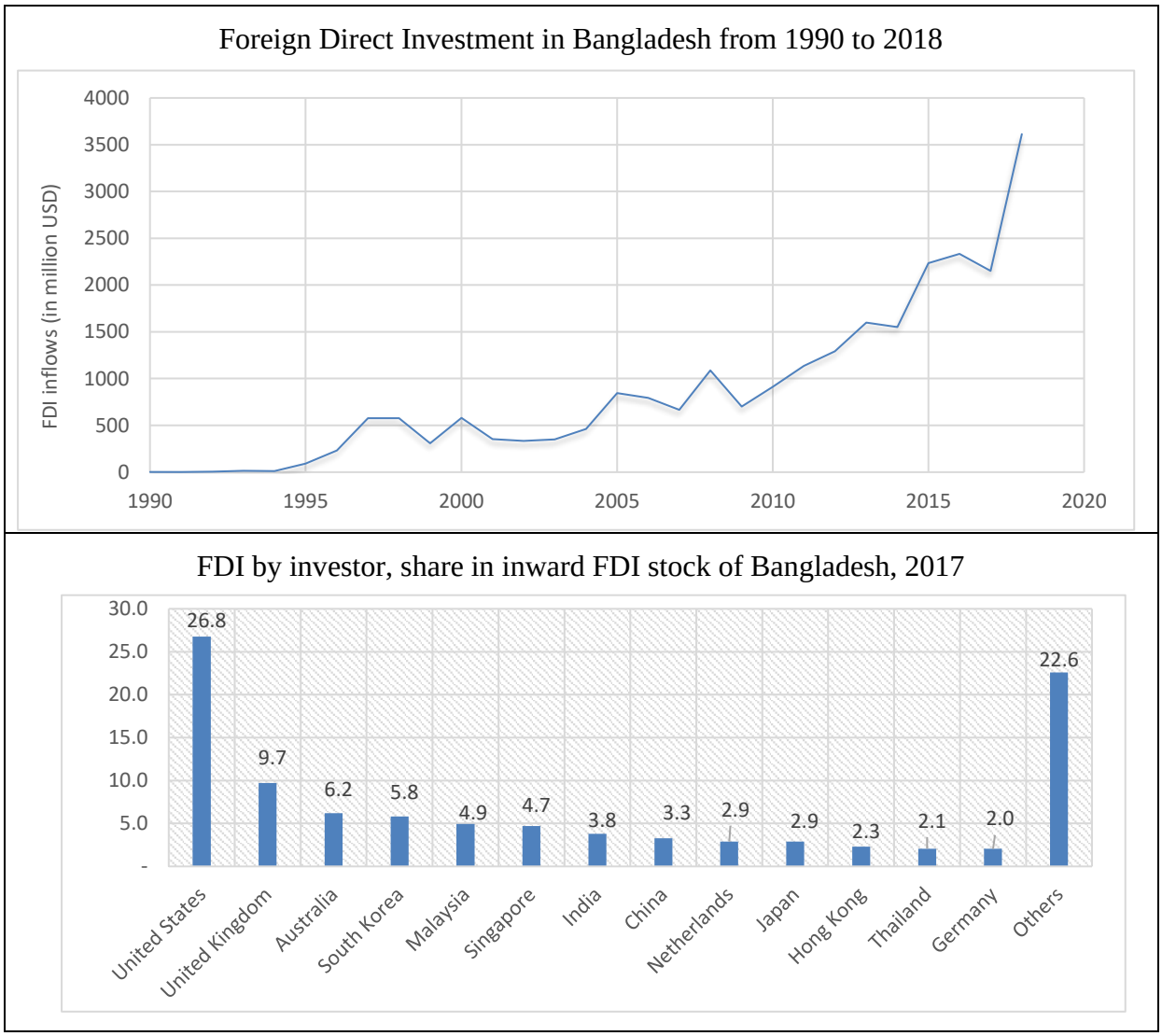
Source: Authors Compilation from Bangladesh Economic Review 2019

Figure 2-5: Trends in Private and Public Investments in Bangladesh

2.7 Status of Foreign Direct Investment in Bangladesh

Foreign Direct Investment (FDI) in Bangladesh has been growing steadily since 2009. The FDI inflow in 2018 has reached to more than 3 billion USD. In the private sector, Bangladesh

has received the single largest FDI of 1.5 billion USD in 2018 when Japan Tobacco International (JT) had purchased Akij Group's tobacco business. The above-mentioned investment alone is expected to encourage other investors to operate their business in Bangladesh. Bangladesh received about 27% FDIs (of its inward stoke) from investors of USA in 2017. Corresponding share of FDI from investors of United Kingdom was 10% in 2017. In addition, Bangladesh receives notable FDI from countries like Australia, Japan, South Korea, China, India, Germany, Netherlands, Singapore, Malaysia, Hong Kong, Thailand, etc. (**Figure 2-6**).



Source; UNCTAD Estimates 2019

Figure 2-6: FDI Outlook in Bangladesh

The existing export processing zones (EPZs) have also contributed to attract foreign investments. Currently, 458 enterprises are in operation within eight EPZs while another 112 enterprises are about to join (**Table 2-1**). The cumulative investment taken place in these EPZs are over 5 billion USD till June 2019. Bangladesh earned equivalent of 74 billion USD as export earnings from businesses operationalized within these EPZs. Over 520 thousand employments have been generated in the process.

Table 2-1: Summary Statistics investment, export and employment in EPZs in Bangladesh

Name of EPZs	In Operation	Under Implementation	Investment (in million USD)	Export (in million USD)	Employment (No.)
Chattogram	154	11	1,719	31,311	203,865
Dhaka	100	8	1,437	26,982	94,527
Adamjee	50	22	522	4,484	62,200
Cumilla	46	30	347	2,918	33,468
Karnaphuli	42	5	586	5,834	76,903
Ishwardi	19	11	145	833	11,939
Mongla	29	16	69	627	4,571
Uttara	18	9	190	1,101	34,088
Total	458	112	5,014	74,090	521,561

Source: BEPZA, 2019

Readymade Garments (RMG) are the leading export industry in Bangladesh – contributes for than 83% of total export from Bangladesh. In commensurate to that about 48% of the enterprises are involved in garments product manufacturing in the EPZs; the corresponding export share from these enterprises are 52%. About one fifth of the enterprises are involved in producing other textile products and holds 25% of export share that are exported from EPZs. A number of enterprises from footwear and leather, plastic, furniture, handicrafts, light engineering and other service-oriented industries have also invested in EPZs. Although these are primarily export processing zones, but the experience of such operation should help both private and public institutions as Bangladesh government is planning to create 100 Economic Zones throughout different part of the country. **Figure 2-7** shows the distribution of investment and enterprises by industries in EPZs.

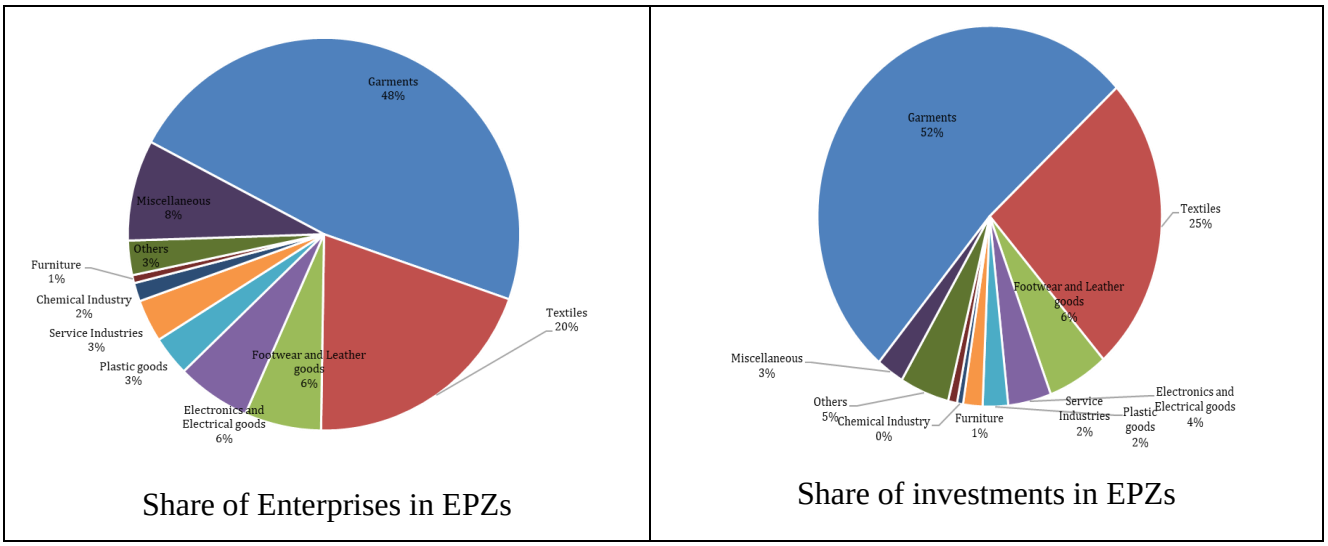
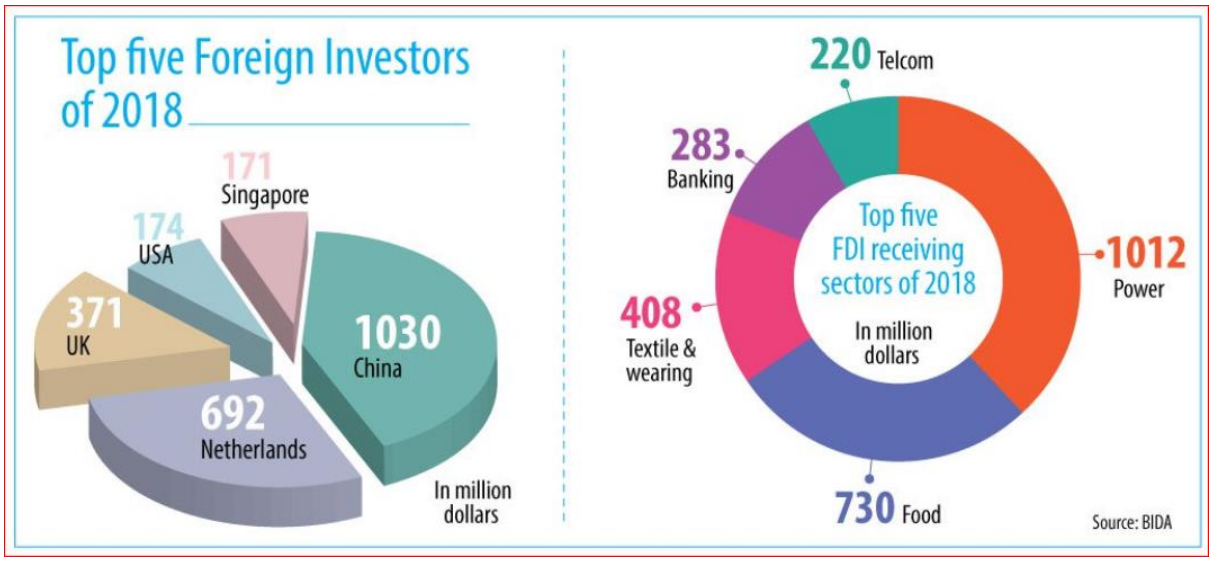


Figure 2-7: Distribution of Investments by Enterprises and by Investments

In addition, BIDA, which monitors foreign investment across the country, reported that top 5 FDI receiving sectors are: Power, Food, Textile, Banking and Telecom while top 5 FDI source countries are: China, Netherlands, UK, USA and Singapore respectively. This shows that while in EPZ, majority of the investments are in the RMG sectors, when considered the whole

country, the pattern of foreign investment is different. It also explains that domestic demand itself has become a guiding force for investors to invest in Bangladesh.



Source: The Daily Dhaka Tribune, Sunday, Aug 11, 2019 (Data source BIDA).

Figure 2-8: Top 5 FDI source countries and Top 5 Sectors of FDI in Bangladesh

2.8 Bangladesh Economic Zones

Bangladesh Economic Zones Authority (BEZA) has been established by the Bangladesh Economic Zones Act, 2010 and it began its operation from 9 November 2010. BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export. Potential investors in EZ areas can target both domestic as well as foreign markets to supply their products and services.

The proposed Netrokona Economic Zone is one the 100 planned economic zones to be established under BEZA. A number of incentives have already been listed to attract investment in these EZs from both domestic, non-resident and foreign investors – which also stands true for Netrokona EZ. The following incentives for investing in EZs are listed below.

2.8.1 Incentive for EZ Developer

- Income Tax exemption for 12 years
- VAT Exemption on electricity
- VAT Exemption on local purchase excluding petroleum products
- Exemption from custom/excise duties
- Exemption of stamp duty and registration fees for land registration
- Exemption of stamp duty for registration off loan/credit document
- Exemption from dividend tax

2.8.2 Incentives for Unit Investors

Duty, Tax and other Exemptions

- Income Tax exemption for 10 years

- Dividend Tax
- VAT on all utility services
- Duty free import of raw materials etc.
- CD for import of vehicles
- Duty exemption on export
- Double taxation subject to the existence of double taxation agreement
- Salary income from IT for expatriates
- 50% Exemption of stamp duty and registration fees for registration of leaseholder land/factory space.
- Tax exemption on royalties, technical fees etc.
- Tax exemption on capital gains from transfer of shares.

2.8.3 Special Operational Incentives

× Economic Zone declared as custom bonded area
× Full repatriation of capital and dividend
× No ceiling of FDI
× 100% backward linkage of raw-materials and accessories to sell for EOI in DTA
× 20% sale of finished product to DTA
× Sub-contracting with DTA allowed

2.8.4 Special Provisions for foreign or non-resident investors/accessing foreign loan

Á Foreign loan is allowed in compliance with existing laws
Á FC Account for non-residents
Á FC Account for both local and joint venture industry
Á Foreign investors to be free to enter into JV
Á Provision of transfer of shares by foreign shareholders to local shareholders and Investors
Á Issuance of work permit to foreigners is allowed up to 5% of total officers/employees of an industrial unit
Á Re-investment of remittable dividend to be treated as new foreign investment
Á Resident visa for investment of US$75,000 or more
Á Citizenship for investment of US$ 10,00,000 or more

Chapter 3: Netrokona EZ Area Description

3 NETROKONA EZ AREA DESCRIPTION

3.1 Salient Features of Netrokona Economic Zone

The proposed Netrokona Economic Zone is located in the Netrokona District about 4 km from the district headquarters. Salient features of the Netrokona Economic Zone have been given in **Table 3-1**.

Table 3-1: Salient features of Netrokona Economic Zone

Division	Mymensingh
District	Netrokona
Upazila	Netrokona Sadar
Mouza	Barni, Kashipur, Shingher Bangla, Bhadrapara
Coordinates	24°55'34.15"N to 24°54'31.99"N 90°46'24.00"E to 90°47'30.92"E
Area	500 acres
Current landuse	Agriculture
Average land elevation	7.36 mPWD
Distance along road from Dhaka	150 km
Distance along road from Chattogram	401 km
Distance from nearest airport	150 km (Hazrat Shahjalal International Airport, Dhaka)
Distance from nearest river Kangsha	3 km
Distance from nearest railway line	adjacent
Distance from nearest highway	adjacent
Distance from nearest 33 KVA electric line	adjacent
Distance from nearest gas supply line	4 km
Probable water sources	Groundwater, Kangsha River, rainwater harvesting in lake

A map of Netrokona EZ area including administrative boundaries is shown in **Figure 3-1.**

A map showing mouza map and satellite image in and around Netrokona EZ has been provided in **Figure 3-2**.

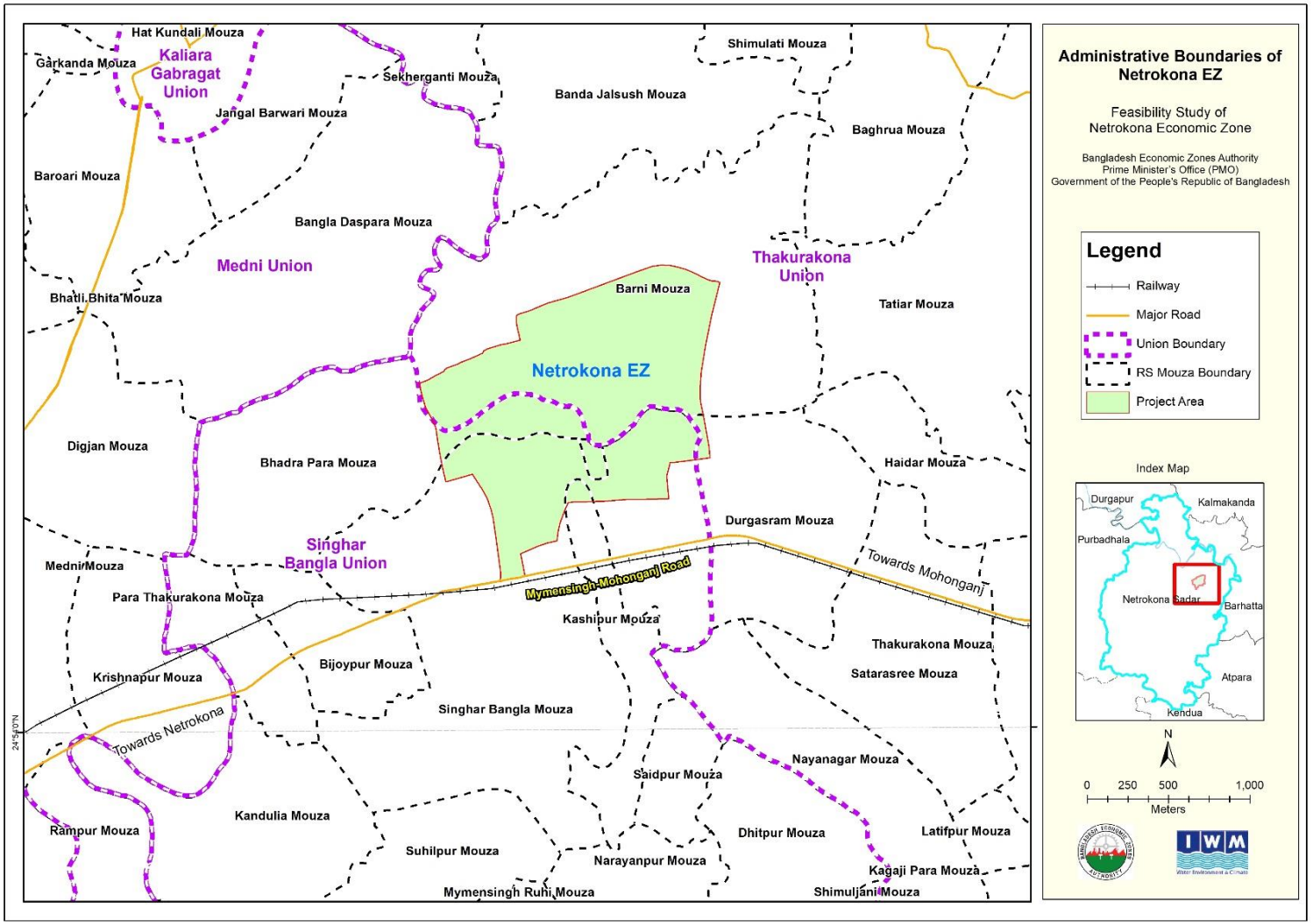


Figure 3-1: Administrative Map of Netrokona EZ

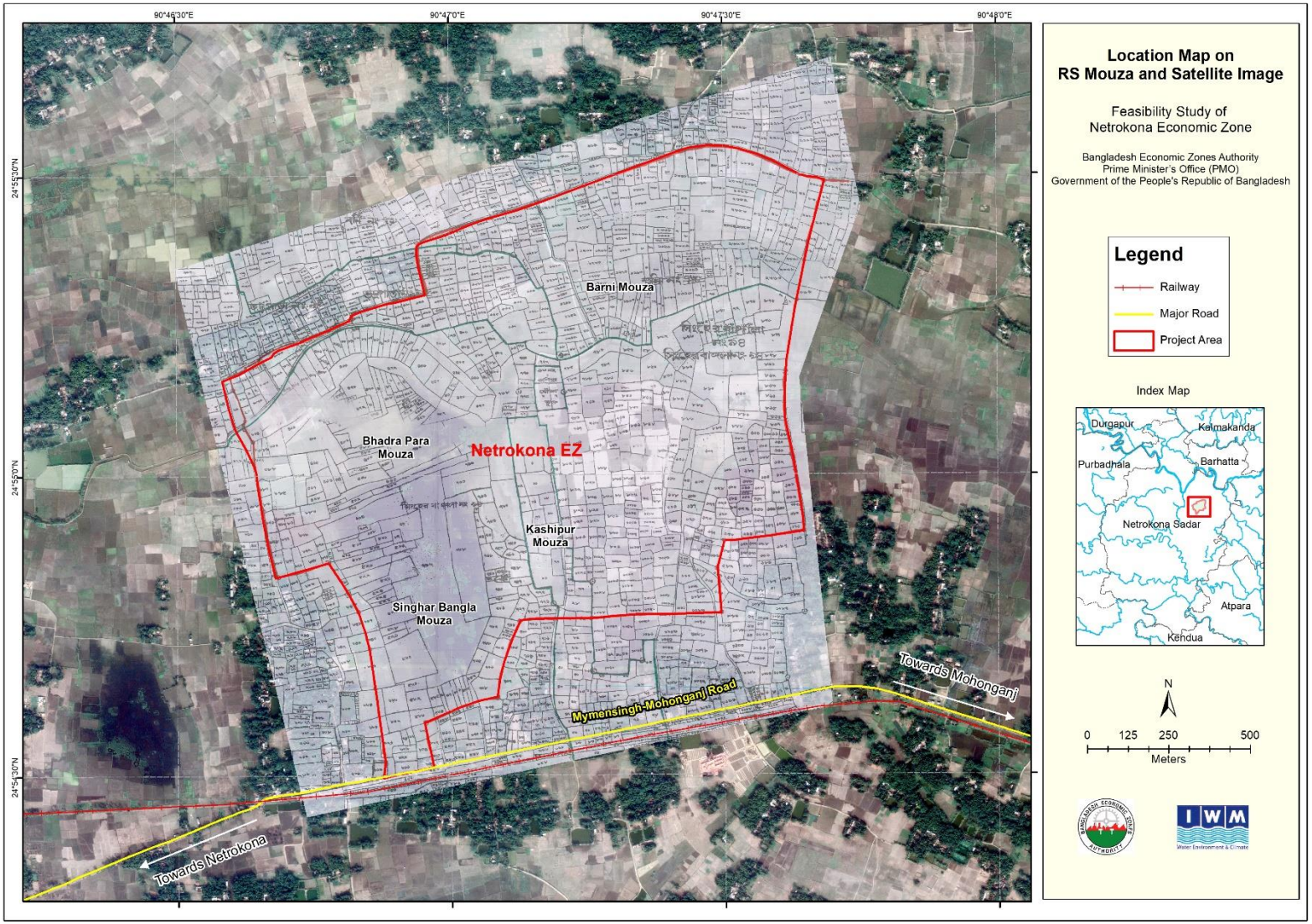


Figure 3-2: Location of Netrokona EZ Map on RS Mouza and Satellite Image

3.2 Topography

Out of total area, 37% is highland and 34%, 21% & 7% are medium highland, medium lowland & lowland respectively. The land types of proposed NEZ are medium lowland land.

The general topography of the NEZ is shown in **Figure 3-3**. There is a large beel area called Kamal Beel within the NEZ. The area of the beel is approximately 77.6 acres. The beel is connected to the Kangsha River in the North. The area-elevation curve of the project area has been shown in **Figure 3-4**. It shows that the average ground level of the NEZ is about 7.36 mPWD.

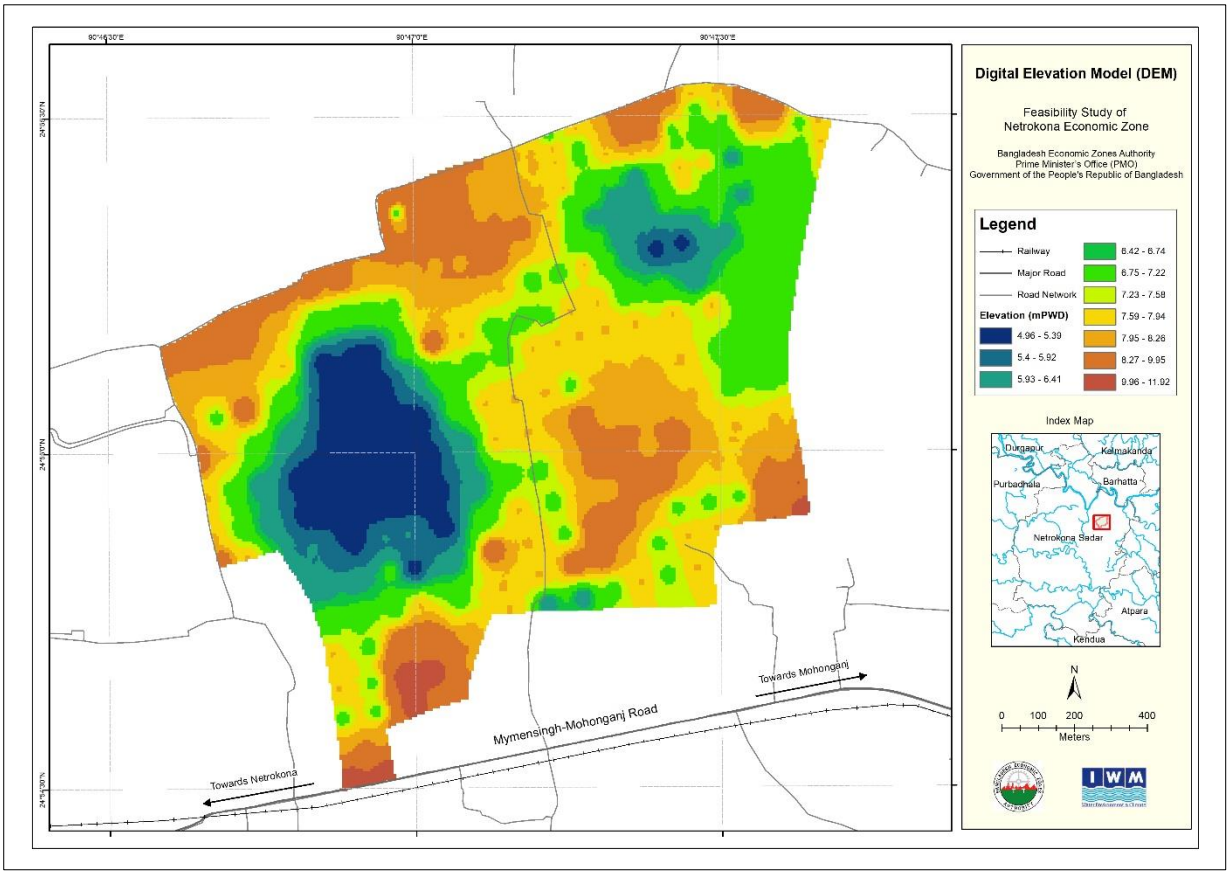


Figure 3-3: Digital Elevation Model (DEM) of Netrokona EZ

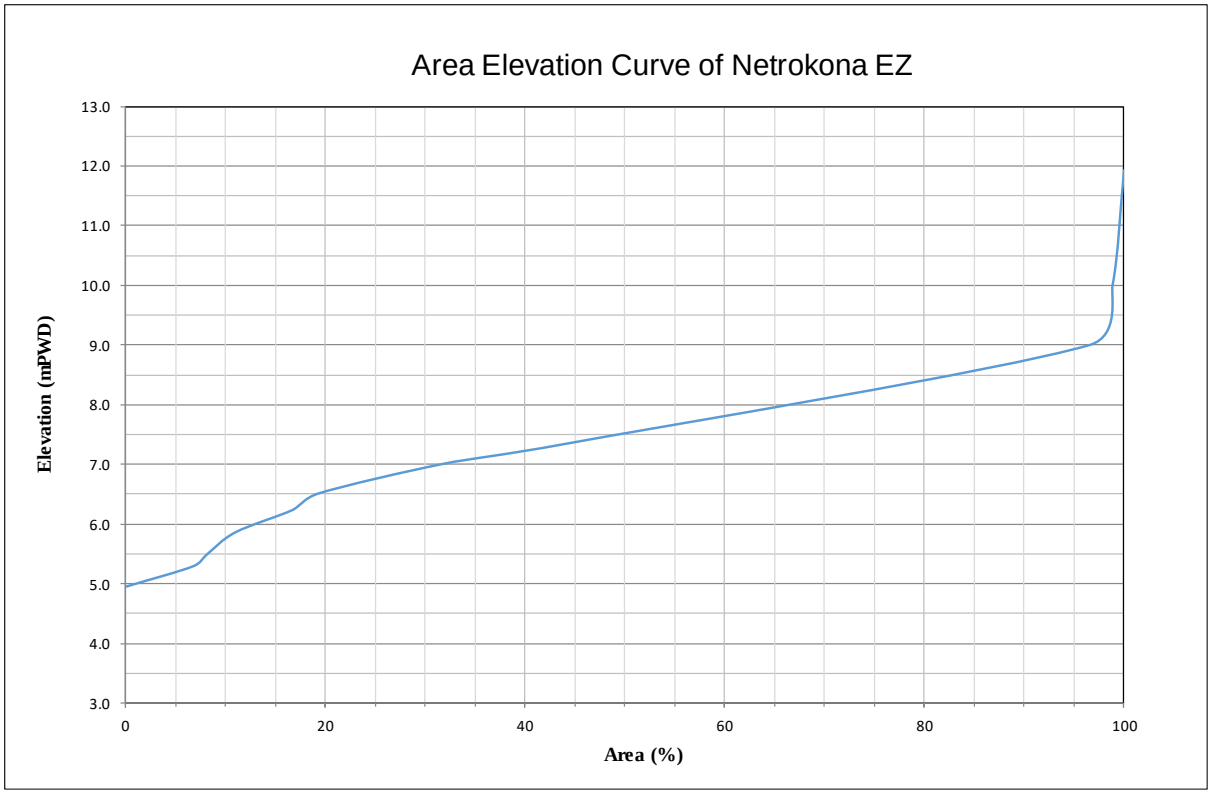


Figure 3-4: Existing Area-Elevation Curve of Netrokona EZ

3.3 Features within 10 km Radius of NEZ

The topographic and infrastructural feature within 10 km radius from the proposed NEZ is shown in **Figure 3-5**. It is seen that Netrokona Pourashava is located about 4 km in the west. The main railway station is located in Netrokona Sadar headquarters. A highway passing the NEZ connects Netrokona Pourashava with Mohanganj in the east. Sheikh Hasina University, Netrokona and Netrokona Medical College are located within 3 km. Significant rivers include Kangsha River 3 km to the north and Mogra River 4 km in the south. There are a number of beel areas within 10km of NEZ i.e. Kuria beel, Megha beel, Joga beel, Nanghuria beel, Dharam beel, etc.

3.4 Hydrological Setting in and around NEZ

Hydrological Setting in and around NEZ has been shown in **Figure 3-6**.

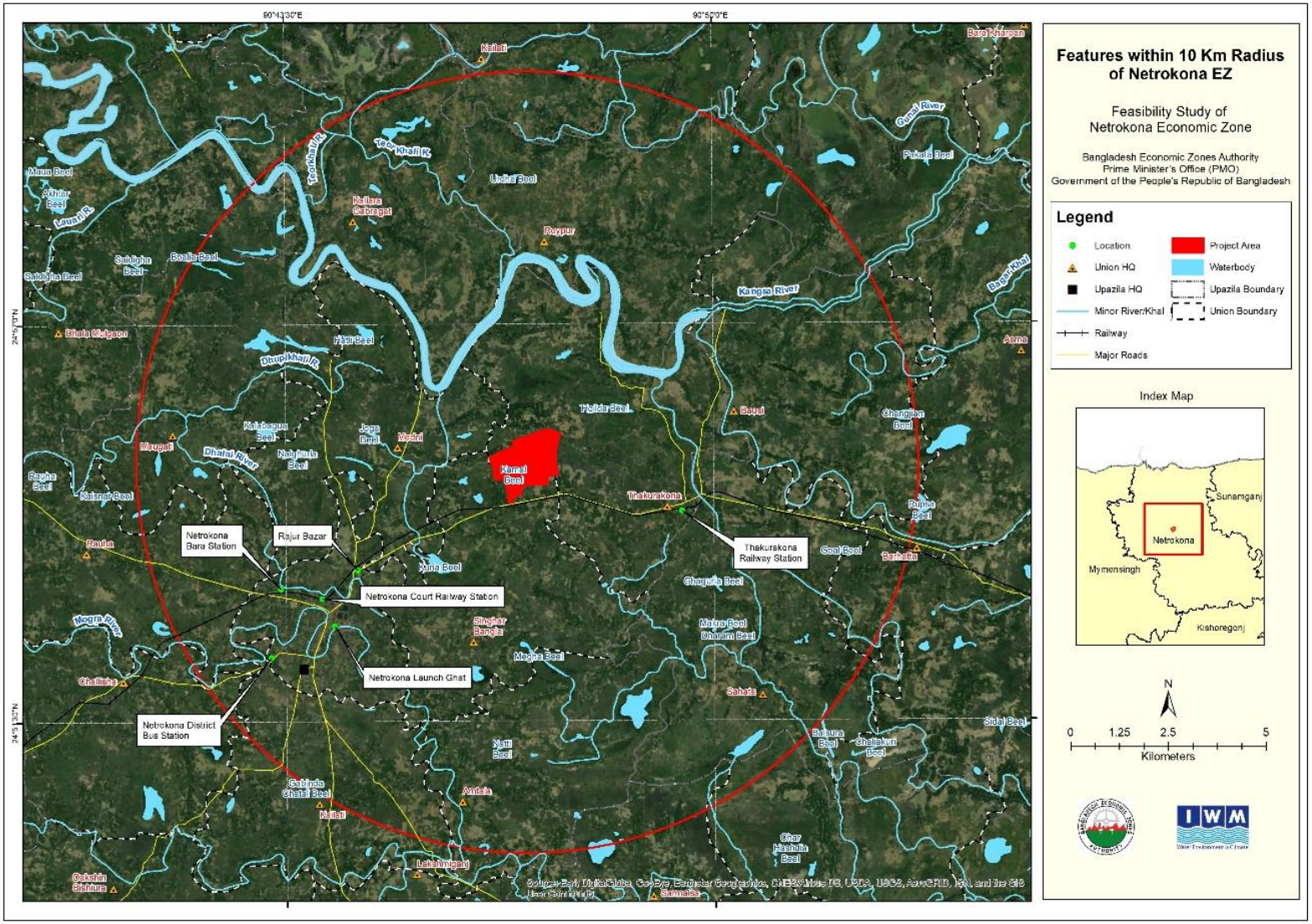


Figure 3-5: Feature within 10 km radius of NEZ

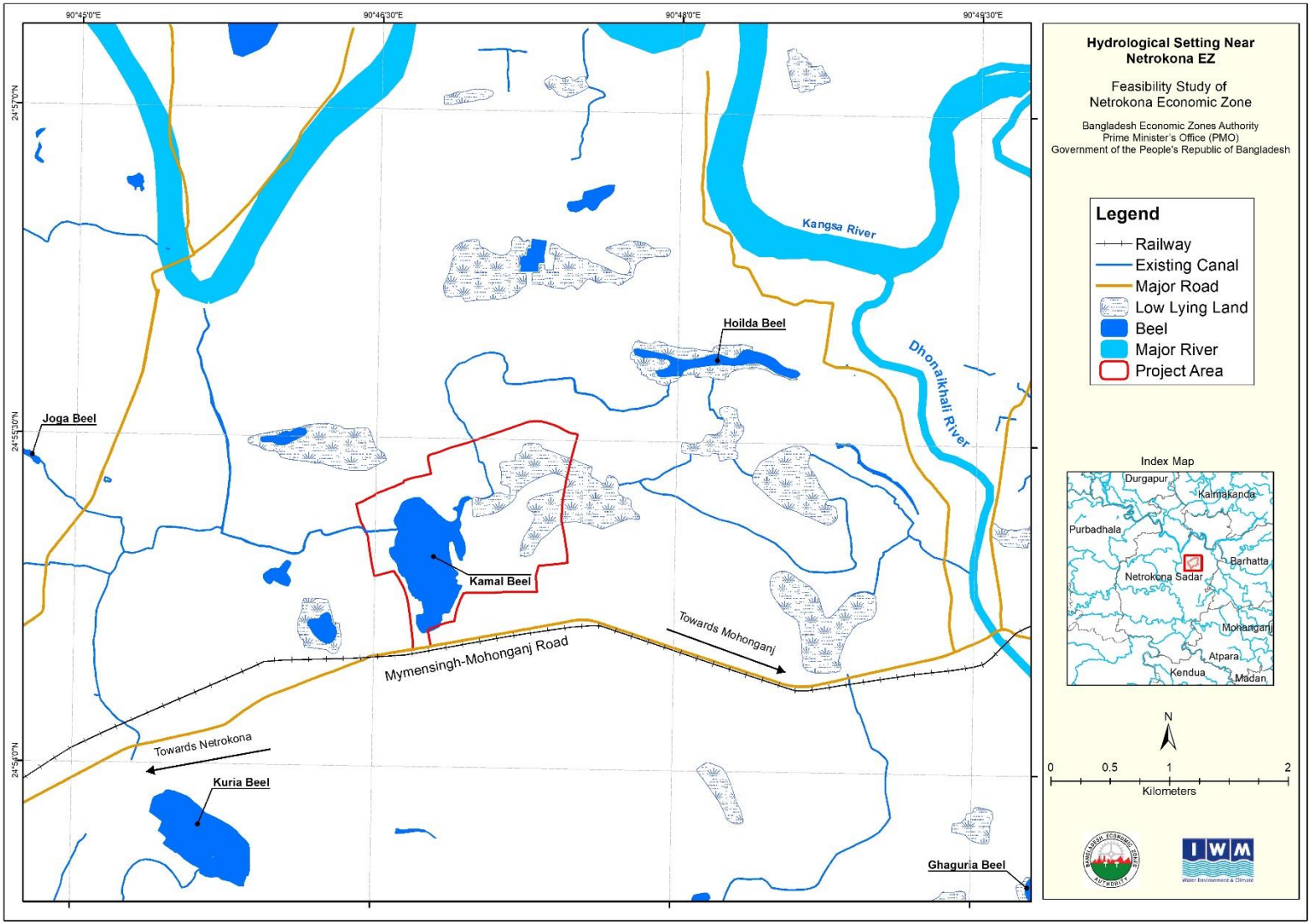


Figure 3-6: Hydrological Setting Near NEZ

3.5 Existing Situation of Netrokona EZ

Figure 3-7: Existing Site of Netrokona EZ

Figure 3-8: Consultation with Local People

Figure 3-9: Dhonaikhali River at Thakurakona

Figure 3-10: Sheikh Hasina University Permanent Campus near NEZ site

Chapter 4: Climate and Hydro-meteorology

4 CLIMATE AND HYDRO-METEOROLOGY

4.1 Rainfall

Long-term average rainfall in this Upazila is approx. 25% more compared to the national average annual rainfall. Around 78% of the annual rainfall occurs within the months Jun to Oct. Max. rainfall occurs in Jul (long-term average) as shown in **Figure 4-1**.

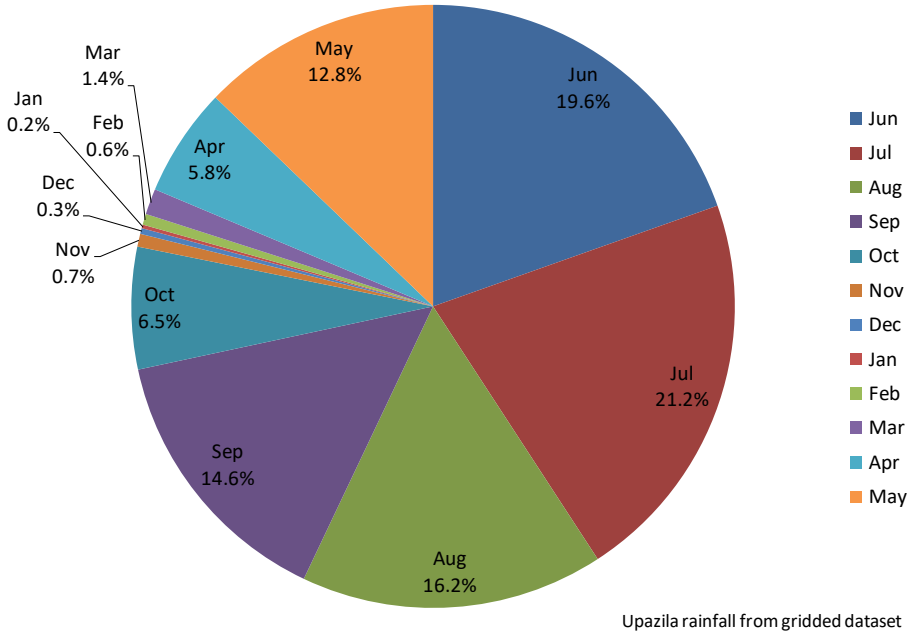


Figure 4-1: Long-term Rainfall Distribution

Analysis of monthly rainfall data is provided in **Table 4-1**. Percentage change in monthly rainfall trend (over a decade) from long term mean monthly rainfall ranges from -8% to 28%. Such changes are the outcome of approximation of trend, degree of accuracy of rainfall measurement, rainfall processing, inadequacy of monthly rainfall data and overall climatic factors. Numerical change exceeding 10%, in regard of all factors, is considered significant for the months Apr to Oct. For remaining dry season months (Nov to Mar) threshold of 30% is used due to high sensitivity of the low numerical rainfall values in these months. In the long-term, there is no significant trend in mean monthly rainfall. Following similar approach, there is no significant trend in dry spells in the long-term. There is no significant trend in long-term maximum daily rainfall intensity. However, in the last 10 years, there are 5 months with significant increasing trend in daily rainfall intensity (Jul, Aug, Dec, Jan and May). There are 5 months with significant decreasing trend in rainfall intensity (Sep, Oct, Feb, Mar and Apr). The last 10-yrs short term trend for maximum rainfall intensity shows steep changes relative to the long-term intensity values, while the 20-yrs trend shows less steep changes. The implication is that characteristics of short-term trend (cycle, pattern, etc.) needs to be considered carefully before extending it into the future.

Table 4-1: Monthly Rainfall Data Analysis

Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
Bangladesh (1900-2012)[a]	506	533	443	314	173	24	5	5	14	40	129	290	2,476
Upazila Monthly Avge[b]	605	656	501	451	202	21	10	6	18	43	180	396	3,089
5yr dry[b]	373	494	346	307	79	2	2	1	7	11	81	242	2,623
5yr wet[b]	804	812	638	593	306	51	34	17	36	69	260	532	3,524
10yr wet[b]	954	908	744	673	406	84	60	29	51	99	335	647	3,815
25yr wet[b]	1093	992	842	741	508	128	89	43	67	133	411	758	4,076
Monthly RF Trend (mm/decade)[b]	-42	9	-5	4	3	6	-1	0	0	-3	10	20	
Effective Rainfall[c]	597	618	481	428	207	23	10	6	18	42	185	391	3,006
Dry days (mean)[c]	11	9	12	15	25	29	30	30	27	28	21	16	
Trend (day/decade)[c]	1	1	1	1	1	0	0	0	0	0	0	0	
Max. Intensity in mm/day (mean)[c]	113	110	91	94	81	15	7	5	12	23	51	81	
Trend (mm/day/decade)[c]	-9	4	0	-1	4	0	0	-1	0	-1	0	1	
Trend last 20 yrs	-32	-12	11	-31	-17	-3	4	-5	-4	-8	0	21	
Trend last 10 yrs	1	16	41	-26	-63	-4	8	4	-10	-34	-7	73	

Notes:

a. Long-term Bangladesh rainfall from Climate Change Knowledge Portal, The World Bank.
b. Upazila rainfall calculated from gridded rainfall dataset (1965 to 2012). Log-normal (3 parameter) distribution used in frequency analyses.
c. BWDB Station CL123 used, only months with full data considered (1962 to 2012). For 10-year trend minimum 7 year's data required and for 20-year trend minimum 14 year's data required. If insufficient data, no trend shown.

4.2 Climate and Evapotranspiration

Avge. potential ET (ETo) is less than effective rainfall in the months of Apr to Oct and is higher in other months. Monthly effective rainfall is insufficient to meet crop water requirements for 5 months of the year.

Table 4-2: Monthly Climate Data (1965-2012)

Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
Average Eto (mm/Month)	111	107	110	99	99	83	65	66	91	120	137	131	1,219
T_{max} (max)	37	37	38	38	38	35	31	31	34	38	43	40	
T_{max} (avge)	31	31	32	31	31	29	26	24	27	31	32	32	
T_{min} (avge)	25	26	26	26	23	18	14	12	15	19	22	24	
T_{min} (min)	16	21	19	21	17	11	8	4	8	9	13	13	

Notes:

a. ETo calculated from gridded dataset.
b. Mymensingh BMD Station used for T_{min} and T_{max} (months with full data considered only).

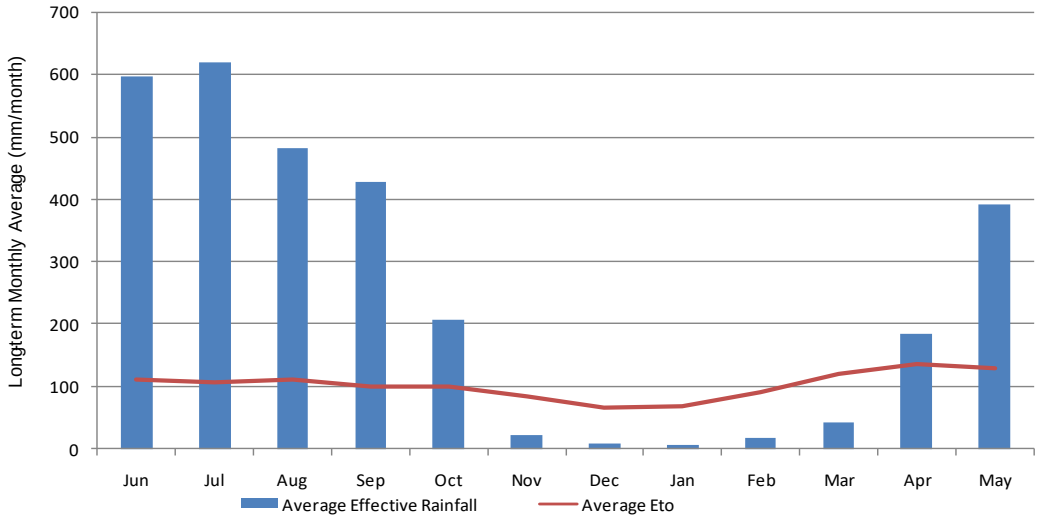


Figure 4-2: Long-term Monthly Rainfall and ETo Comparison

4.3 Flood Situation

Approx. 10.1% of the upazila area is homestead and around 1% is waterbodies (very low land). About 43% of the area is in the homestead and F0 categories (above 8.4 mPWD). The area above this elevation is considered highland and actual flood storage volume of the upazila is limited. Any storage above this elevation can be considered as virtual storage, resulting from the area-elevation-storage calculation process. Flood phase areas in Netrokona Sadar upazila is shown in **Table 4-3** and statistics of river water level is shown in **Table 4-4.**

Table 4-3: Flood Phase Areas in Netrokona Sadar Upazila

Flood Phase	HO	F0	F1	F2	F3	F4	OW	Total
Area (ha)	3465	11266	10446	6492	2156	0	345	34171
Area (sqkm)	35	113	104	65	22	0	3	342
Area (%)	10.14	32.97	30.57	19	6.31	0	1.01	100

Source: NWMP (2001)

Table 4-4: River Water Levels near NEZ site

Simulated Water Levels		
Annual max 5-yr	9.2	mPWD
Mean Annual Peak WL	8.8	mPWD
Mean Annual min. WL	3.4	mPWD
100-year return period WL	10.9	mPWD

4.4 Drought Condition

Drought conditions for the Netrokona Sadar upazila have been assessed based on Standardized Precipitation Index (SPI) of annual rainfall. The analysis was based on gridded rainfall data for the period 1965 to 2012 (**Figure 4-3**). During this period, it was found that in this Upazila, 15% of the years were dry: 1 extremely dry year, 1 severely dry year and 5 moderately dry years.

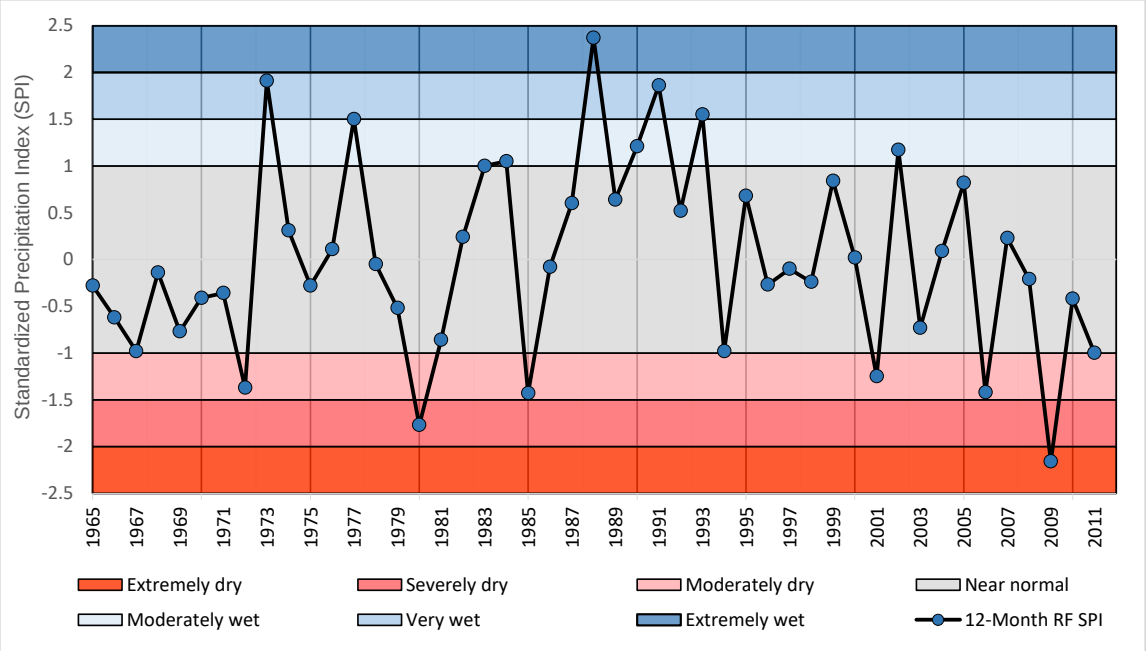


Figure 4-3: Annual Standardized Precipitation Index

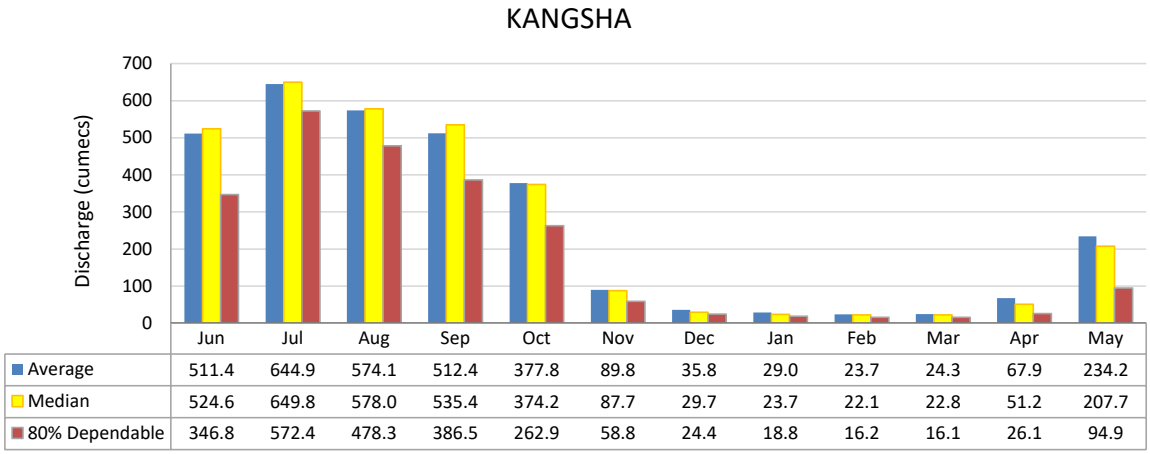
Chapter 5: Water Resources Assessment

5 WATER RESOURCES ASSESSMENT

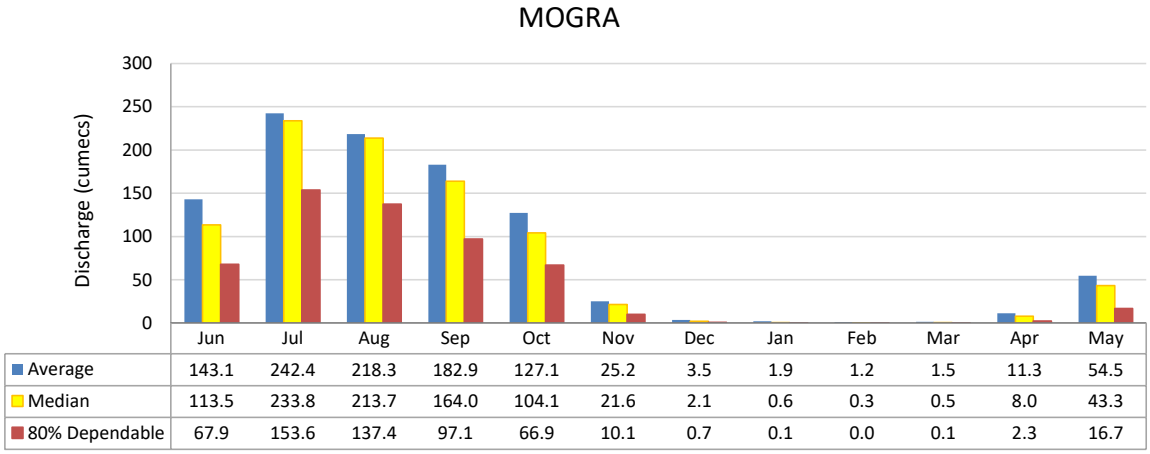
5.1 Surface Water Resources

Long-term simulated flows of Kangsha and Mogra Rivers in the Netrokona Upazila have been assessed and shown in **Figure 5-1**. The average lowest median flow of the rivers was found in the months of February and March.

Utilizable river water resources are insufficient in the months of Jan, Feb and Mar. It should also be noted that in the other months it may not be possible to utilize all the available river water resources due to topography and other physical constraints as well as downstream requirements.



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Average	511.4	644.9	574.1	512.4	377.8	89.8	35.8	29.0	23.7	24.3	67.9	234.2
Median	524.6	649.8	578.0	535.4	374.2	87.7	29.7	23.7	22.1	22.8	51.2	207.7
80% Dependable	346.8	572.4	478.3	386.5	262.9	58.8	24.4	18.8	16.2	16.1	26.1	94.9



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Average	143.1	242.4	218.3	182.9	127.1	25.2	3.5	1.9	1.2	1.5	11.3	54.5
Median	113.5	233.8	213.7	164.0	104.1	21.6	2.1	0.6	0.3	0.5	8.0	43.3
80% Dependable	67.9	153.6	137.4	97.1	66.9	10.1	0.7	0.1	0.0	0.1	2.3	16.7

Figure 5-1: Simulated Flows Kangsha and Mogra Rivers

5.2 Groundwater Resource Assessment

By analysing existing borelogs of Netrokona Sadar upazila, it is observed that layers of fine to medium sand exist beneath the ground surface at different depth (**Figure 5-2**). In UTDC campus fine to medium sand exists from 12m to 29m depth. Medium sand also exists from 55m to 59m depth. Total depth of the concerned borehole is 59.45m.

A borelog of Phaiska area in Sadar upazila reveals that a layer of fine to medium sand exists from 20m to 32m depth below ground surface. Medium sand also exists from 66m to 98m depth below ground surface. Total depth of this bore hole is 98.17m only. Another borelog of 54.90m depth in pourashava area shows that a layer of fine to medium sand from 14m to 20m depth exists in the area. Another layer of medium sand also exists in the area from 46m to 55m depth below ground surface. The following figures illustrate the lithologic condition of the described borelogs.

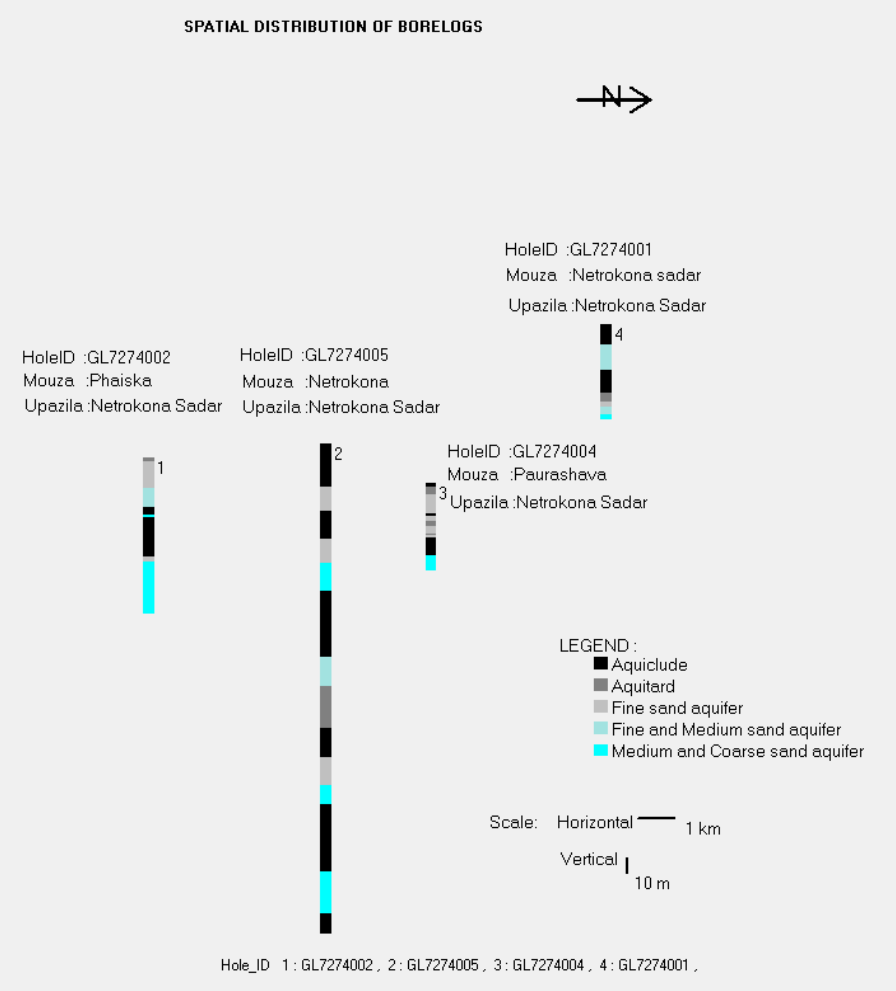


Figure 5-2: Spatial distribution of bore logs of Sadar Upazila, Netrokona

Single section of the mentioned borelogs with specific yield is illustrated below. In borelog no. GL7274001, fine to medium sand exists from 12m to 29m. Specific yield of this is 0.13. From 55m to 59 m depth, specific yield is 0.12to 0.15. In borelog no.GL7274022, Fine sand to medium sand of specific yield 0.13 exists from 20m to 32m depth. In the same borelog medium sand of specific yield 0.15 exists from 66m to 98m. In borelog no. GL 7274004, medium sand of specific yield 0.15 exists from 46m to 55m depth. These sands are good yielding.

In borelog no. GL7274003 with depth 309m, medium sand exists from 75m to 93m, fine to medium sand exists from 135to 153 m, again medium sand exists from 216m to 228m and 273m to 297m. Specific yield of all these sand layers are 0.13 to 0.15 which are good yielding.

Location of boreholes near project area is shown in **Figure 5-3.**

Figure 5-3: Location of Boreholes Near Project Area

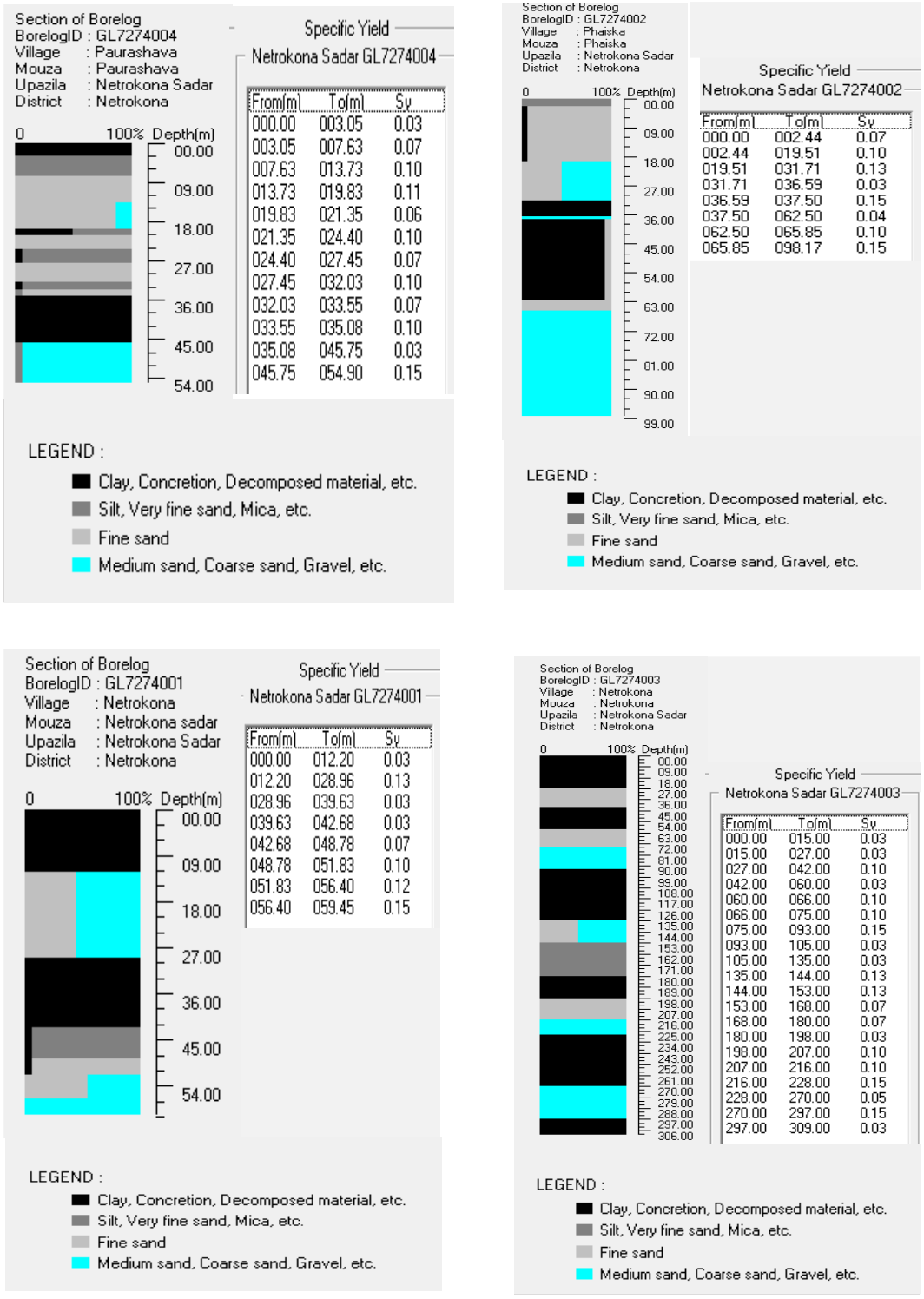


Figure 5-4: Single section of 4 borelogs of Netrokona Sadar upazila

Groundwater Quality of Netrokona Sadar Upazila

Analysis of 9 numbers of GW samples from National survey groundwater quality data (BGS, 2000) shows that concentration of iron in all 9 samples are within allowable limit of Bangladesh (**Table 5-1**). Concentration of arsenic in all the 9 analyzed samples is within allowable limit (50 ppb) of Bangladesh. Manganese concentration of 5 samples among 9 is higher than

Bangladesh standard (0.1 mg/l). Highest concentration of manganese is found (1.42 mg/l) at Lakshmipur mouza in Thakurakona union.

A groundwater quality analysis of Netrokona town from a 65-meter-deep tube well shows iron concentration of 4.10 mg/l and manganese concentration of 0.50 mg/l.

Another groundwater quality analysis of a DPHE well at Netrokona Sadar (Sample no. MYM2019030087, tested: 05-03-19 to 06-03-19) also shows concentration of iron: 0.06 mg/l, concentration of arsenic: <LOQ and concentration of manganese: 0.49 mg/l.

Table 5-1: Groundwater quality of Netrokona Sadar upazila

Groundwater quality of Netrokona sadar upazila										
SL no.	District	Upazila	Union	Mouza	Date of sampling	Well depth (m)	Concentration			
							As (Ug/l)	Fe(mg/l)	Mn(mg/l)	Zn(mg/l)
1	Netrokona	Sadar	Kalihati	Toynagar	16-05-99	56.4	0.5	0.064	0.017	0.018
2	Netrokona	Sadar	Kalihati	Baluakanda	16-05-99	68.6	<0.5	0.056	0.078	0.011
3	Netrokona	Sadar	Madanpur	Monang	16-05-99	61	<0.5	0.103	0.124	0.015
4	Netrokona	Sadar	Daskin Bisiura	Sripurbali	16-05-99	66.4	<0.5	0.034	0.271	0.021
5	Netrokona	Sadar	Ronha	Kumai	16-05-99	64.9	<0.5	0.047	0.407	0.054
6	Netrokona	Sadar	Mongali	Kareharpur	16-05-99	59.4	20.3	0.121	0.298	0.014
7	Netrokona	Sadar	Thakurakona	Lakshmipur	16-05-99	68.6	<0.5	0.023	1.42	0.023
8	Netrokona	Sadar	Amtala	Ramkrishnapur	19-05-99	66.6	<0.5	0.09	0.064	0.038
9	Netrokona	Sadar	Poura area	Ukilpara	22-05-99	159.7	18.8	0.59	0.091	0.061

5.3 Preferred Source of Water

From the study of surface water and groundwater it is evident that, groundwater can be used as the source of water supply to the Netrokona EZ. Kangsha and Mogra river are not dependable source because of very low flow in the dry season. The Kamal Beel within the EZ could be a large storage of water. Sustainability and technical constraints of utilizing groundwater and the stored water in Kamal Beel needs to be carefully assessed for water supply to the economic zone.

Chapter 6: Competitiveness Assessment

6 COMPETITIVENESS ASSESSMENT

6.1 Overview

Competitiveness of the Netrokona Economic Zone has been assessed using the following perspective. We have assessed how competitive Bangladesh is from the perspective of an investor as many investors (foreign and domestic) might consider investing in countries like Vietnam, Sri Lanka, Pakistan, Cambodia, Myanmar, and others. As such, it is important to understand where Bangladesh stands out in terms of investment destination for domestic and foreign investors. It is worth to note that Bangladeshi investors are also actively looking outside the country to invest as they also want to remain competitive in their foreign markets.

6.2 Bangladesh's competitiveness

6.2.1 Macroeconomic Perspectives

Table 6-1 presents macroeconomic indicators of selected countries who are also growing fast and/ or competing with Bangladesh as a probable destination for investment. It shows that among these selected countries, Bangladesh is the fastest growing economy in terms of GDP growth. With a more than 4000 USD per capita GNI (in terms of PPP) Bangladesh is reckoned to have made a remarkable achievement. This is even more remarkable because of its high density of population which is more than 160 million in a 147,570 square kilometre of land.

The inflation rate is also within the similar range of other competitive economies. The size of investment in Bangladesh is nearly equivalent to investment level of Philippines and much higher than others competitive countries. On the other hand, inward FDI investment in Bangladesh is lower than countries such as Philippines or Vietnam but perhaps understandable as the policy makers of Bangladesh are more inclined to pursue strategic trade relationships with partner economies than above mentioned highly trade liberalised countries.

Table 6-1: Selective Macroeconomic Indicators among comparative countries in 2018

Country	GDP Growth (%)	GNI per capita, PPP (constant 2011 international $)	Inflation (annual average)	FDI Inflow (in billion USD)*	Investment (in billion USD)	Trade Openness (% of GDP)
Bangladesh	7.9	4,057	5.5	2.4	85.6	38.2
Cambodia	7.5	3,597	2.9	2.4	5.5	124.9
Myanmar	6.2	-	6.9	3.8	-	-
Pakistan	5.4	5,190	5.1	2.4	46.3	28.0
Philippines	6.2	9,540	5.2	8.1	88.6	76.1
Sri Lanka	3.2	11,611	2.1	1.0	22.8	52.9
Vietnam	7.1	6,220	3.5	12.8	61.3	187.5

Source: WDI, 2019; Note: * 3-years average of 2015 to 2017, - means data not available.

6.2.2 Doing Business Perspectives

Table 6-2 shows efficiency to start a business and in trading for selected countries. It shows that among these countries, businesses in Sri Lanka requires the least amount of time (only 9 days) to start a business while in Bangladesh, it is around 20 days. This is roughly the same for Myanmar, Vietnam, and Pakistan while it is more for Philippines and Cambodia.

In terms of getting an electricity connection, it takes 150 days in Bangladesh, while it is 31 days in Vietnam, 37 days in Philippines, 77 days in Myanmar, and 100 days in Sri Lanka. This may change very quickly as Bangladesh has improved its capacity to produce electricity very recently. For example, Bangladesh currently produces 12,500 MW of electricity against is installed capacity of 18,833 MW.

Table 6-2: State of Efficiency to start a business and in trading

Country	Time required to start a business (days)	Time required to get electricity (days)	Cost to Export (in USD per container)	Time to Export (in days)	Cost to Import (in USD per container)	Time to Import (in days)
Bangladesh	20	150	633	39	1,270	45
Cambodia	99	179	475	23	360	18
Myanmar	14	77	572	36	667	35
Pakistan	17	161	474	16	726	33
Philippines	31	37	509	10	630	27
Sri Lanka	9	100	424	11	583	15
Vietnam	17	31	429	13	556	17

Source: IWM compilation from WDI, 2019

The cost of export per container is 633 USD in Bangladesh while it is 424 in Sri Lanka, 429 in Vietnam, 474 in Pakistan, 475 in Cambodia and so on. Bangladesh is the costliest country in this cohort. In terms of cost of import, it is also one of the least performers in this cohort of countries.

However, there are other issues related to competitiveness of a country. **Table 6-3** presents comparison of Bangladesh with these countries in terms of logistic performance index which is crucial to make a country competitive. It shows that Bangladesh's LPI score is 2.6 and it is 2.9 for Philippine, and 2.6 for Cambodia, and Sri Lanka. Countries like Myanmar, and Pakistan is behind Bangladesh.

Table 6-3: Logistic Performance Index (0 to 5 scale) by Selective Comparative Countries

Country	LPI score	Customs	Infrastructure	International shipments	Logistics quality and competence	Tracking and tracing	Timeliness
Bangladesh	2.6	2.3	2.4	2.6	2.5	2.8	2.9
Cambodia	2.6	2.4	2.1	2.8	2.4	2.5	3.2
Myanmar	2.3	2.2	2.0	2.2	2.3	2.2	2.9
Pakistan	2.4	2.1	2.2	2.6	2.6	2.3	2.7

Country	LPI score	Customs	Infrastructure	International shipments	Logistics quality and competence	Tracking and tracing	Timeliness
Philippines	2.9	2.5	2.7	3.3	2.8	3.1	3.0
Sri Lanka	2.6	2.6	2.5	2.5	2.4	2.8	2.8

Source: IWM compilation from WDI, 2019. Data on Vietnam is not available.

However, it shall be noted that the Government of Bangladesh is fully aware of these lacking and has, therefore, established the BEZA as a one-stop station for all investors. It is expected that these indices, when measured for EZ areas will be much better than that of Bangladesh as a country.

6.2.3 Wages and Environmental Issues

Wage rate in Bangladesh is lower when compare to its comparative countries in the apparel sector. Since the apparel industry is a more formal sector and its wages are governed by a minimum wage law – investors can see Bangladesh's comparative advantage in terms of lower wage to operate their businesses in Bangladesh. In addition, Bangladesh is currently engaged with the ILO and other development partners as well as buying companies to ensure safety and environmental standards. For example, of the 10-top green-environment friendly garment factories of the world, 3 are located in Bangladesh while none in Vietnam. This shows Bangladesh' readiness to promote fair wage and environment friendly technologies in Bangladesh.

Table 6-4 further shows that Bangladesh has the lowest rate of labour force participation among all the countries. This also illustrates that Bangladesh still has a significant number of un-tapped workers who will gradually participate and hence its wage rates are expected to remain lower than other competing economies.

Table 6-4: Wage Rate and Labour Force Participation Rate by selected countries

Countries	Minimum wage rate in apparels industry in 2019 (in USD)	Labour Force Participation Rate (%)
Bangladesh	95	58.7
Cambodia	182	81.1
China	200	68.7
Myanmar	73	62.0
Vietnam	180	77.4

Source: Textile Today 2019; Retrieved from https://www.textiletoday.com.bd/sourcing-costs-climb-wage-increases-set-affect-2019/

6.3 Sources of Raw Materials of Manufacturing Industries

Main sources of raw materials for the manufacturing industries have been presented in **Table 6-5.** Sources of raw materials for major industries like textile and RMG, Pharmaceutical and light engineering are mostly from China and India.

Table 6-5: Main sources of raw materials for the manufacturing industries

Sectors/Industries	• **Raw Materials**
Light Engineering	• Ship scraps as raw materials are used for this sector. Most of them are imported from abroad.
Food Industry	• Uses local agricultural produces as its major raw material.
Furniture	• Main varieties of furniture are produced from wood, processed wood, melamine board, Medium Density Fiber Board (MDF), particleboard, steel etc. On average, 60% of raw materials of furniture sector are imported from different countries.
Textile and RMG	• The backward-linkage industry supplies around 90% raw materials to the knitwear subsector and 40% to the woven sub-sector.
	• 60% woven raw fabrics are imported, mainly from China and India to meet the demand of woven sub sector.
Plastic Industry	• Polymers use as main raw material. Industry uses imported raw materials of polymer granules
Pharmaceutical	• Bangladesh pharmaceutical production is very import intensive as raw materials like API, packaging, and materials are imported from abroad. Around 50% of the total pharmaceutical import comes from China, 30% from India, and the rest from other countries

6.4 Export Growth of Medium and Large Industries

From the data obtained from the Bangladesh Bank (**Table 6-6**), it is observed that most of the industries have experienced positive export growth except for jute and jute goods, leather and leather products. The major growth has been observed in the specialized textiles, agricultural products and chemical products.

Table 6-6: Export growth of medium and large industries

Manufacturing Industries	Changes (%) during July-January, 2018-19 over July-January, 2017-18
Woven Garments	15.18
Knitwear	13.86
Specialized Textiles	41.11
Agricultural Products	61.03
Jute & Jute Goods	-24.66
Leather & Leather Products	-11.71
Frozen & Live Fish	2.01
Chemical Products	51.03
Plastic Products	19.66
Engineering Products	2.04
Others	19.33

Source: Bangladesh Bank, Major Economic Indicators: Monthly Update, February 2019

6.5 Foreign Trade

Trends in export and imports shows that on average they are growing although there were ups and down (**Figure 6-1**). It is also important to note that the gap between export and import are widening implying increasing trends to import more goods. As Bangladesh matures into a LMIC, it is likely that demand for final goods and services from Bangladesh will be on the rise giving rise for foreign and domestic investors to harness the opportunity. In **Figure 6-2,** the volume of export trade is shown.

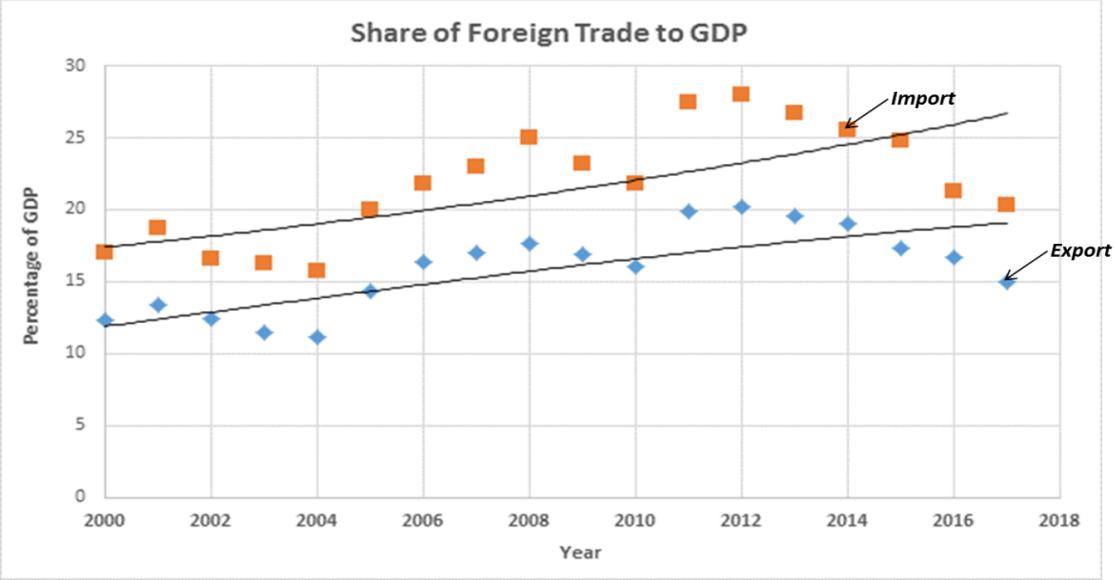


Figure 6-1: Share of foreign trade to GDP

Figure 6-2: Volume of export trade

6.6 The Economy of Netrokona District

Major economic activities in Netrokona is shown in **Figure 6-3.** It shows that wholesale and retail trades (49%) are among the most important economic activities of the district which is followed by transportation and storage (15%) and then manufacturing (12%). The region is clearly a low-intensive manufacturing sector which has immense potential.

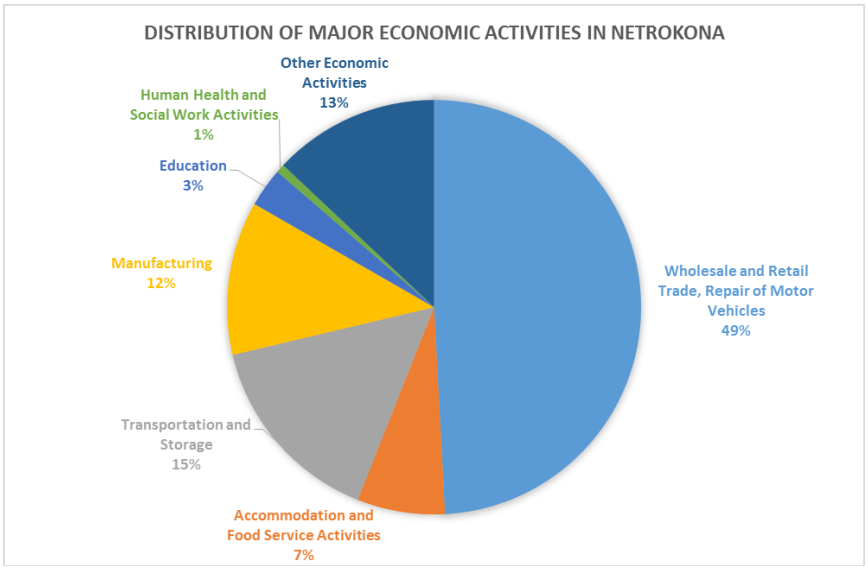


Figure 6-3: Distribution of major economic activities in Netrokona

6.7 Manufacturing Establishments

The Economic Census of 2013 shows that most of the manufacturing establishments are serving the local market (88.91%) while only a very small fraction (0.12%) addresses overseas market as shown in **Figure 6-4**. Around 0.15% of the manufacturing units serves both local and overseas markets.

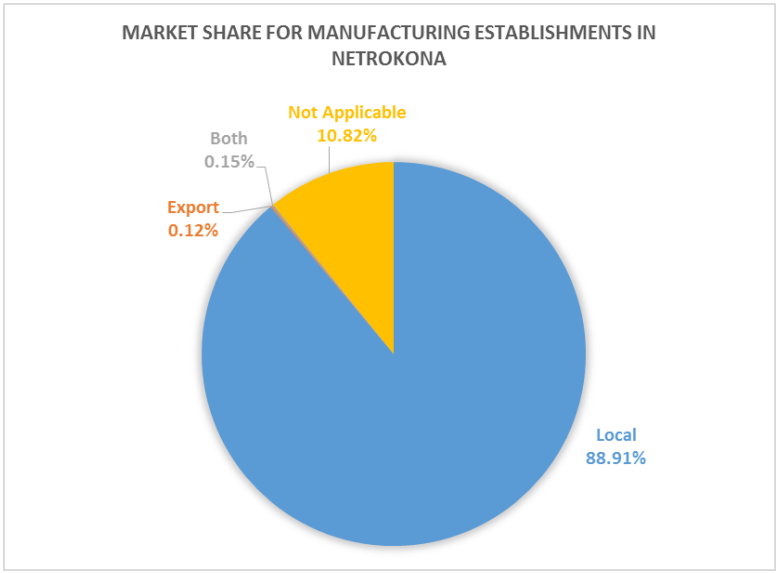


Figure 6-4: Market share of manufacturing establishments in Netrokona

Figure 6-5 further shows that number of manufacturing as well as other economic establishments have increased over the past decades' years. However, rate of growth of new establishments are not yet very stable (**Figure 6-6**).

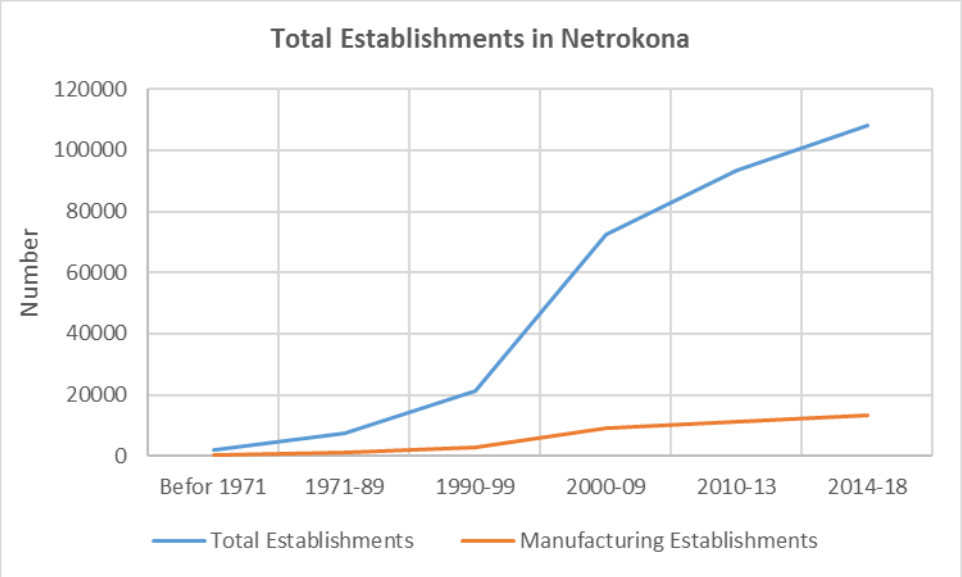


Figure 6-5: Total establishments in Netrokona

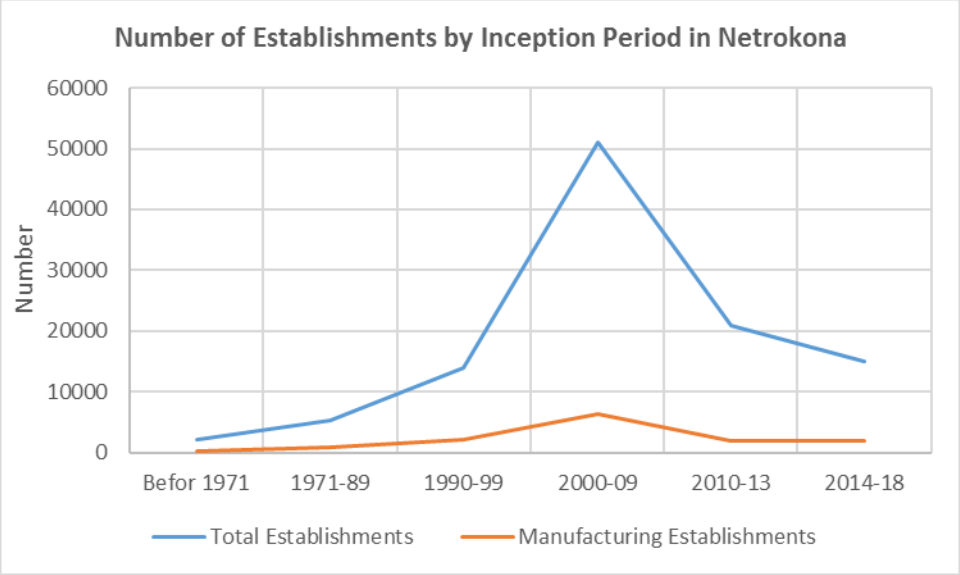


Figure 6-6: Number of establishments in Netrokona by inception period

The main reason could be that most of the producing units are cottage industries. With significant rise in manufacturing growth in the economy, cottage industries often face steep competition from others (**Figure 6-7**).

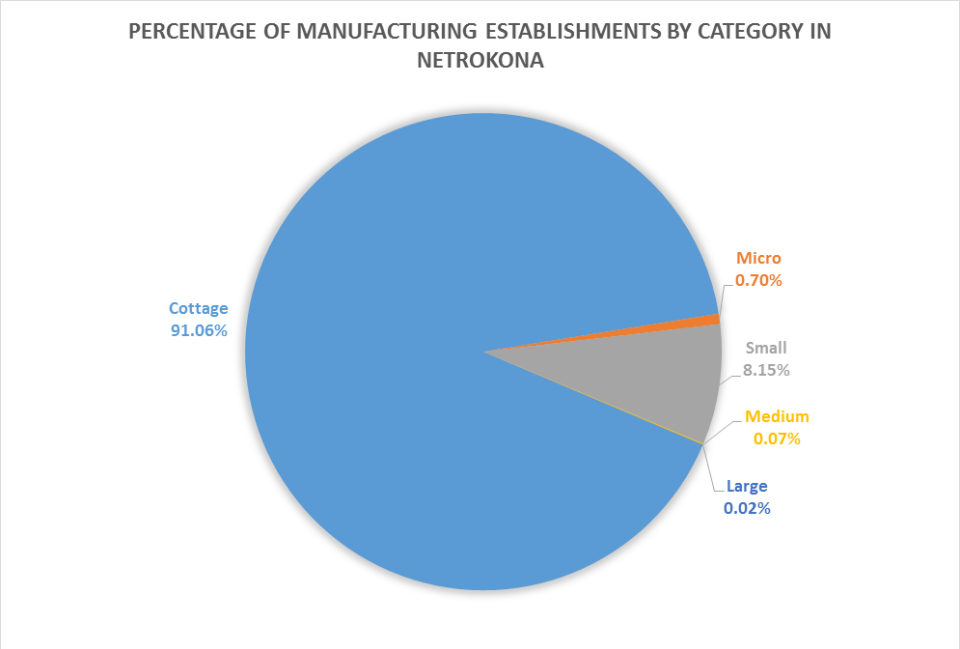


Figure 6-7: Percentage of manufacturing establishments by category in Netrokona

6.8 Employment Situation

Data from Netrokona District Report, 2011 of BBS shows that about 40% of people are employed whereas about 23 have no job. About 35% are engaged in household activities (**Figure 6-8**). The large number of unemployed labour available in the district can get job opportunity in the proposed Netrokona EZ, which can bring very positive change in the employment scenario.

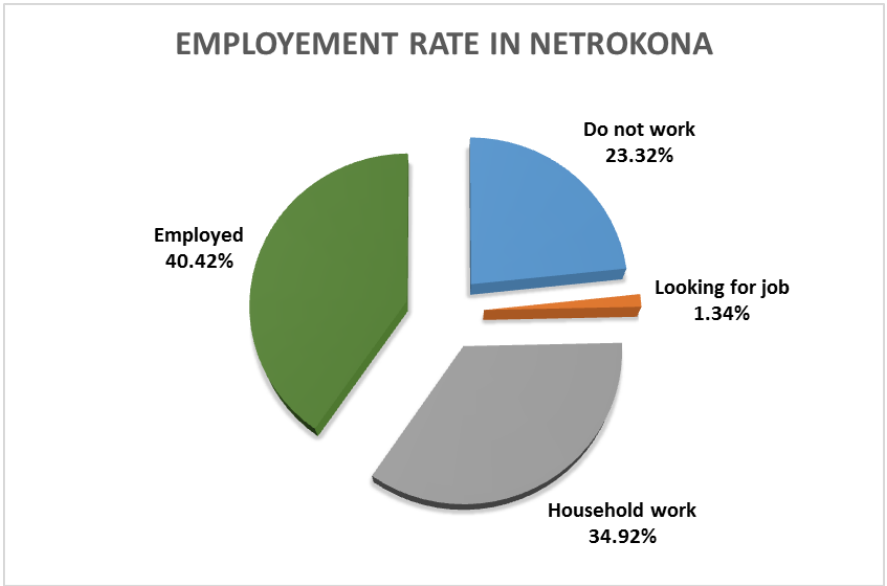


Figure 6-8: Employment rate in Netrokona

6.9 Competitive and Comparative Advantage of the Netrokona EZ

6.9.1 Benchmarking of the zone

Argument in favour of the proposed Netrokona Economic Zone can be established by bench marking with other similar economic zones/industrial parks in abroad. For the purpose the following economic zones have been considered (**Table 6-7**).

Table 6-7: List of economic zones/ industrial parks considered in this study

Name of EZ/Industrial Park	Country
Netrokona EZ	Bangladesh
Phnom Penh SEZ	Cambodia
Tien Son Industrial Park	Vietnam
Bitung SEZ	Indonesia
Mingaladon SEZ	Myanmar

The benchmarking criteria include the followings. Each of the criteria is given a marked using a Likert scale ranging from 1 to 4 with 4 being least cost/best advantageous and 1 being highest cost/most disadvantageous. The list of benchmarking criteria and marks allocated for each criteria are given in **Table 6-8**. The overall score of comparative analysis are then made and is shown in **Table 6-9**.

Table 6-8: List of benchmarking criteria

Sl.	Benchmarking Criteria	Sl.	Benchmarking Criteria
1	Size (Acre)	11	Min. wage (US$/month)
2	No. of plots	12	Skilled wage rate (USD/month)
3	Employment	13	Semi-Skilled wage rate (USD/month)
4	Employment /Acre	14	Management wage rate (USD/month)
5	Distance from commercial metropolis (km)	15	OSS
6	Distance from nearest seaport (km)	16	Water treatment unit (m^3/day)
7	Distance from nearest airport (km)	17	Wastewater TP (m^3/day)
8	Leased tenure (yrs)	18	Corporate tax rate (%)
9	Lease rate (m^2/year)	19	VAT (%)
10	Maintenance charge (m^2/month)	20	Tax holiday (yrs)

Table 6-9: Ranking criteria for benchmarking

1. Size (Acre)			**11. Minimum wage**	
Adequate with Expansion	4		Cheapest	4
Adequate no Expansion	3		Normal	3
Less than 500 Acre- possible expansion	2		Expensive	2
Less than 500 Acre no expansion	1		Most expensive	1
2. No. of plots			**12. Skilled wage rate**	
>300	4		Cheapest	4
200>299	3		Normal	3
100>199	2		Expensive	2
>100	1		Most expensive	1
3. Employment			**13. Semi-skilled wage rate**	
>50,000	4		Cheapest	4
35,000 – 50,000	3		Normal	3
20,000 – 35,000	2		Expensive	2
<20,000	1		Most expensive	1
4. Employment/Acre			**14. Management wage rate**	
>75	4		Cheapest	4
25-75	3		Normal	3
15-25	2		Expensive	2
<15	1		Most expensive	1
5. Distance from commercial metropolis			**15. OSS**	
10 km or less	4		Available	4
10 – 30 km	3		Not available	1
30 – 70 km	2			
>70 km	1			
6. Distance from nearest seaport			**16. Water treatment unit (m^3)**	
25 km or less	4		<5000	4
25 – 50 km	3		5000 – 10000	3
50 - 75 km	2		10000 – 20000	2
>75 km	1		>20000	1
7. Distance from nearest airport			**17. Wastewater treatment plant (m^3)**	
10 km or less	4		>20000	4
10 – 30 km	3		15000 – 20000	3
30 – 60 km	2		10000 – 15000	2
>60km	1		<10000	1
8. Lease tenure (yrs)			**18. Corporate tax rate (percent)**	
>60	4		<20 percent	4
41 – 60	3		20 – 25 percent	3
26 – 40	2		26 – 30 percent	2
<25	1		>30 percent	1
9. Lease rate			**19. VAT (percent)**	
Cheapest	4		<5 percent	4
Normal	3		5 – 10 percent	3
Expensive	2		10 - 15 percent	2
Most expensive	1		>15 percent	1
10. Maintenance charge/m2/month			**20. Tax holiday (yrs)**	
Cheapest	4		>15	4
Normal	3		10 – 15	3
Expensive	2		5 – 10	2
Most expensive	1		<5	1

Based on the benchmarking criteria, comparative assessment of each selected economic zones has been made. The data used data used for the assessment has been obtained from reports shared by BEZA and other secondary sources like web sites of the selected economic zones.

Data used have been presented in **Table 6-10**. The comparative benchmarking assessment and overall score have been presented in **Table 6-11** and **Table 6-12** respectively.

Table 6-10: Data used for detailed benchmarking assessment

	Items Compared	Netrokona EZ	Phnom Penh SEZ	Tien Son Industrial park	Bitung SEZ	Mingaladon SEZ
1	Size (Acre)	500	890	865	1320	222
2	No. of plots	157	103	90	48	41
3	Employment	100,000	21,000	26,000	35,000	NA
4	Employment /Acre	200	24	30	27	NA
5	Distance from commercial metropolis (km)	150	18	22	43	23
6	Distance from nearest seaport (km)	401	209	100	6	24
7	Distance from nearest airport (km)	150	8	35	37	7
8	Leased tenure (yrs)	20	50	50	30	30
9	Lease rate (USD /m2/year)	1.80	55	60	175	0.3
10	Maintenance charge (USD /m2/month)	0.15	0.06	0.5	0.06	NA
11	Min. wage (US$/month)	95	30	130	177	68
12	Skilled wage rate (USD/month)	200	180	325	414	145
13	Semi-Skilled wage rate (USD/month)	120	120	215	209	92
14	Management wage rate (USD/month)	301	700	700	995	600
15	OSS	1	1	0	1	1
16	Water treatment unit (m^3/day)	40,000	5,300	7,000	72,000	5,000
17	Wastewater TP (m^3/day)	30,000	4,500	4,000	64,800	NA
18	Corporate tax rate (%)	35	20	22	25	30
19	VAT (%)	15	10	0	10	0
20	Tax h'day(yrs)	10	9	2	15	5

Table 6-11: Benchmarking Assessment – Comparative Analysis

Items Compared	Netrokona EZ	Phnom Penh SEZ	Tien Son Industrial	Bitung SEZ	Mingaladon SEZ	Max Marks	Weighting	Percentage (%)
Size (Acre)	4	3	3	3	1	4	15	9.1
No. of plots	2	2	1	1	1	4	10	6.1
Employment	4	2	2	2	1	4	10	6.1
Employment /Acre	4	2	3	3	1	4	10	6.1
Distance from commercial metropolis (km)	1	3	3	2	3	4	10	6.1
Distance from nearest seaport (km)	1	1	1	4	4	4	10	6.1
Distance from nearest airport (km)	1	4	2	2	4	4	10	6.1
Leased tenure (yrs)	1	3	3	2	2	4	10	6.1
Lease rate (USD/m^2/year)	4	3	2	1	4	4	10	6.1
Maintenance charge (USD /m^2/month)	3	4	1	4	1	4	5	3.0
Min. wage (US$/month)	3	4	2	1	3	4	10	6.1
Skilled wage rate (USD/month)	3	3	2	1	4	4	5	3.0
Semi-Skilled wage rate (USD/month)	3	3	1	2	4	4	5	3.0
Management wage rate (USD/month)	4	2	2	1	3	4	5	3.0
OSS	4	4	1	4	4	4	10	6.1
Water treatment unit (m^3/day)	1	3	3	1	3	4	5	3.0
Wastewater TP (m^3/day)	2	1	1	4	1	4	5	3.0
Corporate tax rate (%)	1	3	3	3	2	4	5	3.0
VAT (%)	2	3	4	3	4	4	5	3.0
Tax holiday (yrs)	3	2	1	3	2	4	10	6.1
	50	**55**	**41**	**47**	**52**	**80**	**165**	**100**

Table 6-12: Benchmarking Assessment – Overall Score

Items Compared	Netrokona EZ	Phnom Penh SEZ	Tien Son Industrial park	Bitung SEZ	Mingaladon SEZ
Size (Acre)	36	27	27	27	9
No. of plots	12	12	6	6	6
Employment	24	12	12	12	6
Employment /Acre	24	12	18	18	6
Distance from commercial metropolis (km)	6	18	18	12	18
Distance from nearest seaport (km)	6	6	6	24	24

Items Compared	Netrokona EZ	Phnom Penh SEZ	Tien Son Industrial park	Bitung SEZ	Mingaladon SEZ
Distance from nearest airport (km)	6	24	12	12	24
Leased tenure (yrs)	6	18	18	12	12
Lease rate (m2/year)	24	18	12	6	24
Maintenance charge (m2/month)	9	12	3	12	3
Min. wage (US$/month)	18	24	12	6	18
Skilled wage rate (USD/month)	9	9	6	3	12
Semi-Skilled wage rate (USD/month)	9	9	3	6	12
Management wage rate (USD/month)	12	6	6	3	9
OSS	24	24	6	24	24
Water treatment unit (m^3/day)	3	9	9	3	9
Wastewater TP (m^3/day)	6	3	3	12	3
Corporate tax rate (%)	3	9	9	9	6
VAT	6	9	12	9	12
Tax h'day(yrs)	18	12	6	18	12
Total Score	**264**	**276**	**206**	**236**	**252**

6.10 Benchmarking Assessment Results

After applying the benchmarking criteria, the ranking of the economic zones are shown in **Table 6-13**.

Table 6-13: Ranking of economic zones

Economic Zones	Score	Rank
Phnom Penh SEZ	276	1
Netrokona EZ	264	2
Mingaladon SEZ	252	3
Bitung SEZ	236	4
Tien Son Industrial Park	206	5

It is observed that the Netrokona EZ is in second position (2nd) among the all five sites. Main reasons for NEZ scoring second position among all zones are as follows.

1. Creation of better employment opportunities for the locals

2. Lowest wage rate of un-skilled, semi-skilled and skilled labours
3. Lowest management wage rate
4. Total domestic wastewater and industrial effluent plant facilities
5. High incentive in terms of tax holidays
6. One stop service system (OSS)

Other advantages of the site are as follows:

1. Adjacent railway line;
2. The two-lane road adjacent to the site is planned to be extended to four lane regional highway connecting Dhaka and also Sylhet via Tahirpur and Sunamganj;
3. If the Netrokona-Tahirpur-Sunamganj-Sylhet highway is implemented, then the site will have access to two major international airports Dhaka Shahjalal International Airport (150km) and the Sylhet Osmani International Airport (146km);
4. Established railway and road connection to Chittagong port;
5. Only 150 km from the capital city Dhaka which is the centre of all economic, administrative and commercial activities of the country;
6. No major resettlement issue will arise as the site is totally agricultural land.
7. Availability of labour with relatively low wage.

Chapter 7: Industry Assessment

7 INDUSTRY ASSESSMENT

To identify existing and potential industry sectors (and trends) first a long list was considered and then shortlisting of sectors was prepared by considering a number of factors. Further, industry profiles of the selected industries are provided. The following paragraphs discuss the above process step-by-step.

7.1 Short listing of suitable sectors from a long list

A long list of industrial sectors, which exists as 'manufacturing" under Bangladesh government economic sector classification, which are:

Long list of sectors:

1. Textile and RMG Industry
2. Pharmaceuticals
3. Leather Footwear
4. Shipbuilding and Repair
5. ICT Industry (computer, electronic and optical products and software)
6. Light Engineering
7. Frozen Fish
8. Food Processing
9. Cement
10. Wood and products of wood and cork
11. Paper and paper products
12. Printing and reproduction of recorded media
13. Refined petroleum products
14. Chemicals and chemical products
15. Rubber and plastics products
16. Non-metallic mineral products
17. Basic metals
18. Fabricated metal products
19. Electrical equipment
20. Machinery and equipment
21. Motor vehicles, trailers and semitrailers
22. Furniture
23. Ceramics products
24. Others i.e. small and cottage industries

7.2 Factors for short listing of sectors

From the above long list, a shortlist of priority sectors was prepared on the following parameters:

1. suitability with respect to land per unit of value addition;
2. suitability for proximity to port facility or sea;
3. environmental suitability;
4. labour availability in the region;
5. presence of raw materials in the region;
6. growth prospect/export competitiveness;
7. import substitution prospect; and
8. suitability with respect to existing local demand for the products.

7.3 Consultations with Relevant Stakeholders

Following are the type of stakeholder consulted for industry assessment. A further detailed public consultations and their outcomes are given in Chapter 11.

1. BEZA officials

2. Local people
3. Investors/ entrepreneurs
4. Business communities like whole sellers and retailers,
5. Local industries
6. Sectoral experts
7. Social elites
8. BPDB officials
9. Titas Gas Transmission and Distribution Company (TGTDCL)
10. Local administration
11. Roads and Highways Department officials

One of the important opinions expressed by entrepreneurs and other stakeholders are as follows:

1. Significant interest in relocating industries from the Greater Dhaka to NEZ due to limited scope of expansion, pollution of water bodies, higher wage of available labour
2. NEZ offers good air, rail, road and river transport connectivity for importing raw material and exporting finished products, if some of the road and rail links are expanded and rehabilitated
3. GoB is offering incentive packages and one-stop services through BEZA for establishing industries in the economic zones
4. More secured environment and availability of all utility services including water, power, gas, waste management, effluent treatment.

7.4 Short Listed Target Industry Sectors and their Profiles

Probable industries in the proposed NEZ has been made based on the above factors, field visits, consultations with relevant stakeholders & BEZA officials, and secondary data and reconnaissance field visits. The shortlisted target industries have been presented below:

1. Integrated textile
2. Readymade garments
3. Pharmaceuticals
4. Ceramic industries
5. Food processing (Agro-based and fish processing)
6. Light engineering
7. Small and cottage industries

7.5 Target Industry Profile

In the following sections, industrial profile of the above selected sectors has been elaborated:

7.5.1 Integrated textile & Ready-Made Garments (RMG)

Bangladesh has been showing strong presence in textile sector for the last few years. The industrial development of a country starts with strong hold of textile industry. The main textile related destination is the USA, the UK, Canada, European Union, Australia, Japan, etc. Due to

economic confrontation among countries, many companies are looking for better investment destinations other than China. This has created a great opportunity for Bangladesh. Setting up textile industries in the proposed Economic Zone will help the country's economic development. The textile industry is the largest labour-intensive manufacturing sector of the country which employs about 5 million people (BER, 2018). More than 80 percent of the total export of the country comes from textiles and garments sector (BER, 2018). Almost 100 percent of domestic yarn and fabrics requirements are met by Primary Textile Sector (PTS). About 85-90 percent of knit yarn and 35-40 percent of woven fabrics requirements for RMG export are met by PTS (BER, 2018). Skilled technicians, however, is a handicap in the production of quality textiles for the existing and developing garments industry. To meet the growing demand in Bangladesh, the Directorate of Textiles has trained skilled labour, supervisor, diploma technician and graduate-level textile engineers for the textile sector through 40 textiles vocational institute, 3 textile institutes and 5 textile engineering colleges at an affordable cost. Out from these educational institutions, 3309 technicians are getting out every year. The amount of investment in the textile sector is recorded at the US $4.5 billion (year 2017), with value addition in knitting and woven RMG at 70% and 35% respectively. The contribution of the textile sector towards GDP is 12%. 85% Foreign exchange earnings, 90%- 95% Yarn demand of knit RMG and 40% yarn demand for woven RMG are met.

Strength and Potentials of this sector:

- Relatively low labour cost
- Good quality of raw materials
- Present of internationally reputed firms
- Presence of strong business association
- Emphasis on changing trends
- Physical & capital resource
- Knowledge resource
- Foreign direct investment (FDI)

Particularly, in case of Netrokona EZ, if textile and RMGs are established, there will be enough manpower available in this region. Even people working in other regions may come here to work if job opportunity is provided.

7.5.2 Pharmaceuticals

With 194 operating companies, the pharmaceutical industry provides 97% of the total medicinal requirement of the local market. The industry also exports medicines to global markets, including Europe. The industry started flourishing with the promulgation of Drug Control Ordinance (1982). Nearly 80% cumulative growth in the last three years means that the Bangladesh pharmaceutical market has doubled. About 5,600 brands of medicines are manufactured in different dosage forms in Bangladesh. The domestic retail market is growing at 25% per year. Bangladesh is also going to establish an Active Pharmaceutical Ingredient (API) park where 40 API industries are expected to operate. The industry contributes 1% of the GDP.

7.5.3 Ceramic industries

The use of ceramic materials is no longer limited to mere necessity. All ceramic products are now used everywhere. Decorating the houses and decorating the office as a means of decorating ceramic products to the fancy people are increasing day by day. For example, many people cannot even imagine building houses without tiles. Setting up ceramic commode and basins in the house, nowadays, one of the most urgent ones, And the ceramic T-Tables and the house decoration shops are kept in the house and the office and the use of various types of utensils, such as utensils, tea, and tea, has become fashionable nowadays. The ceramics industry started during the late 1950s when the first ceramic industrial plants were established in 1958.

The ceramics industry is a booming manufacturing sector in Bangladesh. Over the years the industry has flourished immensely. While it caters to 85 percent of the local demand it also exports quality ceramic products to international markets. Currently, there are more than 60 ceramic manufacturers in the country. Another 20 will hit the market by June 2018. And currently, more than 500,000 people are engaged in the local ceramics industry.

For this particular EZ, there is an availability of raw material within this district. Gas supply is required for this industry.

7.5.4 Food processing (Agro-based and fish processing)

Food processing sector is one of the growing sectors in Bangladesh in terms of production, growth, consumption, and export. The demand for processed foods is picking up because of rising income and busy lifestyle of domestic population. Increasing disposable income and growing urban middle class are contributing to the growth of this industry. The growing number of restaurants, hotels and supermarkets are also driving the demand for processed foods. The processed food industry provides most of the requirements of the local market. The total turnover of the industry is estimated to be USD 2.5 bn (Year 2018). Products are being exported to 130 countries, including the US, the UK, European Union, Australia, etc. The industry has been expanding and is also expected to continue.

In this economic zone, there is a great potential for agro-based and fish-based industries as there is abundant fish in the nearby waterbodies.

7.5.5 Light engineering

In light engineering industry, prospect of growth and import substitution is significantly high. This sector contributes to growth in various related sectors and a wide range of economic activities. It is estimated that there are more than 40,000 units of light engineering industries producing 10,000 different items and employing 7 million persons. There are strong backward and forward linkages between the light engineering industries and other sector such as agriculture, automobile, and transportation in Bangladesh. The Sector is experiencing positive export performance in recent time and achieved 14.1% export growth in 2015. In the 7th Five Year Plan, GoB has given emphasis to attract Foreign Direct Investment (FDI) in the light engineering sector, for greater and easier market access, and for easier transfer of technology. To facilitate FDI in the sector, the government is planning to set up several SEZs and hand over these SEZs to investors from Japan, China, India and other countries.

This sector will support spare parts of machineries of transport, agriculture, power, automobiles and pharmaceutical sector, and electrical switches and accessories.

7.5.6 Small industries

Small Industry (Manufacturing): Small Industry means an industry in which the value/replacement cost of durable resources other than land and factory buildings is in between (0.05 to 15 million) taka and employment generation is not more than 50 persons (BSCIC Website). A small industry produces its goods using small machines, less power and hired labour. Cottage industry means an industry in which family members are engaged part time or full time in production and service-oriented activities. Bangladesh Small and Cottage Industries Corporation (BSCIC) has developed a total of 74 industrial estates throughout Bangladesh to foster the growth of SCIs in a balanced manner and also construction for a number of estates including special type like Tannery, API (active pharmaceutical ingredients) and garments park are under execution. Some type of cottage industries in Bangladesh are pottery, bamboo and cane industries, jute products, textile and weaving factories, embroidered quilts, cool mat and ornaments.

During visit to Netrokona BSCIC, the officials demanded for allocation of land in the proposed economic zone. The demand letter to Ministry of Industries for expansion of existing BSCIC has been provided in **Annex H**. To address this demand, a provision of 49 plots (49 acres) has been kept in the proposed Master Plan.

Chapter 8: Master Plan

8 MASTER PLAN

A master plan for the proposed Netrokona Economic Zone (NEZ) has been prepared based on field visits, analysis of industry data, opinion surveys among stakeholders and local people, secondary data on air, road, railways, water routes infrastructure at the local and regional and national levels, water availability, power supply, flooding condition, gas and telecommunication infrastructure, etc. Detail analysis of all secondary data and policies, primary data including field surveys, workshops, and questionnaire surveys will be carried out during feasibility study to review and finalise master plan.

8.1 Zoning

The economic zone has been divided in accordance with the land use. The master plan proposes broadly four zones. A brief description of these four zones has been given below:

Zone A: Industrial zone. In this zone it is likely that manufacturing units related to Garments, Integrated Textiles, Food Processing, Ceramics, Small Industries, Light Engineering and Pharmaceuticals will be established.

Zone B: The residential areas for staffs and their families will be located in Zone B

Zone C: Recreational zone includes green areas, parks, playground, food plaza, etc.

Zone D: Administrative and service zone includes health care facilities, day care centre, commercial spaces, utility services (water treatment plant, wastewater treatment plan, common effluent treatment plant, power sub-station, solid waste collection stations, fire stations etc.), parking and logistics, security and surveillance, educational spaces, truck stand and workshop.

The zoning map showing these four zones is provided in **Figure 8-3**.

8.2 Plot

Each of the plot size shall of roughly one acre in size in uniform rectangular length and width. There will be some large plots for special industrial purposes. A number of regulations will be followed in establishing industrial units within the plots.

1. Nothing can be constructed on the set back area on the side of the building for the fire fighting. It should be properly landscaped with small sized trees.
2. 30% of the setback area on the backyard can be used for services (generator room, prayer room, etc.)
3. 65% of the frontage can be used for parking, loading unloading, security booth, walkway, driveway etc.
4. 35% of the setback at the frontage should be landscaped with trees and properly grassed.

Each tenant will build the fence surrounding own leased land. The maximum height of fences shall be 2.2m from the ground level. For the front side, the upper half portion should be open type and the lower half portion should be closed type. The standard sample is shown below:

a. The fences facing the front road shall be open-type fences made of iron bars or galvanized chain- link fencing material framed with galvanized pipes and other similar

types of fences. Details of colour and material should be discussed with the zone administration.

b. No concealing fences shall be erected facing the roads. On the other hand, the structure of the side and back fence should be closed type for security purposes.
c. The fence between two adjoining plots could be built rightly on the plot division line with agreement of both tenants of plot and the cost of the fencing could be shared by the two tenants.
d. The setback of 3.281 feet (1m) is required between the u-channel and the fence. This is for necessary maintenance of the fence foundation in the future. The setback should be grassed for the landscape purpose.

8.3 Gate System

The gate system of proposed Netrokona Economic Zone (NEZ) has been carefully considered and the following items are the key system. There will be CCTV, security alarm system, access control system, etc. in the main entrance. Moreover, the individual industrial plots will ensure their security with proper gate systems.

8.4 Land Use

The existing land use map including administrative boundaries (union and mouza) is shown in **Figure 8-1**. The proposed land use map has been presented in **Figure 8-2**. The different types of land use have been given in **Table 8-1**. Finished ground level of NEZ has been determined as 10.9mPWD.

Table 8-1: Proposed Land Use Pattern of NEZ

Type of Zone	Type of Land Use	Area (Acres)	Percentage of Total Area
Zone A: Industrial Area (39.99% of total NEZ area)	Ceramic Ind. (16 plots)	15.79	3.11%
	Food Processing (28 plots)	27.71	5.45%
	Garments (47 plots)	47.16	9.27%
	Integrated Textiles (26 plots)	25.7	5.05%
	Light Engineering (16 plots)	16	3.15%
	Pharmaceuticals (22 plots)	22.02	4.33%
	Small and Cottage Industries (49 plots)	49.01	9.64%
Zone B: Residential Area (5.81% of total NEZ area)	Residential Area	29.53	5.81%
Zone C: Recreational Area (24.76% of total NEZ area)	Club, Playground & Food Plaza	4.5	0.88%
	Eco Park	7.59	1.49%
	Green	16.4	3.22%
	Landscaping & Slope Protection	28.3	5.56%

Type of Zone	Type of Land Use	Area (Acres)	Percentage of Total Area
	Park	1.18	0.23%
	Playground	1.53	0.30%
	Waterbody (Lake & Canal)	66.45	13.07%
Zone D: Administrative & Service Area (29.44% of total NEZ area)	Administration	5.65	1.11%
	Central Truck Stand & Workshop	7.12	1.40%
	CETP	5.83	1.15%
	Commercial Area	7.5	1.47%
	Day Care Center	1	0.20%
	DTW	1.09	0.21%
	Education	3.43	0.68%
	Entrance, Parking & Security	6.1	1.20%
	Fire Station	2	0.39%
	Health Care	2	0.39%
	Lifting Station	0.6	0.12%
	Logistics & Helipad	2	0.39%
	Power Sub-station	1.88	0.37%
	Religious Facilities	2	0.39%
	Rest house	4	0.79%
	Road Network	69.46	13.66%
	School & Playground	6.12	1.20%
	Solid Waste Management Site	1.83	0.36%
	STP	6	1.18%
	Utility Services Management	3.93	0.77%
	WTP	10.16	2.00%
Total			**100%**

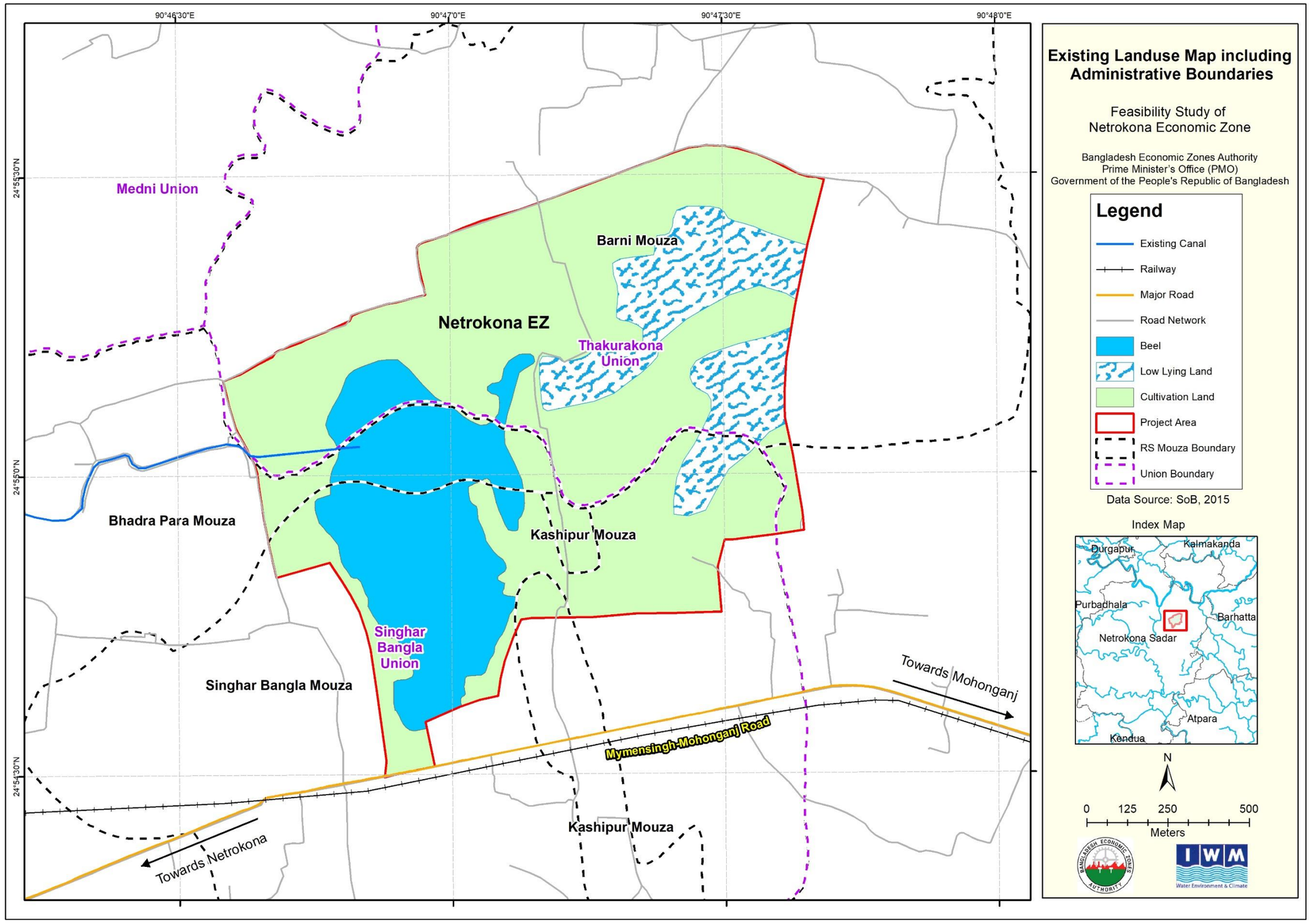


Figure 8-1: Existing Land use Map including Administrative Boundaries (Union and Mouza)

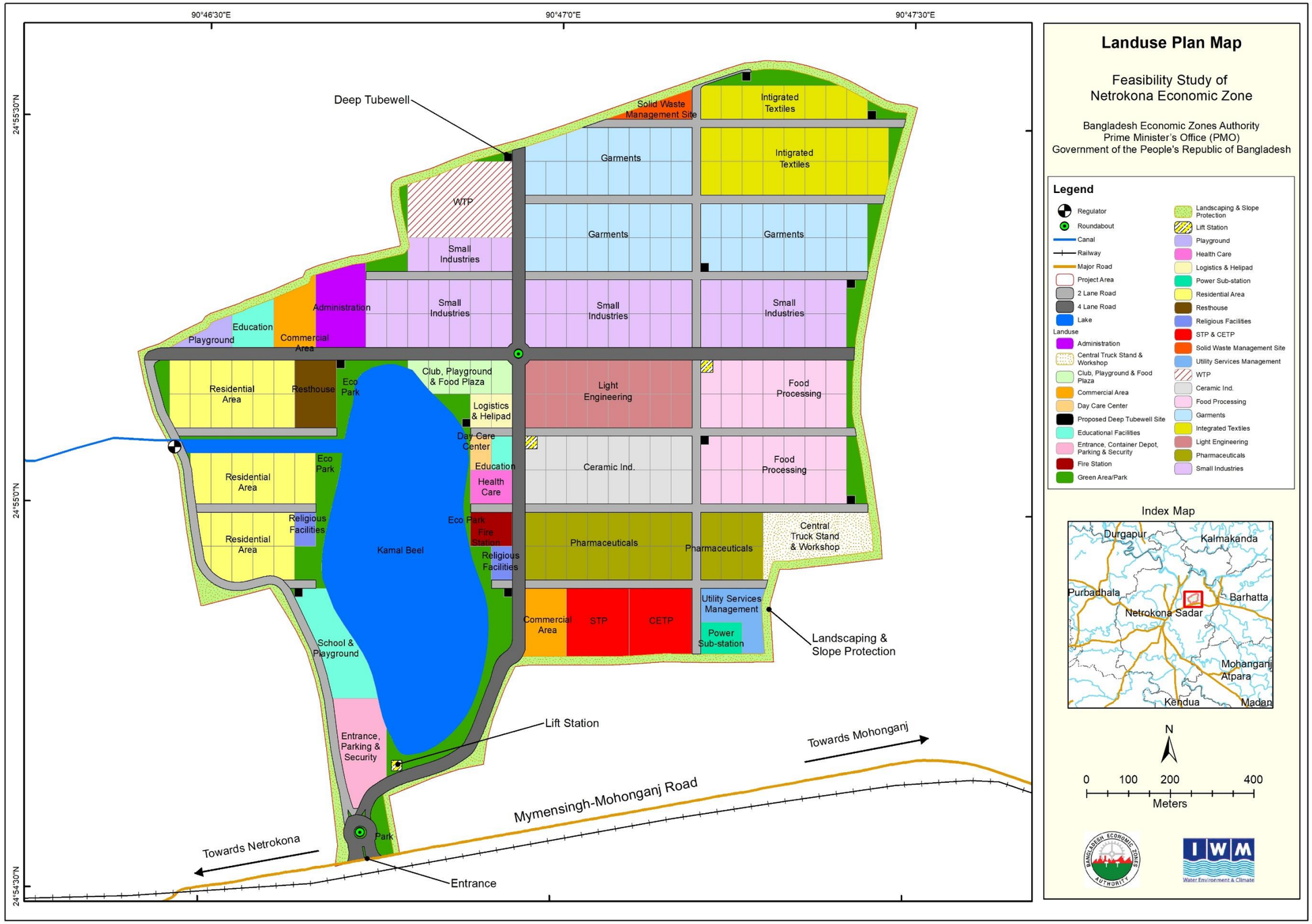


Figure 8-2: Proposed Landuse Plan Map

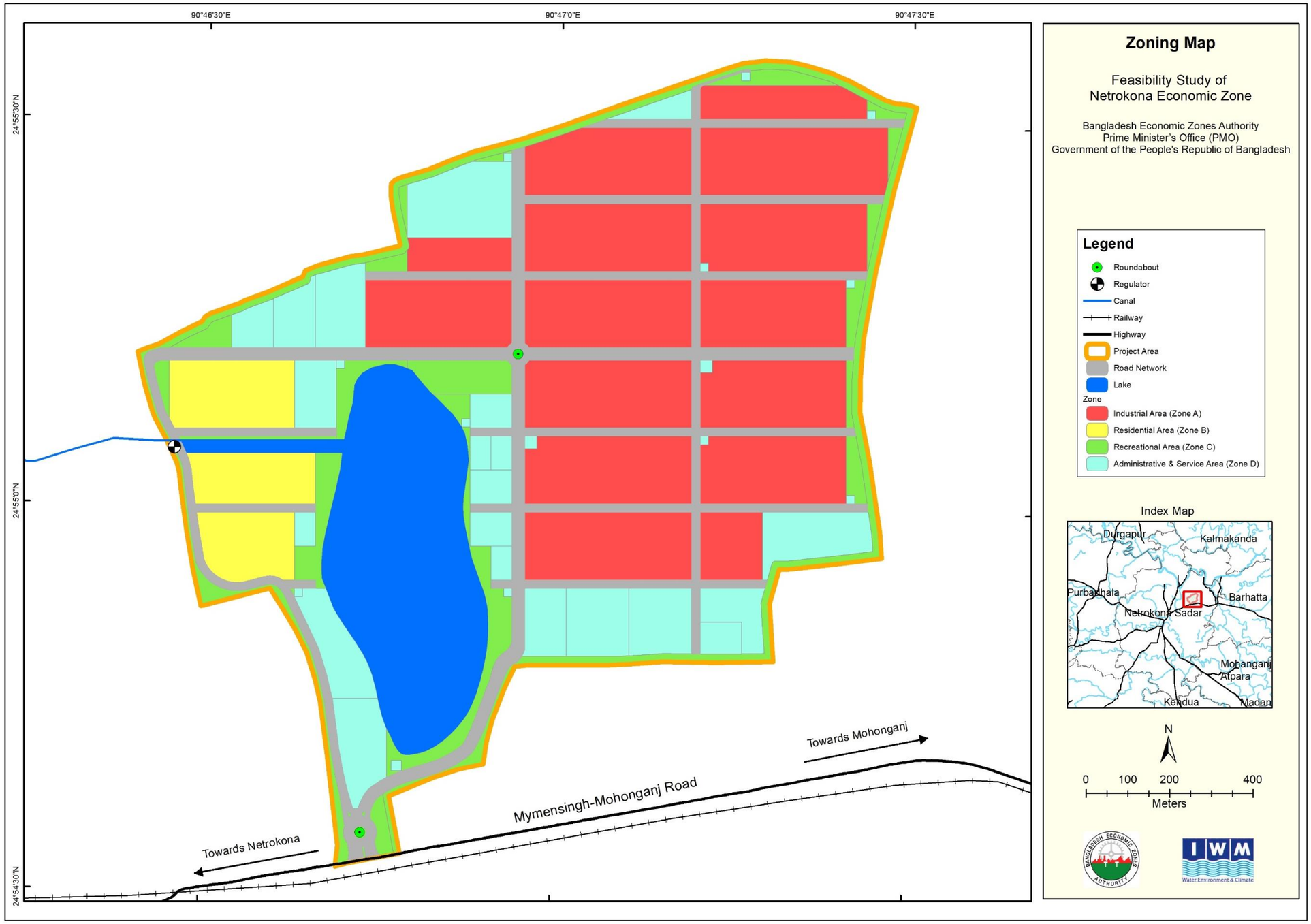


Figure 8-3: Proposed Zoning Map

8.5 Onsite Infrastructure

8.5.1 Road Network

The road network has been planned as follows:

Four (04) lane roads: The length of the four-lane road is approximately 3.66 km. The right of way (RoW) of this road is 30m. Typical cross- section of 4 lane road is attached in **Annex N of Volume II.**

Two (02) lane roads: The length of the two-lane road is approximately 8.79 km. The right of way (RoW) of this road is 20m. Typical cross- section of 2 lane road is attached in **Annex N of Volume II.**

Walkway: Walkways are proposed along the periphery of the Kamal lake and the Channel. The walkway should be at least 3m wide.

8.5.2 Power Supply System

The existing electrical grid network in and around Netrokona District has been shown in **Figure 8-4.** There are three existing 132/33 kV Grid Substation situated in Netrokona Sadar Upazila under Power Grid Company of Bangladesh (PGCB). Netrokona Sadar is served both by Bangladesh Power Development Board (BPDB) and Bangladesh Rural Electrification Board (BREB).

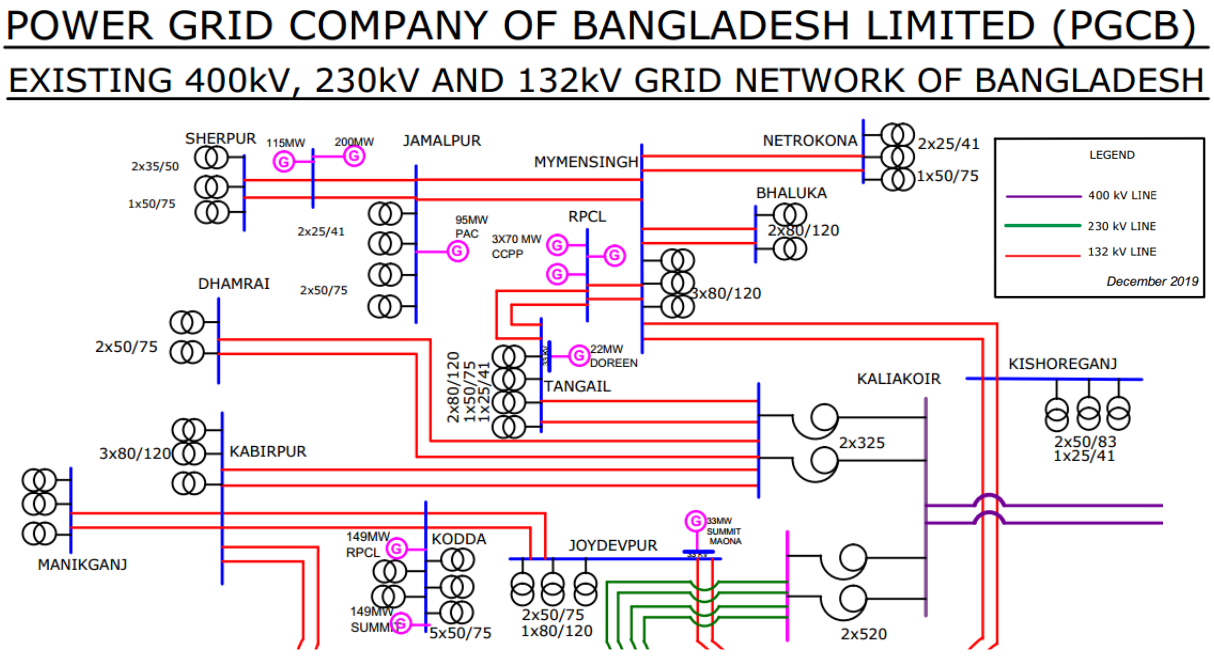


Figure 8-4: Existing Electrical Grid Network in and around Netrokona District

According to the proposed land use of Netrokona EZ, the estimated power demand is approximately 43 MW (**Table 8-2**). This will need a revisit during preparation of a detailed Master Plan for the developing economic zone.

Table 8-2: Power Demand for Netrokona EZ

SN	Type of Land Use	MW
1	Administration	0.56
2	Central Truck Stand & Workshop	0.36
3	Ceramic Ind.	2.69
4	CETP	0.38
5	Club, Playground & Food Plaza	0.45
6	Commercial Area	1.80
7	Day Care Center	0.10
8	DTW	0.07
9	Eco Park, Park, Playground, Green, Landscaping & Slope Protection	2.75
10	Education	0.96
11	Entrance, Parking & Security	0.61
12	Fire Station	0.20
13	Food Processing	4.71
14	Garments	3.30
15	Health Care	0.10
16	Integrated Textiles	4.37
17	Lifting Station	0.04
18	Light Engineering	2.72
19	Logistics & Helipad	0.20
20	Pharmaceuticals	3.74
21	Power Sub-station	0.12
22	Religious Facilities	0.20
23	Residential	1.48
24	Rest house	0.20
25	Small Industries	8.33
26	Solid Waste Management Site	0.31
27	STP	0.39
28	Street Lighting	0.80
29	Utility Services Management	0.26
30	WTP	0.66
	Total Demand	**42.85**

Recommendation for Power Supply in Netrokona EZ

- A plot with 1.88 acres of land has been kept for constructing sub-station for the EZ.
- 33 kV feeder lines will be needed to connect the EZ with existing power sub-stations.
- Power lines within the EZ has been considered to be laid in both sides of the road.
- During master planning the power demand might need revision.
- It is suggested that the power supply system be implemented with the support of PGCB and BPDB /BREB.
- The implementation budget has been considered under this project (**Table 9-1** & **Annex D** of **Vol. II**).

8.5.3 Electric Lighting

All roads shall have LED street lighting arrangement with central auto controls. Typical lighting arrangement to be installed is shown in **Figure 8-5**.

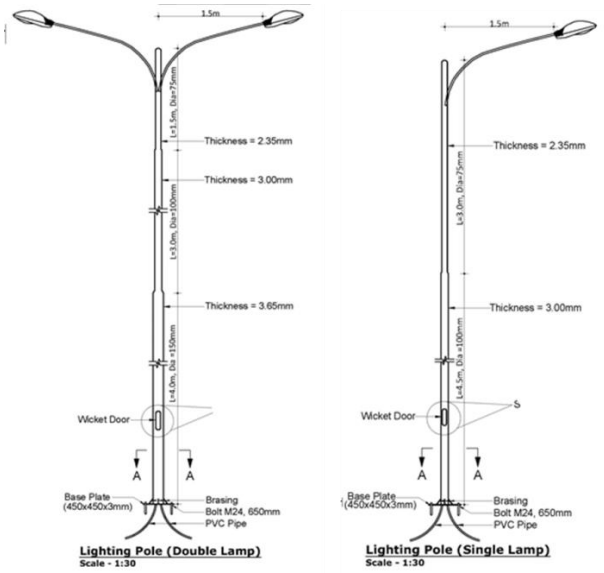


Figure 8-5: Typical lighting arrangement to be installed

8.5.4 Gas Supply System

Present Status of Gas Supply in Netrokona

Titas Gas Transmission and Distribution Company (TGTDCL) is supplying gas to Netrokona RMS (Regulating & Metering Station) through a 40 km transmission line from Mymensingh RMS (Figure 1). The diameter of Mymensingh RMS to Char Raghurampur VS is 8 inches (8 km) and diameter of Char Raghurampur VS to Netrokona RMS is 6 inches (32 km) (Figure 2). Currently, Titas Gas is supplying gas to domestic customers, business customers, CNG refuelling stations, etc.

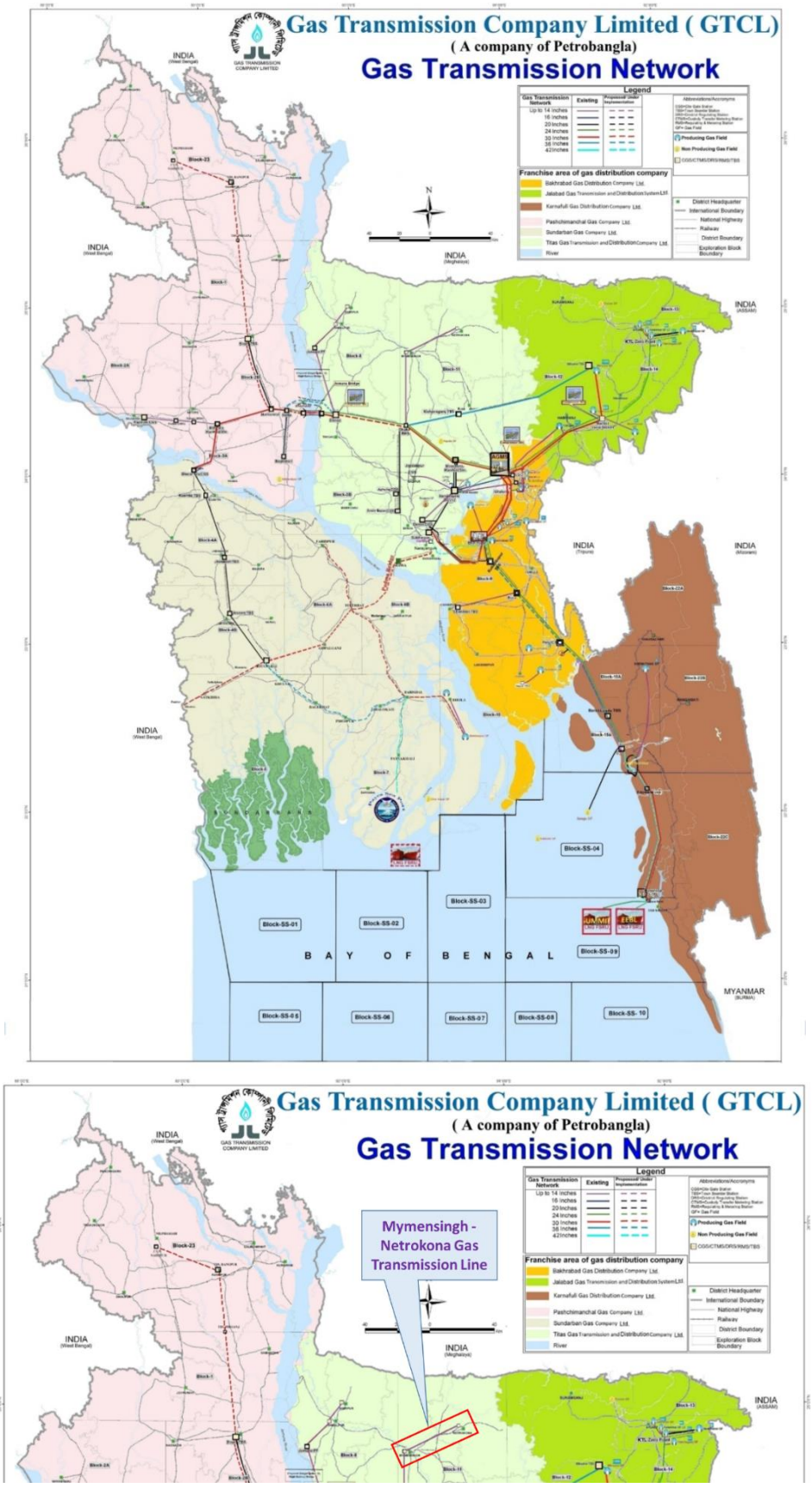
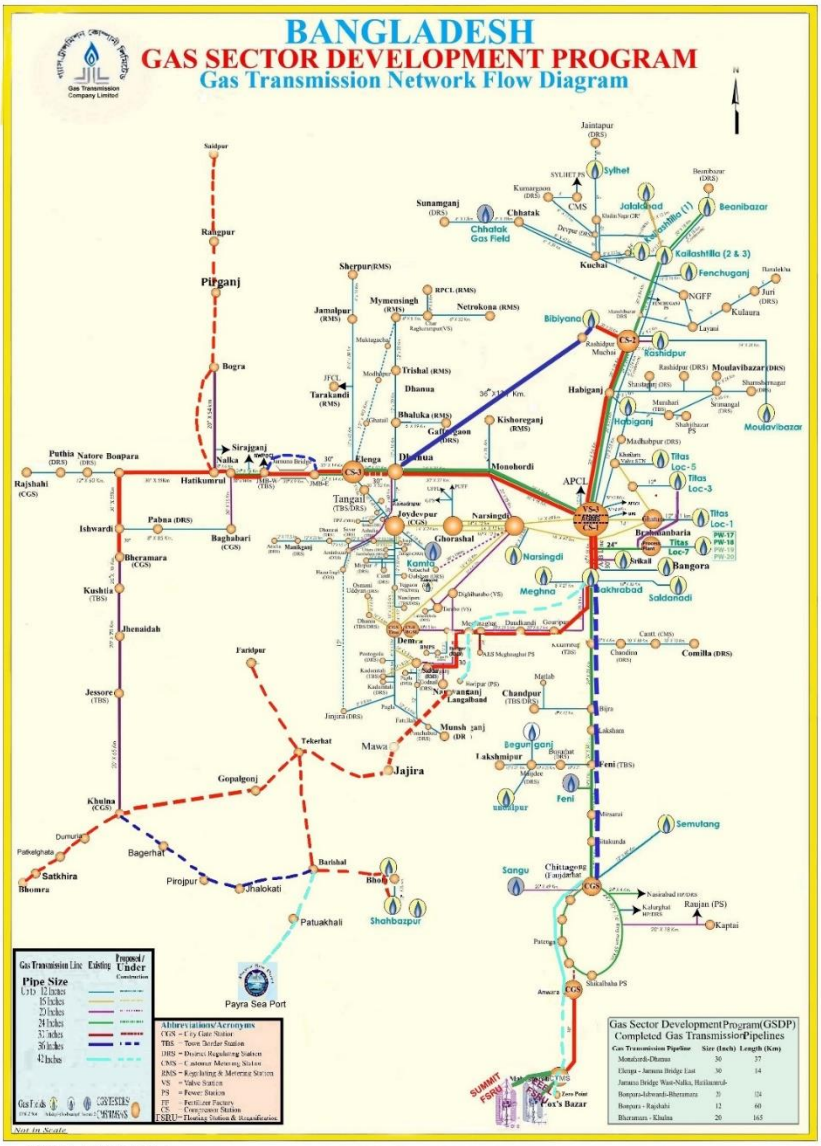
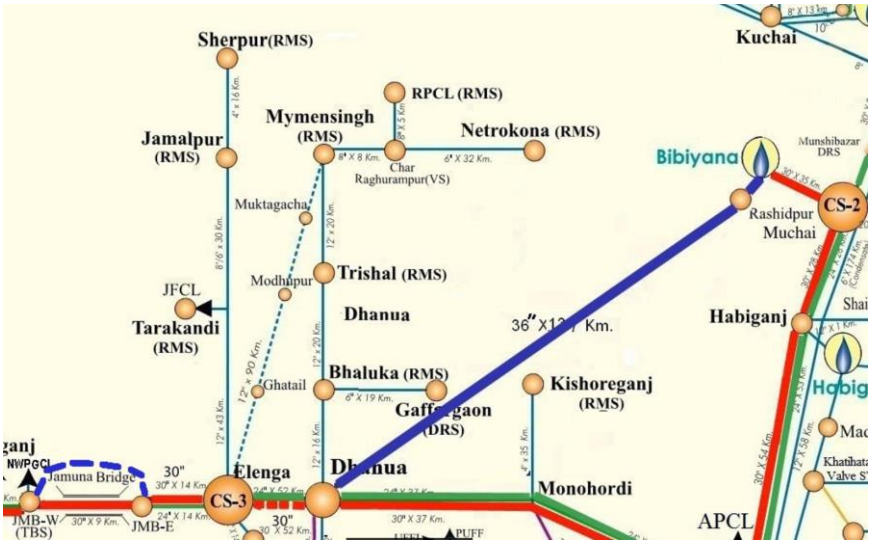


Figure 8-6: Gas Transmission Network of Bangladesh and Gas Transmission Line from Mymensingh to Netrokona District



SOURCE: PETROBANGLA



Source: GTCL

Figure 8-7: Gas Transmission Flow Diagram of Bangladesh and Netrokona District

Proposed Gas Supply System in Netrokona EZ

To supply gas to the EZ, a gas transmission line needs to be laid from existing Netrokona RMS to the entry point of Netrokona EZ. The approximate length of this transmission line will be 7.93 km. The alignment of this transmission line has been shown in **Figure 8-14**.

If gas is supplied to all of industries and other sectors, the approximate demand will be 60000 m3/hr. The current capacity of Netrokona RMS is not sufficient to meet this huge demand. Again, the distribution length within the EZ will be quite long, if gas is supplied to every plot. Thus, to reduce the demand, it is proposed that gas connections will be provided for Ceramic, Pharmaceuticals, Food Processing and Small Industries. Other industry sectors such as RMG, Integrated Textile and Light Engineering sector will not be provided with gas supply. For other cases such as residential, administrative, hospital, etc., Liquefied Petroleum Gas (LPG) connections have been suggested. As per the proposed plan, the length of internal gas distribution network is approximately 7.22 km. The gas supply distribution network has been shown in **Figure 8-15**.

Recommendation for Gas Supply in Netrokona EZ

- The existing transmission line from Mymensingh to Netrokona needs to be upgraded.
- The existing Regulating & Metering Stations (RMS) at Netrokona needs to be upgraded.
- As the economic zone site falls under Titas Gas Transmission and Distribution Company's (TGTDCL) jurisdiction, it is suggested that the gas supply system be implemented with their support. The implementation budget has been considered under this project (**Table 9-1** & **Annex D** of **Vol II**).
- This plan might need a revisit during preparation of a detailed Master Plan for the developing economic zone.

8.5.5 Land Development/ Earth Filling

Existing average land level of Netrokona EZ area excluding Kamal beel is 7.36 mPWD. The land level should be raised to 10.9 mPWD for flood protection. The required sand for earth filling may be provided from the dredged sand of the Kangsha, River. The site should be prepared following the standard procedure of land filling including necessary compaction. The cost of earth filling including dredging has been provided in **Annex D** of **Vol II**.

8.5.6 Water Supply System

The NEZ will require 40 million litres per day (MLD) water supply. According to the assessment of water resources, the most reliable water source will be groundwater. The groundwater quality is good. Groundwater (40 MLD) from 11 nos. of DTW (each of 1.5 cusec capacity) will be used for proposed NEZ. No groundwater treatment plant (WTP) is needed at present. Provision (space) for groundwater treatment plant (WTP) have been kept if it is required in future.

Diameter wise water supply network length is given in **Table 8-3.** Total length of water supply network is about 20 km. Layout of water supply system map is shown in **Figure 8-9.**

Table 8-3: Diameter Wise Water Supply Network Length

SN	Diameter (mm)	Materials	Length (km)
1	110	HDPE	8.47
2	160	HDPE	2.82
3	200	HDPE	3.28
4	250	HDPE	0.79
5	315	HDPE	4.27
6	400	HDPE	0.21
7	560	DI	0.17
Total			**20.02**

8.5.7 Provision of Rainwater Harvesting System

Rainwater is a valuable source of water through harvesting. It can be used for several purposes such as, drinking and cooking, bathing and laundry, flushing toilets, watering lawns, gardens and houseplants, composting, storing water in ponds, washing vehicles and equipment, fire protection, etc. However, industrial units do not prefer rainwater harvesting for their industrial process. Therefore, the industrial demand will be met from surface water and groundwater sources. However, for the industrial units having the roof top area >300m^2, it is encouraged to implement rainwater harvesting components in their premises. The storm water drainage system is planned to be discharged at the Kamal Beel. Kamal Beel will improve the overall recharge of rainwater to the shallow aquifer.

Recommendation has been given for measures for rainwater harvesting for artificial recharge of groundwater aquifer. Several methods of groundwater recharge like spreading, pit, induced recharge and injection well method are practiced. The area requirement of spreading method sometimes limits its use. Among them the recharge / injection wells can directly feed depleted aquifers with fresh water by gravity from ground surface. The recharge through this technique is fast and has no transit losses or evaporation losses. It may ensure timely disposal of the excess runoff as well as replenishment of aquifer. Except recharge pit, other structure of recharge well remains underground; there is hardly any loss of land. **Figure 8-8** shows the schematic diagram of artificial recharge of ground water aquifer.

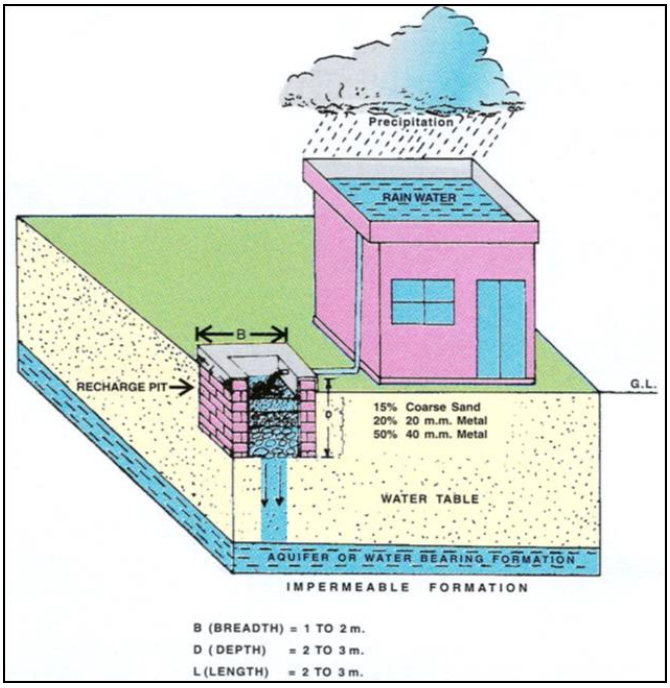


Figure 8-8: Schematic Diagram Showing Artificial Recharge of Aquifer

8.5.8 Storm-water Drainage Network

Storm water drain has been planned to build on the both sides of the roads as indicated in **Figure 8-10.** Total length of the storm water drain is about 17 km. This drainage network will drain the storm water into Kamal beel through seven (07) outfalls.

8.5.9 Sewage Treatment Plant (STP)

There will be one sewage treatment plant (STP). The total capacity of the STP will be 6 million litres per day (MLD). Three (03) SLS have been proposed for this network. Layout of domestic wastewater collection network system is shown in **Figure 8-11**. Diameter wise sewer network length is given in **Table 8-4.** Total length of the sewer network is about 12 km.

Table 8-4: Diameter Wise Sewer Network Length

SN	Diameter (mm)	Material	Length (km)
1	200	uPVC	10.46
2	250	uPVC	0.78
3	300	uPVC	0.55
4	350	RCC	0.19
5	400	RCC	0.08
Total			**12.07**

8.5.10 Common Effluent Treatment Plant (CETP)

All industries shall have their own ETP for preliminary treatment according to ECR 1997. CETP will be built after the full development work of EZ. At this phase provisions for primary infrastructure with pipe layout will be kept. The treated water from the ETPs will be conveyed to a CETP for further treatment before discharge. Two (02) effluent lift stations has been

proposed for this network. Preliminary capacity of CETP has been estimated as 28 MLD but this capacity of CETP will be determined later based on the nature of the future industries that will be built in this EZ. Layout of industrial waste water collection network system is shown in **Figure 8-12**. Diameter wise industrial effluent network length is given in **Table 8-5.**

Table 8-5: Diameter Wise Industrial Effluent Network Length

SN	Diameter (mm)	Material	Length (km)
1	200	uPVC	3.84
2	300	uPVC	1.01
3	350	RCC	0.37
4	400	RCC	0.18
5	500	RCC	0.59
6	600	RCC	0.98
7	800	RCC	1.00
8	1000	RCC	0.10
Total			**8.08**

8.5.11 Discharge of STP and CETP

A combined discharge pipe of 5.91 km length (made of RCC) will carry the treated water of both STP and CETP. The diameter of this pipe is 1000 mm. This pipe will go between Netrokona-Mohonganj road and Netrokona-Mohonganj rail line. The combined discharge of the STP and CETP will fall into Dhonaikhali river near Thakurkona rail bridge as shown in **Figure 8-13**.

8.5.12 Integrated Waste Management Facilities (IWMF) including Waste Sorting and Material Recovery facility

Generated solid waste will be transported to Secondary Transfer Stations (STS) from individual plots. Location of STSs has been proposed in the plot of Integrated Waste Management Facility. The area of this site is about 1.83 acres. There will be four (04) Secondary Transfer Station (STS) in this integrated waste management facility (IWMF); among which one (01) will be used for residential zone and three (03) will be used for industrial zone. Sufficient nos. of dustbin should be placed along the road network and in public places (i.e. parks, playgrounds, etc.). A waste sorting facility will be constructed to process waste and recover material from industrial and municipal waste, including metals, glass, paper, textiles, and plastics, as well as domestic food waste, roads and building construction waste and electronic waste. Mechanical sorting technologies will be used to ensure effective and safe material recovery from industrial and municipal waste. The facility will screen, sort, shred, separate and store industrial and municipal solid waste to be recycled.

A layout plan of Integrated Waste Management Facilities (IWMF) site including STS has been provided in **Annex N** of **Volume 2**.

8.5.13 Sludge Management

When a liquid sludge is produced, further treatment may be required to make it suitable for final disposal. Typically, sludge is thickened (dewatered) to reduce the volumes for disposal. Near the settling tank, there is a sludge drying bed. Several possibilities regarding sludge destination can be proposed as:

- Use of sludge as land-filling material;
- Use of sludge as filling material for public works (road, pipe laying) provided that sludge contents in organic matter are acceptable;
- Use of sludge as material for brick manufacturing by incorporating sludge in clay;
- Use of sludge as material for agricultural soil improvement, providing that lime is added, and aluminium concentration is acceptable (aluminium is toxic for humans and plants);
- Evacuation of sludge to dumping site.

8.5.14 Fire Protection

For the fire protection system, a fire station and two fire trucks have been considered in case of fire incidence.

8.5.15 Administration/One-stop Service Building and Other Supporting Buildings

The administrative/One-Stop Service Buildings shall include the followings:

1. One-Stop Service Division (about 10 staffs)
2. Economic Zone Administration Division (about 30 staffs)
3. Security Office (10 staffs: 24 hours)
4. Presentation/Seminar Room (50 people can be accommodated)
5. Meeting Rooms (3 Rooms)
6. Custom House

In addition, a number of support services shall be provided from the establishment:

1. Banks
2. Insurance companies
3. Shopping mall/market
4. Restaurants
5. Residential hotel/Rest House

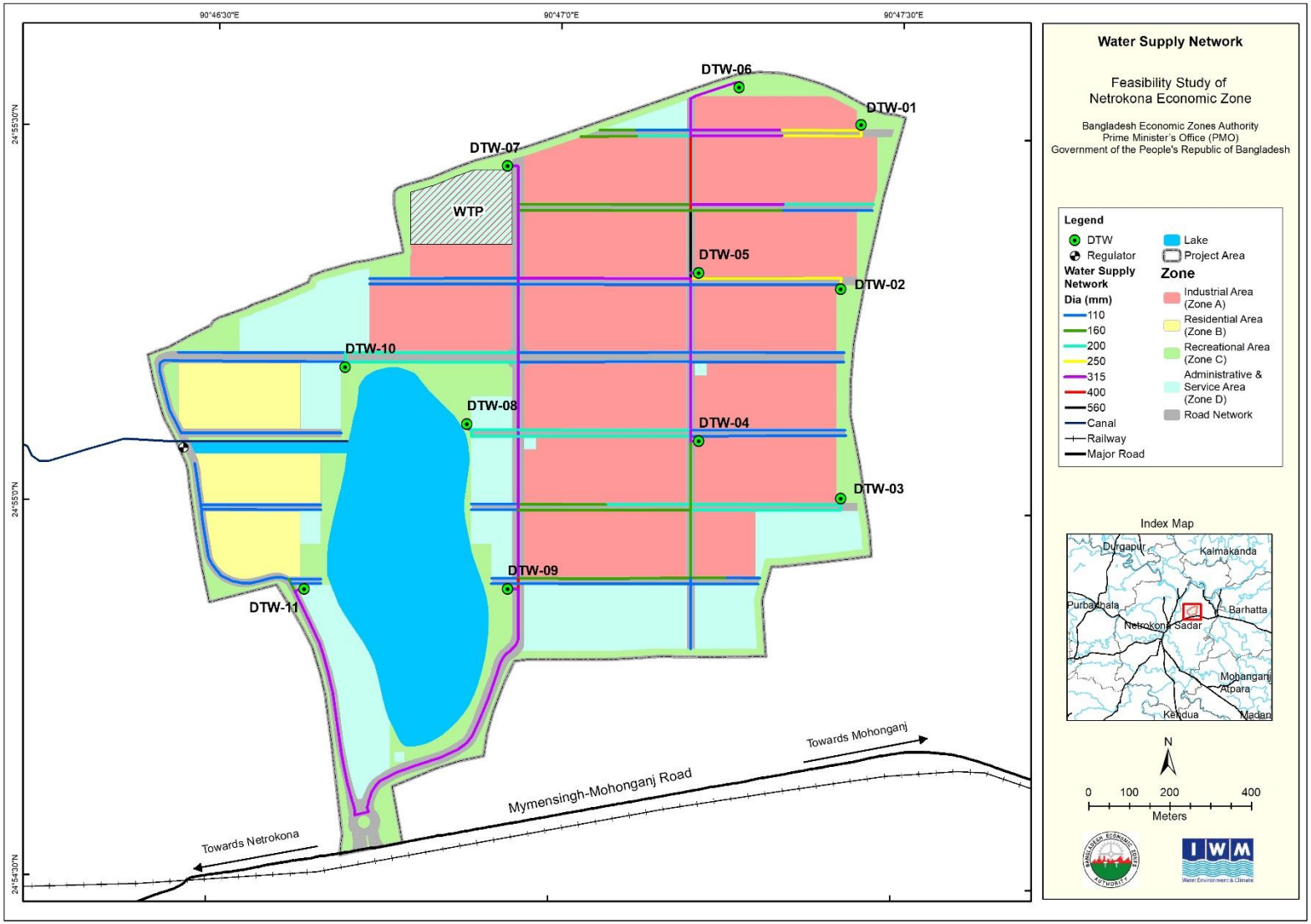


Figure 8-9: Water Supply System Map

Figure 8-10: Storm Water Drainage System Map

Figure 8-11: Domestic Wastewater/Sewage System Map

Figure 8-12: Effluent (Industrial Wastewater) Collection Network

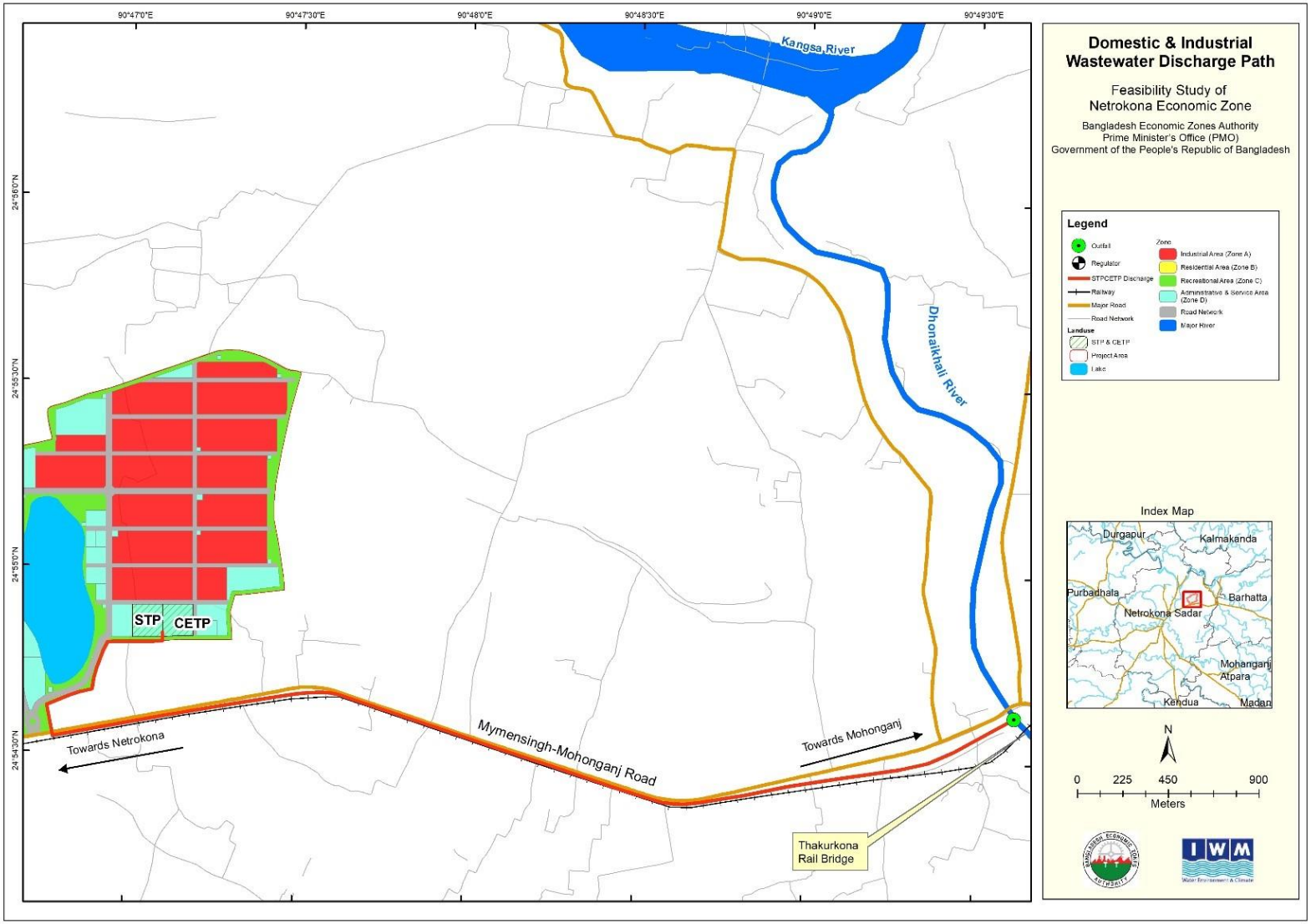


Figure 8-13: Domestic and Industrial Wastewater Discharge Path

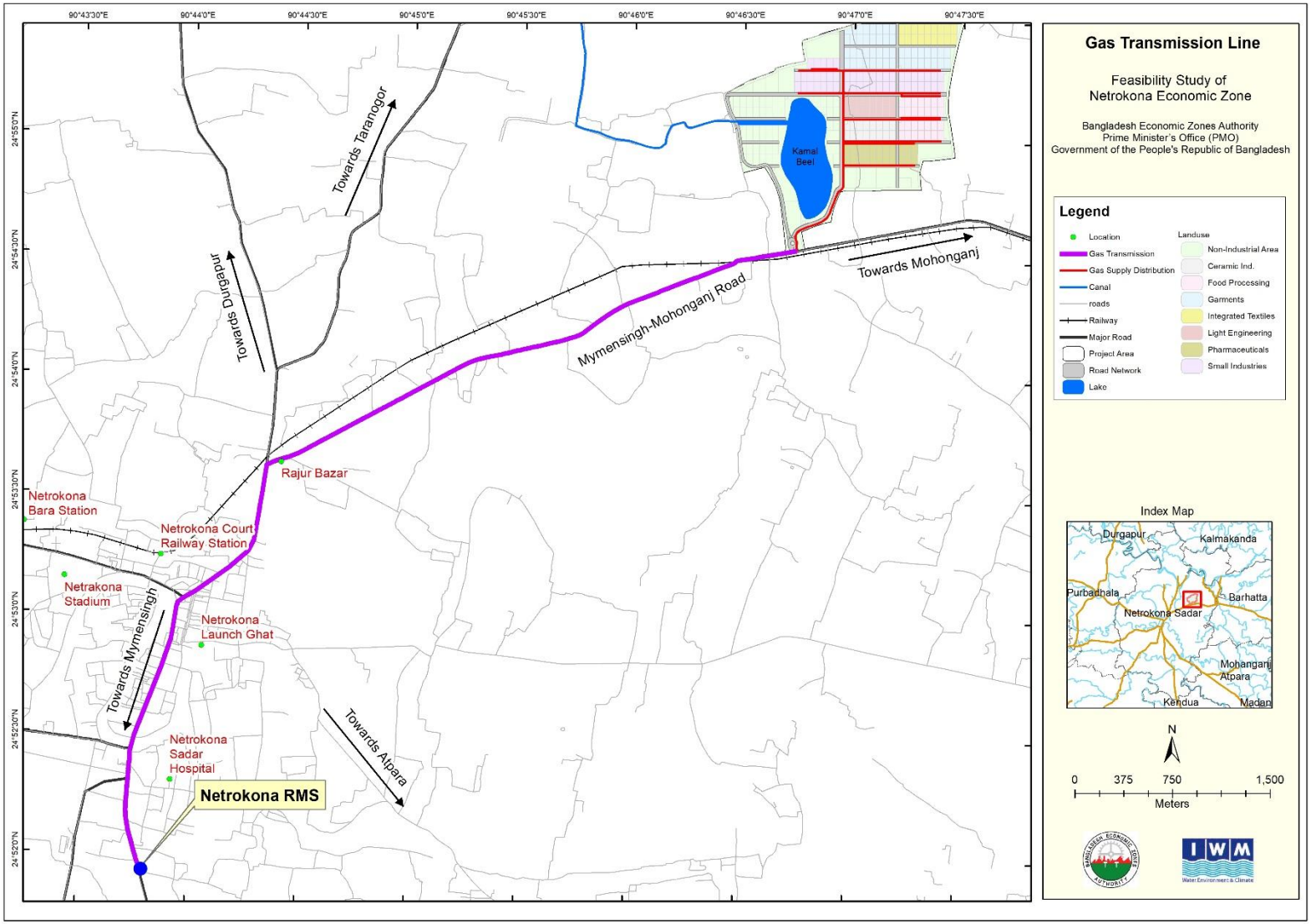


Figure 8-14: Gas Transmission Line to Proposed NEZ

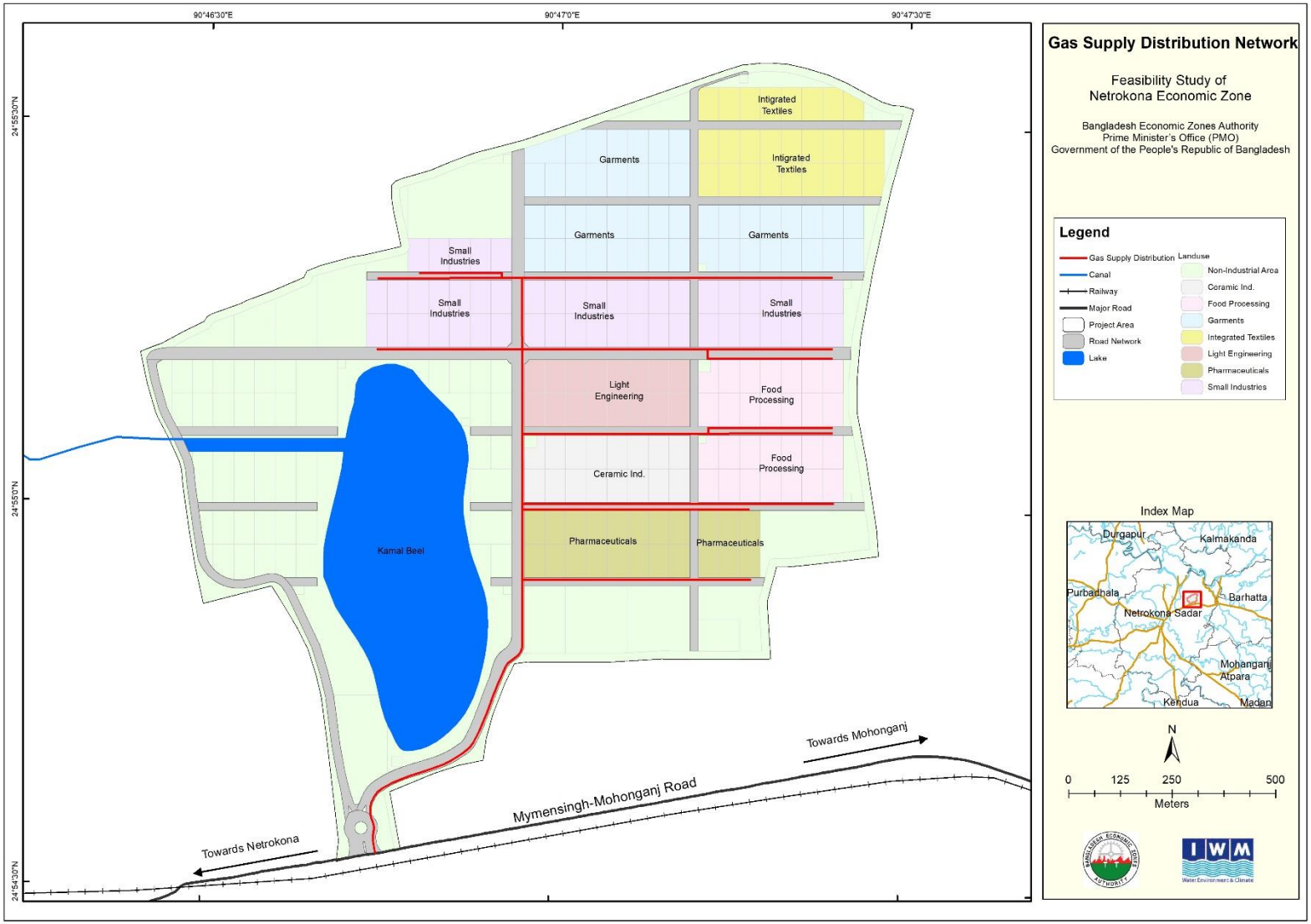


Figure 8-15: Gas Supply Distribution Network in NEZ

8.6 Off-site Infrastructure

To make the Netrokona Economic Zone more attractive to the investors and to make it more economically feasible and thus to enhance the socio-economic condition of the people in regional level, the following off-site infrastructures have been proposed. The proposed off-site infrastructures are presented in **Figure 8-17**.

1. Establishment of Railway Station in front of NEZ Gate.
2. Madhyanagar Bazar to Tahirpur link (approximately 19.3 km) should be established to connect Netrokona district with Sunamganj district. This new road link will also ensure connectivity between Mymensingh and Sylhet cities.
3. If the Netrokona-Tahirpur-Sunamganj-Sylhet highway is implemented, then the site will have access to two major international airports Dhaka Shahjalal International Airport (150km) and the Sylhet Osmani International Airport (146 km).
4. Mymensingh to Madhyanagar Bazar (approximately 90.5 km) via Netrokona Sadar and Mohonganj road is recommended to make as 4 lanes by RHD.
5. Tahirpur to Sylhet Osmani International Airport (Sylhet) road (approximately 100.8 km) via Sunamganj is recommended to make as 4 lanes by RHD.
6. Shaumvoganj (Mymensingh) to Bhairab Bazar road (approximately 130 km) via Ishwarganj, Nandail, Kishoreganj Sadar, Katiadi, Kuliar Char is recommended to make as 4 lanes by RHD. This road will provide Ashuganj River Port connectivity with proposed NEZ.
7. The proposed Netrokona city bypass road (from Challisa Bazar to Bangla Bazar) will lessen the extra traffic load from Netrokona city and will ensure better connectivity with Mymensingh city and Ashuganj River Port.
8. The proposed border road from Haluaghat to Sunamganj will also help to transport raw materials and finished goods to and from proposed NEZ.

These road networks will enhance the regional connectivity and eventually will connect NEZ and Netrokona with Asian Highway network. The increased connectivity will ensure improved socio-economic condition of the people of the locality and region at large.

8.6.1 Establishment of Railway Station in front of NEZ Gate

A railway station has been proposed to be established in front of proposed NEZ gate. This proposed railway station will facilitate loading and unloading of the raw materials and finished products. The platform of the railway station will be built in the space between of the existing road and railway. Layout of this proposed railway station has been provided in **Figure 8-18**. An elevation view of typical gantry crane has been provided in **Figure 8-19**.

8.6.2 Data Connectivity for NEZ

A robust infrastructure for high-speed internet connectivity is essential for ensuring the sustainable operation of the zone. On top of that, it is imperative to have connectivity from multiple operators to maintain high uptime and seamless service levels to the tenants. An operator with sufficient capability may provide network connectivity inside the zone and maintain clientele among tenants independently.

8.6.3 Dredging

There are several rivers and waterbodies nearby the EZ site, such as Kangsha River in the North, Mogra River in the West, Dhonakhali river in the East direction. These rivers can be dredged to increase the conveyance and the dredged materials can be used for landfilling in this EZ area. The required sand is recommended to be collected from Kangsha River. The sand will be transported to proposed NEZ through pipes with the use of appropriate mechanical arrangements. The recommended portion of Kangsha River which will be dredged is shown in **Figure 8-16**. The average distance from proposed NEZ to dredged portion of Kangsha river is about 3.4 km. A probable dredging route is shown in **Figure 8-16**.

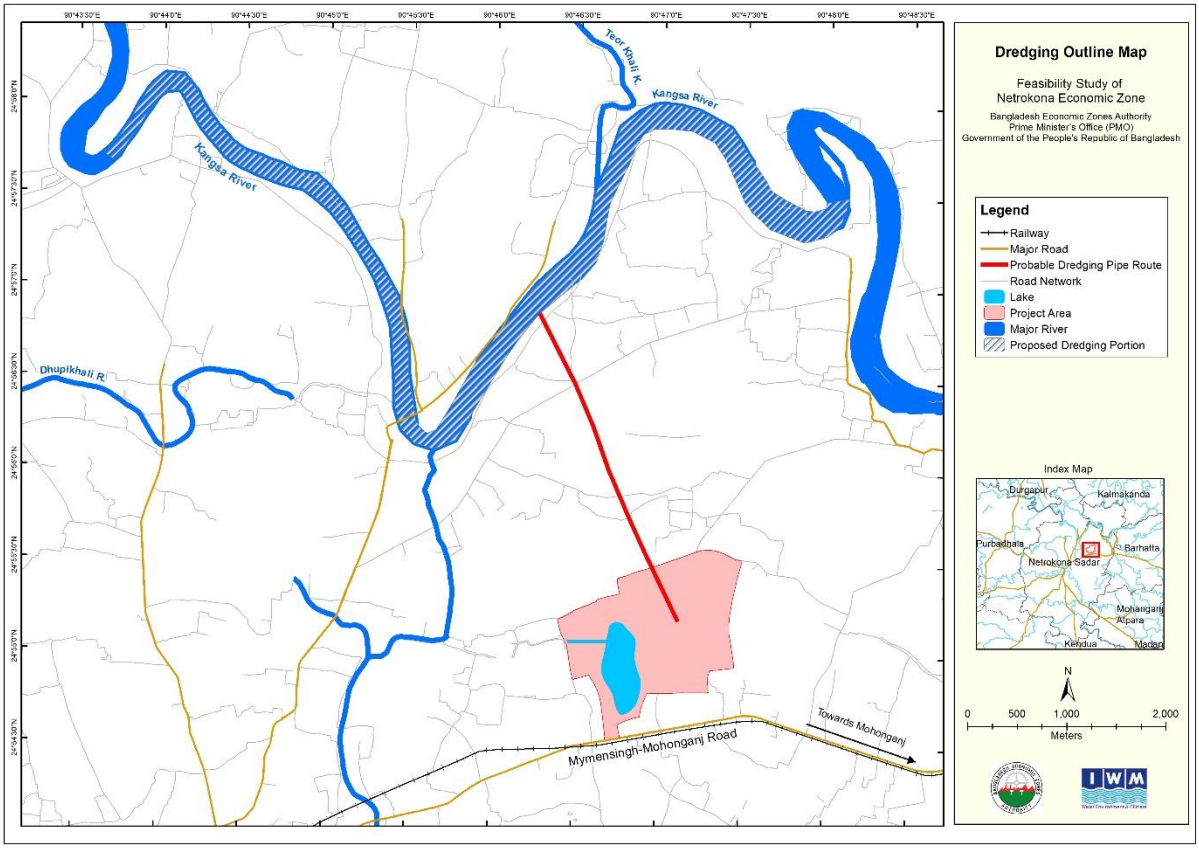


Figure 8-16: Dredging Outline Map

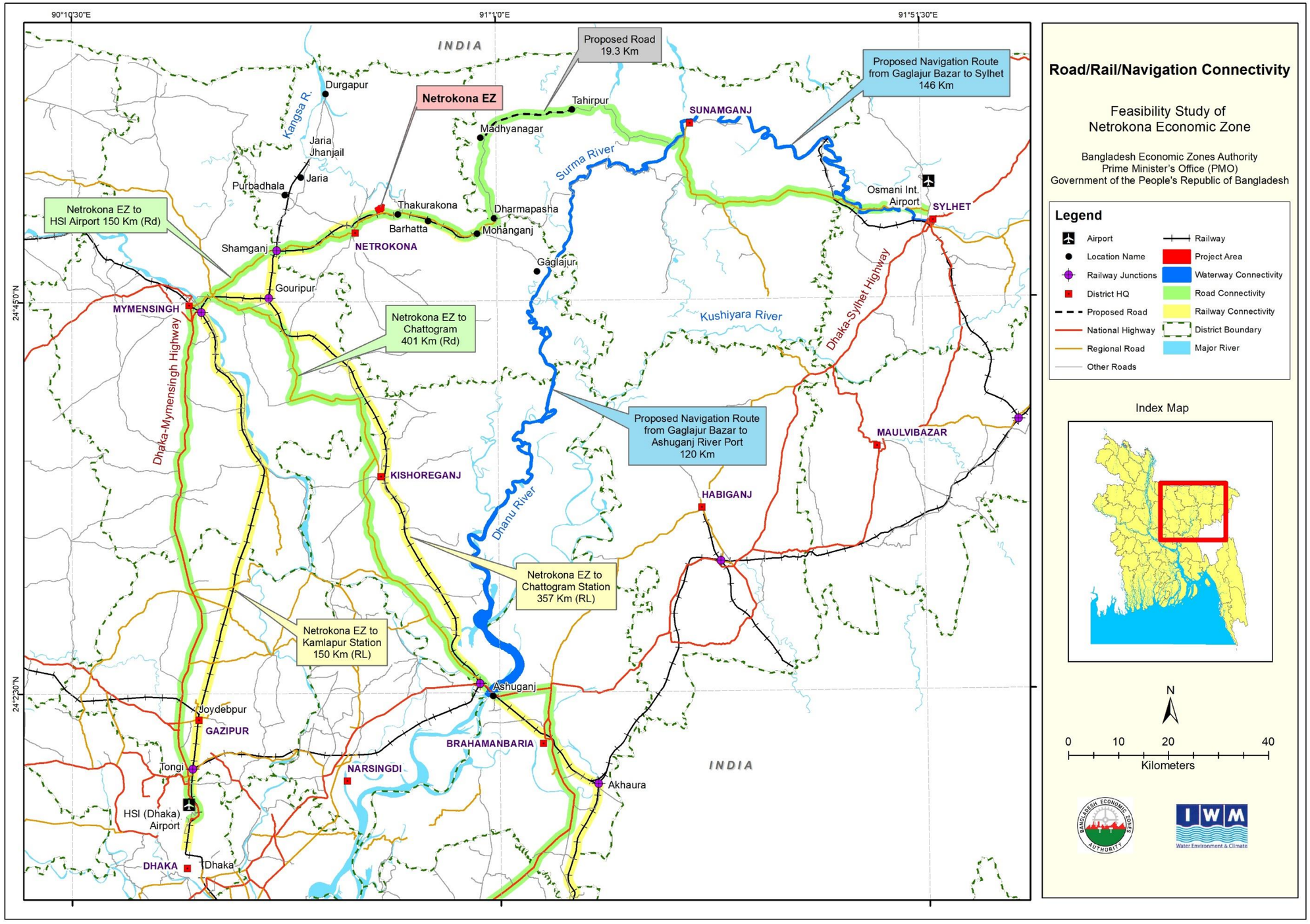


Figure 8-17: Road/ Rail/ Navigational connectivity

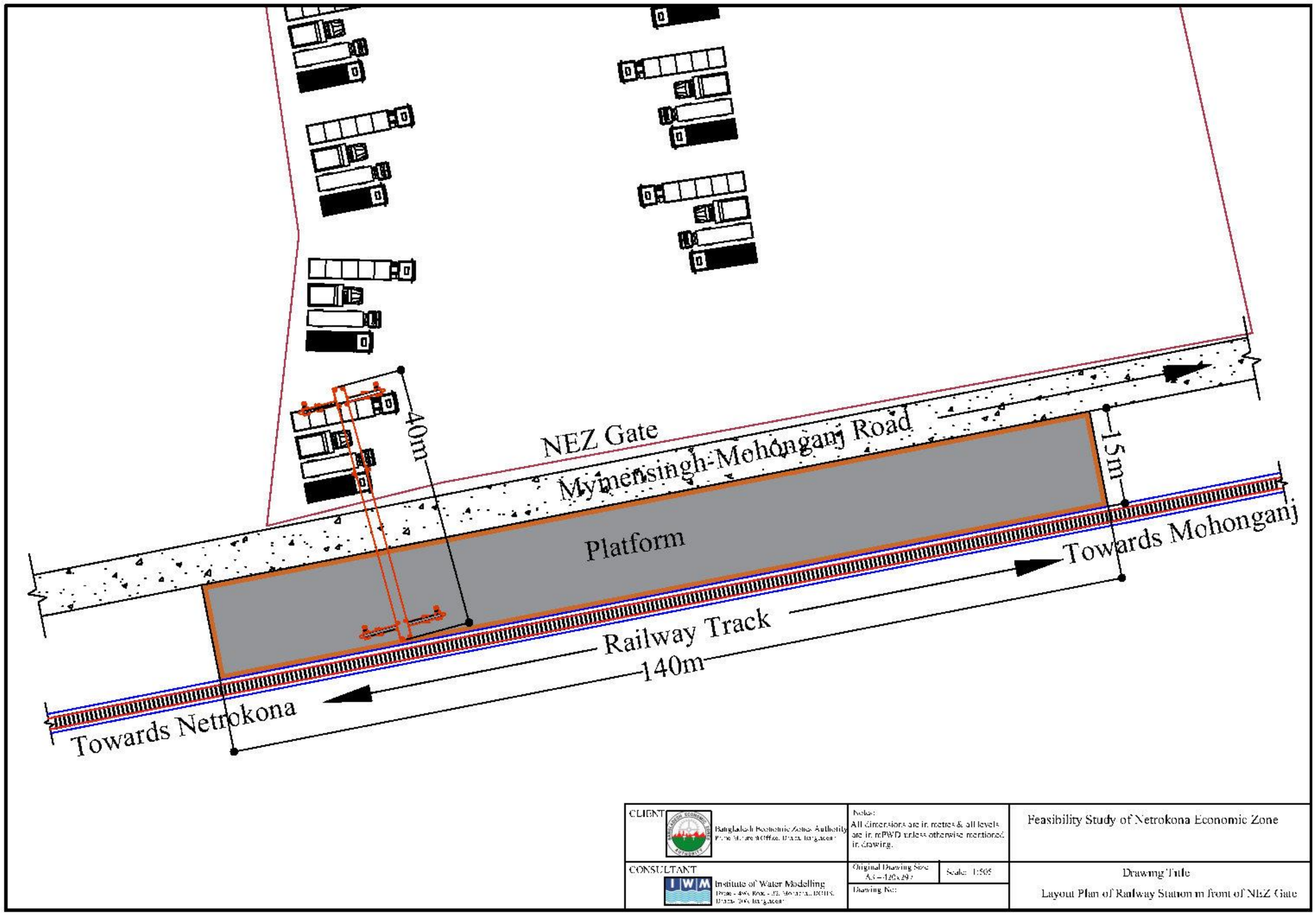


Figure 8-18: Layout Plan of Proposed Railway Station in front of NEZ Gate

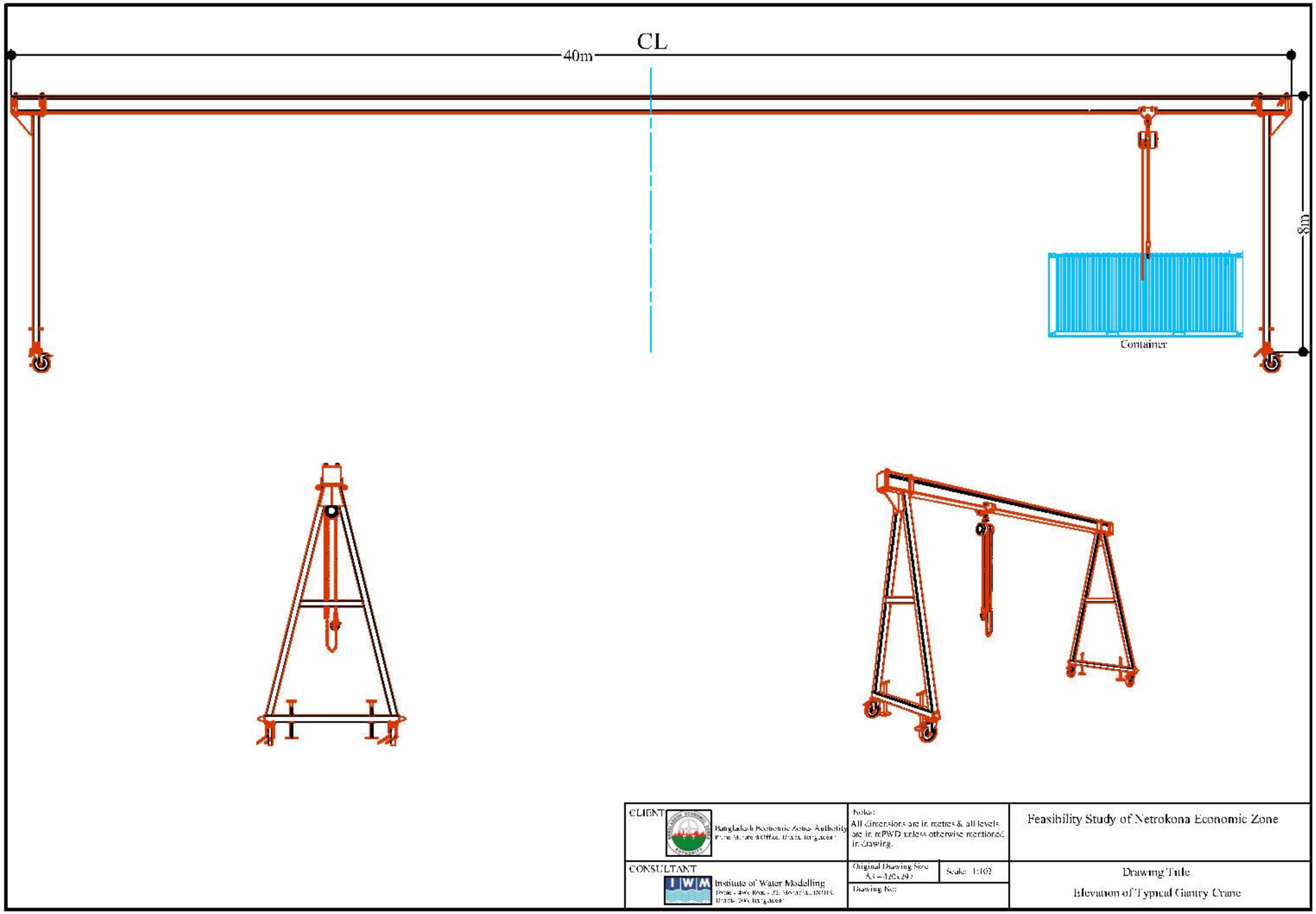


Figure 8-19: Elevation View of Typical Gantry Crane

Chapter 9: Financial and Economic Analysis

9 FINANCIAL AND ECONOMIC ANALYSIS

9.1 Estimated Cost Assessment

The estimated cost is BDT 14,959 million. Detail of the cost estimate has been presented in **Table 9-1**.

Table 9-1: Detailed cost estimate of Netrokona EZ

Sl. No.	Item	Unit	Quantity	Rate (BDT)	Amount (BDT in M)
1	**Land Development including Dredging, Boundary Wall, Landscaping and Slope Protection**				**1,959**
	1.1 Land Development including Dredging (Unit rate reference **Code No: 02.16.4.2** of Page 75 of PWD rate of schedule, 2018)	cum	7,142,833	195	1,393
	1.2 Boundary Wall	m	6,600	10,023	66
	1.3 Landscaping and Slope Protection	LS			500
2	**Land Cost**	Acres	500	7,103,025	**3,552**
3	**Off-site Infrastructure**				**840**
	3.1 Establishment of Railway Station in front of NEZ Gate	LS			800
	3.2 Optical Fiber Cable	LS			40
4	**On-site Infrastructure**				**3,317**
	4.1 Internal Roads (4 Lane)	km	3.66	112,274,948	411
	4.2 Internal Roads (2 Lane)	km	8.79	36,993,869	325
	4.3 Other Common Zone Facilities i.e. administration, rest house, fire station, club, logistics, helipad and religious facilities	LS			700
	4.4 Social Facilities i.e. playground, education, park, green and daycare etc.	LS			400
	4.5 Training Center	sqm	1,815	25,000	45
	4.6 Commercial Facilities	LS			616
	4.7 Lake and Canal Improvement including regulator	LS			820
5	**Business Component (utilities/others)**				**4,495**
	5.1 Water Supply & Sewerage System				709
	5.1.1 Water Supply Network incl. DTW	km	20.02		349
	5.1.2 Sewer Network incl. SLS & STP	km	28.29		361
	5.2 Drainage System	km	17.42		937
	5.3 Power Supply System incl. substation, onsite and offsite interventions	LS			850
	5.4 Gas Supply System including both onsite and offsite interventions	LS			750
	5.5 CETP incl. effluent & discharge pipeline, lift station	km	13.99		873
	5.7 IWMF (Integrated Waste Management Facilities)				376
6	**Project Preparatory Costs of the Sponsors**				**152**

Sl. No.	Item	Unit	Quantity	Rate (BDT)	Amount (BDT in M)
	6.1 Consultancy Fees for Design, Construction and Supervision	LS			48
	6.2 Off-site Infrastructure Consultancy Fees	LS			50
	6.3 Legal Support	LS			24
	6.4 Administrative & Marketing Promotions	LS			10
	6.5 Vehicle	LS			20
	Sub-total (1 to 6)				**14,315**
7	**Contingency (2% of sub-total)**				**286**
8	**Cost Escalation**	LS			**358**
	Total Cost (BDT in Million)				**14,959**

Note: For cost estimation latest rate schedules of PWD, RHD, LGED, DWASA and DNCC have been followed.

Detailed cost breakdown of this total cost has been provided in **Annex D** of **Volume II**.

9.2 Financial and Economic Analysis Method

The Financial and Economic Analysis of the Netrokona Economic Zone (NEZ) is carried out under several assumptions. It is assumed that the zone will begin its operation in 2023 with a limited scale (25%). The year 2021 will be used mostly for land acquisition while 2022-2023 to develop the zone and infrastructure needed to make the zone operational.

9.2.1 Phasing Plan for the EZ

It has been assumed that the zone will function in its full capacity by the year 2027 using the following growth rate. However, allocation of land to investors may begin prior to 2023. Investments are operational in 2023.

Table 9-2: Phasing Plan for the EZ

Year	% of Land functional with a secured investors
2023	25%
2024	38%
2025	56%
2026	84%
2027	100%

9.2.2 Other parameters used for the Financial and Economic Analysis

The analysis required a set of assumptions to be completed. These assumptions are based on several economic and financial parameters available and applicable for Bangladesh. These are shown in **Table 9-3.**

The exchange rate is taken as of January 1, 2019 for Bangladesh currency. Utility service charges are primarily assumed to be 15% and utility units will run by a third party based on

BOO basis. Utility services include a) water treatment plant, b) sewerage treatment plant, c) Substation/Captive power station. Gas supply is assumed to be given directly to the investors and EZ Authority is not responsible for this. Water distribution, drainage facilities, road networks are responsibility of the Zone authority and so there will be a Zone Service Charge applicable on all investors and it is assumed to be 15% of the land tariff charges. Land tariff charges is 1.80 USD and will payable in local currency using the current exchange rate.

Bangladesh Taka has depreciated its value by 2.9% per year over the period of 2017 and 2019 and it is assumed that it will continue doing so until it reaches 1USD=120BDT. Land price will escalate over time and it has been used to calculate the salvage value of the project at the end of its 25 years. The rate of escalation is assumed to be 25 times over this period. Finally, it has been assumed that investors will reinvest 20% of their capital value to refurbish their investments.

Table 9-3: Parameters used for Financial and Economic Analysis

Parameters used for the analysis		
Exchange rate	82.18	per USD
NEZ area in acres	500	acres
Electricity Demand	43	MW
Water demand	40	MLD
Utility service charge	15%	
Tariff escalation factor	5%	
Cost escalation factor	0%	
Rent per square meter (annual)	1.80	USD
Upfront payment of rent for 50 years of contract per m2	0.70	USD
Percent of Rent to be paid upfront for 50 years for other spaces	40%	
Power Tariff per kWh	9.50	BDT
Water & Sewage Charges per cum	24.74	BDT
Water & Sewage Charges per cum with VAT	28.45	BDT
Training space rental per cum per year	5,000	
Commercial space rental per cum per year	5,000	
Commercial and other space upfront rent per sqm	40%	
Zone Service Charge	15%	
Number of industrial plots	204	
Financial Discount Rate	12%	
Economic Discount Rate	12%	
Exchange rate depreciation	2.9%	
Land price escalation per year	1	time
Re-investment rate for capital imports	20%	
Initial investment target	10%	
Total area	2023430	sqm
Operating cost % of total cost (except land cost)	2%	

9.2.3 Benefits of the NEZ project

In terms of economic benefits of the project there are several benefits. These are listed below.

a. Benefits in terms of value addition to GDP – Economic zones are expected to contribute towards increasing GDP of the country. This is in terms of value addition to the economy. Using published study on China (since most of the investment are expected from China), we have calculated value addition per employment created in the economy. Value addition includes direct and indirect income generated in the economy due to investments in NEZ.

b. Foreign Exchange Reserve Benefits – additional foreign exchange accumulated in the economy due to FDI inflow into the zone, is also considered as an indirect benefit to the economy of Bangladesh.

c. Income earned by the Zone Authority – is a direct benefit of the project to the economy. This include a) rental income from the investors for use of the land inside NEZ, b) service charge paid to the Zone authority because of handling of utility services (except Gas), c) Net income from Central Effluent Treatment Plant, d) rental income from commercial and other service facilities inside the zone and e) zone service charges due to maintenance of the roads, and other utility services like roads, drainage, etc.

d. Increase in land value in Netrokona – this is an indirect benefit of the project and it will stimulate the Netrokona economy. As NEZ will begin functioning, land price surrounding the zone will increase due to increased economic activities. This indirect benefit is recognized in the study, but its value is not included since we found the Net Economic Benefit is already high enough to make the zone economically feasible.

9.2.4 Financial Analysis

The financial analysis of the zone does not include indirect benefits to the economy due to the project. Includes direct income to and expenditure of the Zone Authority. Financial analysis of individual investors is not part of this study.

The analysis covers

a. Revenue to the Zone authority from leasing of land to the investors
b. Service charges for handling of utility services by the zone authority
c. Facility service charges to the zone authority for maintenance of roads and drainage infrastructure.
d. Service charges from the management of CETP (outsourced to a third party)
e. Service charges from the management of Water and STP facilities (outsourced to 3rd party)
f. Service charges from users of ancillary facilities like commercial, conference facilities.

g. Costs of management of zone including investment and O&M

9.2.5 Sensitivity Analysis

Sensitivity Analysis Sheet: Sensitivity analysis will be used to test the robustness of the results to variation in key inputs and project parameters. Cash flow as well as financial indicators depend on the interplay of several factors including capital cost, O&M cost and revenue and charges it earns from different category of services. It will use to identify the values, if any, at which, preference for one option is switched to preference for another. Considering these variations of parameters, change of output /results will be found through this analysis.

Scenario Analysis Sheet: The model will incorporate different demand forecast scenarios. This sheet analyses the results of these scenarios in different combinations.

Netrokona Economic Zone Businesses: The Economic Zone Act 2010 provides the legal coverage for attracting and leveraging private investment towards development of zones as zone developers and operators. As such, the financial model of the economic zone incorporates government/BEZA led model. The option of investment the financial model considers broadly on two types of sub-businesses like: Core/Main Business & Component Businesses.

Land Lease: The EZ will lease out land to different industries and receive revenue.

Vocational Training Centre: One of the core businesses of the EZs is to provide training centre facilities, lease out spaces of training centre and receive revenue.

Commercial Facilities: One of the main services of an economic zone is to lease out commercial facilities/spaces and possessions to the different vendors, shop owners, banks etc.

Standard Factory Building: Standard factory building is a significant part of the business of an economic zone. It helps the entrepreneurs to start businesses on a first track basis with readily available factory space.

Water and Sewerage System: Water and sewerage services may be treated as a component business to determine the tariff rate for water and sewerage services to be charged to the industries. The EZ will have deep tube wells, water treatment plant for providing these services. The EZ will also lay water and sewerage pipes and pumps, and also be responsible for operation and maintenance of the water and sewerage system.

Power: The Economic Zone is responsible for providing power connections to industrial enterprises to be located within the zone. Therefore, the EZ has to either build its own power generation plant or enter into an agreement with a third party to construct a power plant and supply power to the zone inside tenants/industries. Tariff (Tk/kWh) will be charged to the industries for the electricity supplied.

CETP: Central Effluent Treatment may be treated as a component project to determine the tariff rate to be charged to the industries for providing effluent treatment services. The tariff

will be charged based on the amount of effluent treatment (Taka/m3) to the industries. The tariff of CETP system is based on the rates of CETP at CEPZ.

Term/Business Period: The business period over which the EZ would receive a profitable return on his investment is very important. However, this would depend on the following factors:

1. sources of capital and its repayment terms;
2. economic life of major depreciable assets;
3. revenue earnings;
4. capability of the tenants/ buyers to pay the cost; and
5. phasing of the zone's infrastructure.

Capital Cost: Capital costs is comprised cost of land development, land filling, external/ off-site infrastructure, which include connectivity infrastructure like road, gas or power. The social infrastructure ensures proper living conditions of the people inside the zone, which includes administrative buildings, a mosque, a vocational training centre and commercial facilities. These are the part of capital cost but some of the social infrastructure like the mosque, etc. will not generate direct revenue. The capital cost also includes the commercial facilities like shops, restaurants, banks, etc. are essential for day-to-day life of the tenants inside the Zone.

Demand Forecast: The model will be used to assess the viability of developing the economic zone using three different demand forecast scenarios.

Investment Trends: The demand forecast considers new company formation trends and viability of existing business enterprises as a way to establish a baseline upon which the demand estimations are based.

Relocation Trends: The zone will be heavily marketed to attract companies wishing to relocate from city. As such, consultants explored these firms' stated willingness—and actual proclivity—to locate or relocate, external pressures to move, and analysed the types of firms that would actually move.

Uptake Rates in Bangladesh*:* The demand forecast reviewed actual land uptake rates of other economic zones in Bangladesh in support of high demand for serviced industrial space. For each scenario, the financial analysis indicates the internal rate of return (IRR) of the project and allows for sensitivity analysis on costs and other factors to see their effect on the IRR.

Identification of Revenues and Expenses: Revenues: The Economic Zone is expected to earn revenue from a number of sources. The financial model considered the following sources.

Depreciation: Depreciation is a non-cash expense. Though it does not directly influence cash flow, it influences tax obligations from income of the business, by offering tax savings adding to depreciation. Depreciation like interest is a tax-deductible item considered by the tax authorities.

***Basis of Depreciation**:* The Income Tax Ordinance, 1984 allows deduction of depreciation of assets from the income of the particular year to determine the taxable income for that period.

Operating Expenses: Each of the facilities developed and constructed by the Economic zone has operational costs, which include salary and allowances of employees, maintenance costs, and utilities costs. In addition, the cost of fuel used in the power plant is also an operational cost. Maintenance costs associated with training centre and commercial facilities are based on the amount of revenue generated from each item. The O&M cost will be higher if the buildings are in full capacity and lower if not all leasable spaces are taken up.

Return from the Project: The internal rate of return (IRR) on a project is the annualized effective compounded return rate or discount rate that makes the net present value of all cash flows from the project equal to zero. Internal rates of return give an indication on the desirability of investments or projects. The higher a project's IRR, the more desirable it is to undertake the project. Amongst other factors, returns depend upon tariff rates. The following tariff rates have been assumed:

Net Present Value (NPV): NPV will be calculated using the cost of capital/hurdle rate of 9%. The computation shows the NPV in Government led model which should be positively indicate the project positive viability.

Sensitivity Analysis: Various factors affect the equity IRR of the project. In order to understand the importance of each factor in determining the viability of the project, it is important to carry out a sensitivity analysis. The factors those will analyse to examine the impact on the internal rate of return are: Capital Cost; O&M Cost & Lease rate.

9.3 Financial and Economic Analysis

9.3.1 Model 1– BEZA Model

We have examined two types of model for establishment of Netrokona Economic Zone. The first model is called BEZA MODEL – in which BEZA develops the zone along with the support from different agencies such as Gas supply, Railway, PDB, etc. The zone is managed by BEZA using a ‘one window’ service centre.

BEZA will coordinate delivery of the following services:

a. Gas supply
b. Water supply
c. Power supply
d. Sewage service
e. Railway connectivity to the zone
f. Road networks
g. Development of training and conference facilities

The services are, however, delivered by the respective agencies.

Table 9-4 provides the summary of the Financial and Economic Analysis of the Netrokona Economic Zone. It shows that the total cost of the project is 14.9 billion BDT while total revenue of the project over the 25 years is 126.8 billion BDT. However, since the costs and benefit flows do not occur at the same time, we used discount rates to bring them into present value with a discount rate of 12%.

Using 12% as the discount rate, the financial analysis shows that the project has a positive Net Present Value with Financial IRR as 12.7% and a Benefit Cost Ratio 1.09.

On the other hand, economic analysis measures the value of the project to the economy of Bangladesh and it shows that the NPV is positive, BCR > 1 and EIRR is 43.5%. This means that the project is also economic feasible.

Table 9-4: Summary of Financial and Economic Analysis

Total investment by the Zone	**14,959**	**BDT m**
Total Revenue over 25 years	126,867.05	BDT m
Total Maintenance cost over 25 years	3,854.43	
	Financial	**Economic**
Discount rate	12%	12%
Net Present Value	1,098.19	66,577.09
Benefit to Cost ratio	1.09	6.50
Internal Rate of Return	12.7%	43.5%

Sensitivity Analysis of BEZA Model (Model-1)

To understand the robustness of the financial and economic analysis, we have used a range of values against each of the assumptions used. **Table 9-5** presents the result. It shows that our findings are not sensitive to most of the assumptions except the tariff charges on land. We have used 1.80 USD (2019) as land lease charge per square meter. Our analysis further shows that if BEZA receives its investment fund at an interest rate below 9.2%, the project will become financially feasible.

Table 9-5: Sensitivity Analysis Results

Sensitivity Analysis		**FIRR**	**FNPV**	**FBCR**	**EIRR**	**ENPV**	**EBCR**
Utility service charge	15%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	5%	12%	483.70	1.04	43.4%	65,962.60	6.45
	10%	13%	790.94	1.07	43.5%	66,269.84	6.48

Sensitivity Analysis		FIRR	FNPV	FBCR	EIRR	ENPV	EBCR
	15%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	30%	13%	2019.92	1.17	43.8%	67,498.82	6.58
Tariff escalation rate	5%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	0%	12%	506.73	1.04	43.4%	65,985.63	6.45
	5%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	10%	13%	2257.79	1.19	43.7%	67,736.69	6.60
	15%	15%	4595.52	1.38	43.9%	70,074.42	6.79
Cost escalation factor	0%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	1%	13%	906.72	1.07	43.3%	66,385.29	6.40
	2%	12%	711.16	1.06	43.0%	66,189.38	6.30
	3%	12%	510.51	1.04	42.8%	65,988.40	6.20
	5%	12%	93.44	1.01	42.3%	65,570.63	6.00
Land tariff charges	1.8	13%	1098.19	1.09	43.5%	66,577.09	6.50
	1.1	12%	4.37	1.00	43.3%	65,483.28	6.41
	1.25	12%	238.76	1.02	43.4%	65,717.66	6.43
	1.5	12%	629.41	1.05	43.4%	66,108.31	6.46
	2.5	13%	2192.00	1.18	43.8%	67,670.90	6.59
Zone Service charge	15%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	5%	13%	750.53	1.06	43.5%	66,229.43	6.47
	10%	13%	924.36	1.08	43.5%	66,403.26	6.49
	15%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	20%	13%	1272.02	1.11	43.6%	66,750.92	6.52
Re-investment target	20%	13%	1098.19	1.09	43.5%	66,577.09	6.50
	25%	13%	1098.19	1.09	47.7%	82,425.19	7.81

Sensitivity Analysis		FIRR	FNPV	FBCR	EIRR	ENPV	EBCR
	30%	13%	1098.19	1.09	51.5%	98,273.30	9.12
	50%	13%	1098.19	1.09	63.5%	161,665.71	14.36

9.3.2 Model 2 – PPP Model

Under this model, Private Parties could be invited to develop the NEZ after initial acquisition of land and set up of boundaries by BEZA. The model will ensure that BEZA will share nearly 44% of the cost of development and the rest is invested by a PPP operator (50%) and Bangladesh Railway (6%). Bangladesh Railway will receive tariff on all goods and services provided to the NEZ during the project period, PPP operator will fetch 75% of the total revenue. Under this situation, BEZA's investment will have an FIRR of 13.56% while PPP operator's FIRR will be 3.72% against their investments respectively. Under this situation, PPP model is unlikely to be successful unless shares of revenue for PPP operator increases significantly.

The summary of sharing is shown in the following **Table 9-6.** The table shows that of the 14.9 billion Taka investment, 7.59 billion BDT will have to be invested by the PPP operator, 6% (or 836 million BDT) by the Bangladesh Railway to connect the NEZ from the Netrokona Railway Station. BEZA will have to invest 6.7 billion BDT (or 44% of the cost) for this project. The return to the Bangladesh Railway will be in terms of increased volume of goods traffic from the zone and assuming that Bangladesh Railway do not subsidize its cargo movement, this part shall be financially feasible. On the other hand, if BEZA receives 47% of the shares in revenue, it will have a financial IRR of 13.56%. However, PPP operator's financial IRR is only 3.72% and so it is not going to be a feasible proposition to build this under PPP model.

Table 9-6: Sharing of Cost and Revenue

	Description	BEZA	Shares under PPP model			
			PPP	BEZA	3rd party	Total
A	Cost for BEZA Model (m BDT)	14,959				14,959
B	Cost for PPP model (m BDT)		7,640	6,661	836	15,138
	Break-down of costs					
1	Land Development including Dredging, Boundary Wall, Land Scaping and Slope Protection	1,959		1,959		1,959
2	Land Cost	3,552		3,552		3,552
3	Off-site Infrastructure	840	40		800	840
4	On-site Infrastructure	3,317	3,317			3,317

	Description	BEZA	Shares under PPP model			
			PPP	BEZA	3rd party	Total
5	Business Component (utilities/others)	4,495	3,786	709		4,495
6	Project Preparatory Costs of the Sponsors	152		152		152
7	Contingency (2% of sub-total)	286	142	128	16	286
8	Cost Escalation	358	177	161	20	358
9	Upfront Fee by PPP operator		178			178
C	**Total**	**14,959**	**7,640**	**6,661**	**836**	**15,138**
D	**Cost shares**		50%	44%	6%	100%
E	**Revenue shares**		53%	47%		100%
F	IRR (Financial)	12.7%	3.72%	13.56%		
G	IRR (Economic)	43.5%		43.5%		
H	NPV (Financial)	1098.19	-3961.10	1,722.34		
I	NPV (Economic)	66,577.09				

The economic IRR will not change as it is based on overall economic impact of the project and not on the basis of who operates it. This means, Economic IRR is still 43.5% from BEZA's point of view. Detail breakdown of Financial and Economic Analysis is given as **Annex E of Volume II**.

9.4 Conclusion of Financial and Economic Analysis

The financial and economic analysis of investments are usually done to determine whether the investment is financially and economically feasible. For public investment projects, the crucial determinant is Economic Analysis because the economy benefits from the indirect benefits accrued to the economy and so it justifies public investment. For a private investment point of view, it is only the financial analysis of the project that is relevant for decision making.

Netrokona Economic Zone is a public investment venture and its primary objective is to stimulate the economy of Bangladesh and in particular to ensure that every corner of Bangladesh, in this case Netrokona District, gets economic boost from the investment. As such, the project must be economically feasible. It is expected to create 100,000 jobs directly in the zone.

We suggest the following approach to management of the Netrokona Economic Zone.

Analysis shows the following.

a. The project is economically feasible with EIRR 43.5% under its current assumptions.
b. The project is financially feasible under both models and BEZA will have minimum of FIRR of 12.7%.

We, therefore, recommend the following

1. *The Netrokona Economic Zone be developed by BEZA who will need to invest a total of 14.9 billion taka. The project will have a positive economic impact and its Economic IRR is 43.5%.*
2. *If the project is initiated for PPP, the PPP investor will have to bear 55% of the total cost of the project and even if they receive 53% of the total revenue against their investment, financial IRR for them is only 3.72%. As such, it is not feasible (financially) for PPP investor.*
3. *Sensitivity analysis have been on several parameters assumed in the model. These are summarized below (under BEZA model)*
    a. *Even if the utility service charge is around 5%, the project still remains financially feasible.*
    b. *The analysis assumed 5% tariff escalation factor per year over the period of the project, the sensitivity analysis shows that even at no increase in tariff the project is financially feasible.*
    c. *The cost of escalation factor was 0% in the analysis. Sensitivity analysis shows up to 5% rise in cost it is still feasible.*
    d. *Zone service charge is assumed as 15% for operating the one stop centres by BEZA. However, even if it is 0%, the project is feasible.*
4. *The project needs to be completed on time and it needs to plan to have investments in its plots by 2027.*

Chapter 10: Environmental and Social Review

10 ENVIRONMENTAL AND SOCIAL REVIEW

10.1 Introduction

Bangladesh Economic Zones Authority (BEZA) has been emerged by the Bangladesh Economic Zones Act, 2010, the Bangladesh Economic Zones Authority (BEZA) was officially instituted by the government on 9 November 2010. BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and exports.

Bangladesh Economic Zones Authority (BEZA) is the overall agency responsible for establishment of EZs in all the potential areas including the backward and undeveloped regions. BEZA has identified various locations for development of EZs. One of the proposed sites is located at Netrokona Upazila and selected land area is approximately 500 acres. As a part of prefeasibility study this environmental review report is prepared.

10.2 Objective

The overall objectives of the environmental study of the proposed project were

- To identify potential significant environmental and social impacts to implement the project,
- To identify if there is any environmentally critical area, protected area of forest department or any other protected area within project impact boundary
- To review on baseline condition of environment
- To identify possible environmental impacts resulting from the proposed project activities and to suggest an outline of mitigation measures.
- To carry out public consultations in order to get views and concerns of local people and peoples' representatives regarding different socio-economic aspects of the proposed project.

10.3 Methodology

The study is based on both primary and secondary data and the opinions of the people around. The primary data includes the data collected directly from the field and field survey while the secondary data includes review of the Bangladesh statistical data and relevant information from different Government Departments. The public opinions came from the discussions held with different community representatives and local people.

10.4 Project Location

Proposed project site is located in between 24°54'39.08"N & 24°55'32.21"N latitude and in between 90°46'41.60"E & 90°47'22.89"E longitudes (**Figure 10-1**). And total proposed land for the project is 500 acres under Shingher Bangla and Thakurakona Union (within Netrokona Sadar Upazila). Proposed area is just beside the Netrokona-Mahanganj road.

Figure 10-1: Proposed Netrokona Economic Zone Location on Google map

10.5 Environmental and Social Baseline

The environmental and social baseline is the existing status of environment and society around the proposed area. It has been analysed through assessment of environmental components like air, water, land, noise, soil, etc. and environmental characteristics like physical, physico-chemical, biological and socio-economic status of the study area within the 10 km radial zone of the project site. Physical environment includes important physical structures, topography, land, soil. Physico-Chemical environment includes meteorology, air, water, noise, etc. and the biological environment includes flora and fauna. Socio-economic environment of the study area includes demography, ethnicity, religion, education and employment opportunity, occupation, income, poverty, social relations, etc. Baseline environmental conditions are based on the data collected from various related agencies and the secondary documents from published sources and websites. The baseline provides the basis for assessment of impact (potential changes in the baseline conditions) due to the development of proposed Netrokona Economic Zone. The site is located at Netrokona Sadar Upazila of Netrokona District.

10.5.1 Physical Environment

10.5.1.1 Access Road

The site is approximately 9.2 km away from the Mymensingh -Netrokona Highway and just beside the Netrokona-Mahanganj road (**Figure 10-2**). There is approximately 3 m width BC road within the proposed project area, it is also entrance road of Borni village. Proposed area is 50 km away from Dhaka - Mymensingh Highway (Shambhuganj bridge point). The subproject land level is 2 m down from the road height.

Figure 10-2: Netrokona-Mohonganj Road (Front side road of proposed area)

10.5.1.2 Topography

Netrokona Sadar Upazila is a land of mixed topography. The core area is slightly elevated than the surrounding fringe low-lying agricultural lands and free from annual normal floods. The Mogra River a tributary of the Meghna River flows through and around the Pourashava in the eastern direction in a zigzag way providing a well outfall for the drainage system for the Pourashava. In 1990 the flood level reached the average ground level causing shallow flooding. There are large number of ponds, beels and low-lying agricultural lands in and around the Pourashava that act as retention basin which serve to delay and reduce the peak floods annually. The north of the district is high having international boundary with Meghalaya of India and located at the foot of the Garo hills. The eastern part of the district is low and forms the 'haor' areas along with the adjacent Sunamganj and Kishoreganj districts

10.5.1.3 Detail Environmental and Infrastructural Features

Land of the area is approximately 2 m (average) down from the area side road. Netrokona is Hoar area and most of the area (**Figure 10-3**) goes under water during rainy season. During dry season the area is used for paddy cultivation. There is a natural drainage canal inside the proposed area, which is connected with Kangsha River. But most of the canal area is filled up with sedimentation. Most of the houses around the area are of tin shade & semi pucca structure. Rail line is 300 m far from the proposed area boundary. There are some sawmills and shops on both sides of the subproject adjacent road. Proposed Sheikh Hasina University area is just 2.5 km away (at south) from the project boundary. Main rivers of Netrokona are Kangsha, Teorkhali, Dhupikhali, Laori, Mogra. Boalia Beel, Hatli Beel, Megha Beel are also notable.

Figure 10-3: Present condition the proposed EZ site

Table 10-1: List of several significant places in and around the subproject area with distance

Name of the Feature	Distance form Proposed site (km)
Netrokona DC office	7.5 km
Netrokona Sadar Upazila Complex	7.5 km
Netrokona High Court	7.5 km
Proposed Location of Sheikh Hasina University	2.5 km
Dhonaikhali Bridge	4.35 km
Dhonai River (North-East)	2.65 km
Netrokona District Stadium	6.3 km
Magra River (South West)	5 km
Mogra Bridge	6.64 km
Netrokona Railway Station	5.4 km
Netrokona Government College	6.345
Netrokona Bus Stop	7.8 km
Netrokona LGED Bhaban	7.5 km
Kangsa River (North)	2.24 km
Rail Line	0.3 km
Boalia Beel	8.5 km
Megha Beel	4.8 km
Thakurakona Railway Station	3.7 km

10.5.2 Physico-Chemical Environment

10.5.2.1 Climate

Bangladesh is located at the central part within the Asiatic monsoon region where the climate is tropical. Relatively small size of the country and generally low-lying area cause moderate spatial variation of temperature, precipitation, relative humidity, wind speeds and other climatic variables. However, the climate of Bangladesh exhibits pronounced temporal variability. This is because of the moisture-laden monsoon winds flowing predominantly from the south-west during summer and the comparatively dry and colder north-western winds during winter.

Three seasons are generally recognized: a hot, muggy summer from March to June; a hot, humid and rainy monsoon season from June to November during which more than 85% of the total annual rainfall occurs; and a moderately cold, dry winter from December to February. The beginning of the rainy season varies from year to year; heavy rains may commence anywhere between mid-April and early June and may end anywhere between the end of September and mid-November. Usually winter season is dry with occasional rains. The early summer season is considered from March-April. During summer, the air becomes hot with very low humidity. Early summer is also dominated by Baishakhi cyclone and rains. Average annual climate data of Netrokona are shown in **Table 10-2**.

Table 10-2: Average Annual Climate Data of the Netrokona District (Year 2017)

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	18.4	20.9	24.9	27.6	27.8	27.9	28.3	28.5	28.2	26.9	23.4	19.9
Min. Temperature (°C)	12	14.1	18.4	22.2	23.7	24.9	25.6	25.7	25.3	23.2	18.2	13.8
Max. Temperature (°C)	24.9	27.7	31.5	33	31.9	31	31.1	31.3	31.2	30.7	28.6	26
Precipitation/Rainfall (mm)	12	17	62	152	356	562	489	440	330	187	21	2
Humidity %	45	44	58	74	71	82	83	76	75	77	67	64
Avg. Wind speed (Kmph)	10.7	10	11.4	14.7	11.5	13.8	16	11.7	11.2	10.5	8.2	6.9

Source: Bangladesh Meteorological Department

Precipitation

The general pattern of precipitation (which consists entirely of rain) follows the monsoon pattern with the cooler, drier months of November to March, increasing rains in April and May, and highest rainfall in the summer months of May to September when the prevailing wind direction from the southwest brings moisture-laden air from the Bay of Bengal. The winter period (November to February) is dry with very little rainfall. Even though the temporal pattern of rainfall is pretty much similar throughout the country, there is pronounced spatial variation of rainfall over the country with the north-eastern and south-eastern part of the country receiving relatively higher amount of rainfall compared to the western part. The project area

receives around 2630 mm rainfall annually, which is lower than the average annual rainfall of the country (i.e. 2400 mm).

Relative Humidity

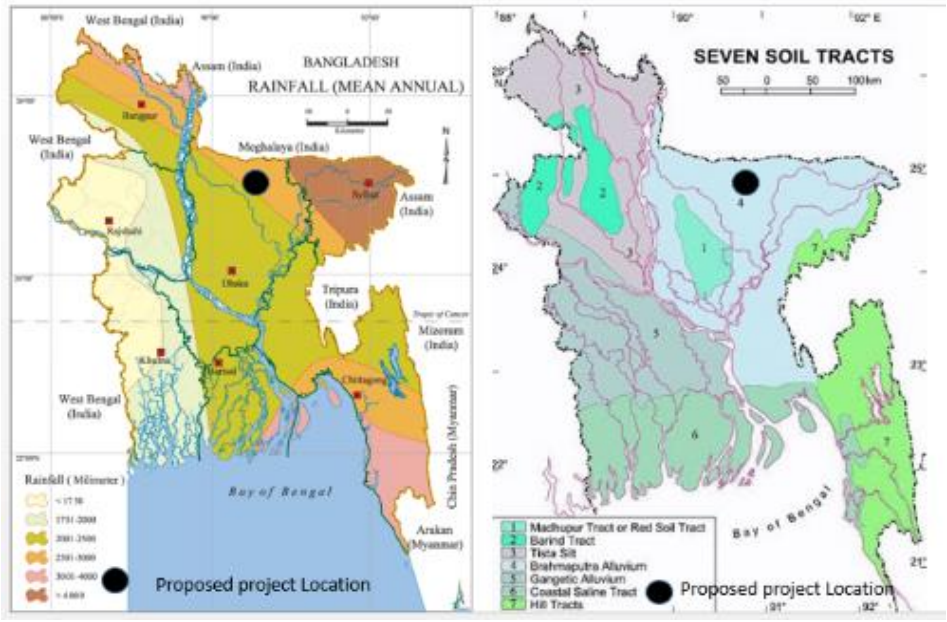
The spatial and temporal variation of Relative Humidity throughout the year is very low in Bangladesh. In the project area, the relative humidity varies from 45% to 83%.

Ambient Air Temperature

The temperature of the country is related to the period of rainfall. In general, cool seasons coincide with the period of lowest rainfall. Table 1.2 shows the monthly average mean, maximum and minimum temperature of the study area. Maximum average temperature over the year is usually observed in April - September and minimum average temperature in January.

Wind Speed and Direction

Wind direction from October to February is the calm condition followed by wind speed of 6.9 Kmph to 10.7 Kmph. In the rest of the months, the predominant wind speed is 11.2 to 16 Kmph. This indicates the weather conditions are favourable for the dispersion of the pollutants released in the air. The monthly wind trend: NE and NW wind prevail in November to February; wind flows multi-directional in March and October; the predominant wind direction is south followed by SE and SW in April; in May the wind direction is south and SE, the predominant wind direction is SE followed by south in June to September.



(a) (b)

Figure 10-4: The location of proposed project on annual rainfall and soil tracts map

10.5.2.2 Geology, Soils and Seismicity Geology

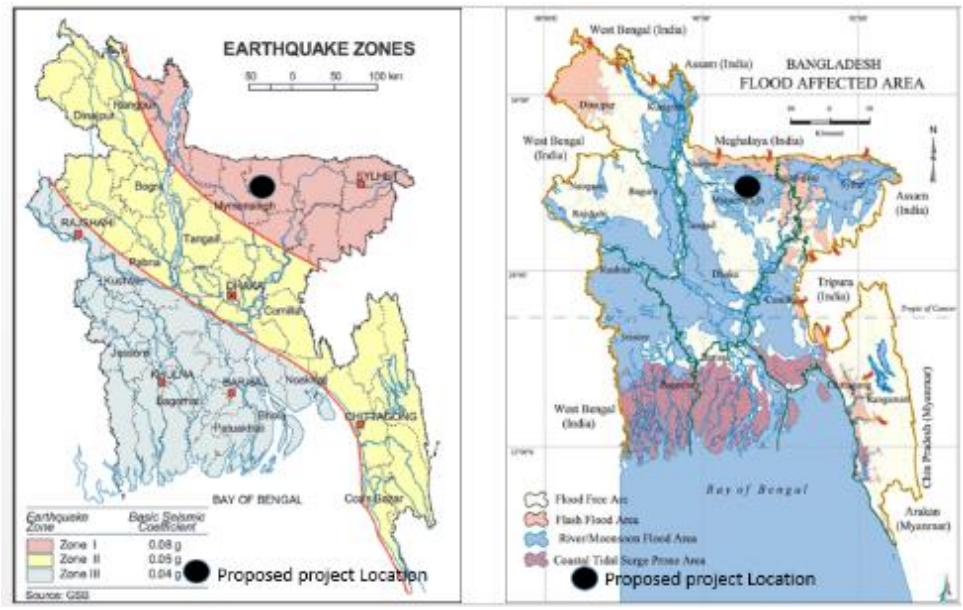
Geology of Bangladesh is generally dominated by poorly consolidated sediments deposit over the past 10,000 to 15,000 years (Holocene age). It is mostly characterized by the rapid subsidence and filling of a basin in which a huge thickness of deltaic sediments was deposited as a mega-delta out built and progressed towards the south. The delta building is still continuing into the present Bay of Bengal and a broad fluvial front of the Ganges- Brahmaputra-Meghna river system gradually follows it from behind.

Soil Characteristics

The soil formation in Bangladesh is remarkably homogeneous in appearance, both vertically and laterally. It comprises layer of unconsolidated clay, about 10m thick near Dhaka, but apparently thinner to the east and possibly much thicker in the west of the Rajshahi district. The sand mineralogy in this area is broadly similar to that of the tertiary hill sediments. The soil of Bangladesh can broadly be classified into seven tracts: (1) Madhupur Tract or Red Soil Tract, (2) Barind Tract, (3) Teesta Silt, (4) Brahmaputra Alluvium, (5) Gangetic Alluvium, (6) Coastal Saline Tract, and (7) Hill Tracts. Figure 4.12(b) shows the position of the sub-project area on the soil tract map of Bangladesh. The soil formation of proposed sub project area lies on Hill tracts of the Garo Hills of the former greater Mymensingh. Hill Tracts cover an area of around 15,000 sq. km. The soils consist of hard red clay with a mixture of fine sand of the same colour and nodules containing a large percentage of sesquioxides. The soils are moderately to strongly acidic. The soils are highly leached and have a low natural fertility. Hills are mainly under natural and plantation forests. Shifting cultivation is practiced in some places.

Seismicity

In the north and northeast of Bangladesh, there are areas of high seismic activity and some of the major earthquakes originating in these areas have affected the adjacent regions of the country. The whole of Bangladesh is divided into three seismic zones. The northern part of the country that includes the greater districts of Rangpur, Mymensingh, and Sylhet are in the Zone-I where earthquake shock of maximum intensity of IX of the Modified Mercalli Scale is possible. The Zone-II includes the greater districts of Dinajpur, Bogra, Dhaka and Chattogram and the shocks of intensity of VIII are possible. The southern part of the country, the least active region, where the maximum intensity is not likely to exceed VII, is in the Zone-III. The experts suggest not constructing normal buildings with more than 60m of height. Project area falls in zone I. **Figure 10-5** (a) shows the locations of proposed site in the seismic map of Bangladesh.



(a) (b)

Figure 10-5: Location of proposed project on 'seismic map' and flood risk map

10.5.2.3 Flood-prone Areas

Bangladesh is prone to flooding; the coastal flooding as well as the bursting of Bangladesh's riverbanks is common and severely affects the landscape of the country. Floods in Bangladesh can be divided into three categories: (a) monsoon flood - seasonal, increases slowly and decreases slowly, inundates vast areas and causes huge losses to life and property; (b) flash flood water increases and decreases suddenly, generally happens in the valleys of the hilly areas; and (c) tidal flood short duration, height is generally 3m to 6m, blocks inland flood drainage. The combined annual flood wave from the Ganges, Brahmaputra and Meghna rivers passes through a single outlet, the lower Meghna tide levels in the Bay of Bengal, reducing the slope and discharge capacity of the Lower Meghna. The effects of these high river water levels extend over most of the country and are the main determinant of the drainage condition and capacity. The discharge from minor rivers is reduced and surface drainage by gravity is limited to land above the prevailing flood level. Flooding caused by this drainage congestion exists nearly everywhere except in the highland and hilly areas in the northern and eastern parts of the country.

Since in the project area located in the hoar region. So, there are many haors (basin like structure) where water remains either stagnant or in flash flooding condition during the months of June to November. Thus, during monsoon when river water rise, study area is subjected to flash flood and overflow of the major River such as Meghna. However, this area is affected in historical flood events such as 1988, 1998 and 2007. In addition, the project site is located over the natural canal and it connects with river. Hence, during monsoon or high windy period such as during Tornado at project site water level could be raised. So, analysing the hydrological data, maximum flood level of project location has to be considered in the final design of bridge to ensure the flood controlling measure. As per flood zoning map of Bangladesh (**Figure 10-5 (b)**) this area is considered as a monsoon flood zone.

10.5.2.4 Cyclone and Tidal Surge

Bangladesh very often becomes the landing ground of cyclones formed in the Bay of Bengal. This is because of the funnel shaped coast of the Bay of Bengal, most of the damage occurs in the coastal regions of Khulna, Patuakhali, Barisal, Noakhali and Chattogram and the offshore islands of Bhola, Hatiya, Sandwip, Manpura, Kutubdia, Maheshkhali, Nijhum Dwip, Urir Char and other newly formed islands. The coastal zone of Bangladesh is disaster prone. Port area where the sluice will build is in the exposed coastal area which is frequently subjected to cyclone and storm surges. A cyclone risk map prepared by the Management Information & Monitoring (MIM). **Figure 10-6** shows that, the proposed site (blue circle) falls under high wind area in the Cyclone affected area Map

Figure 10-6: Areas Affected by Cyclone in Bangladesh

10.5.2.5 Air Quality and Dust

Ambient air quality data could not be found. As there are no major industries in Netrokona the main sources of air pollution are vehicles and non-point sources such as open burning. Dust is generated during the movement of the vehicles in dry season and windblown dust cause air pollution. Additionally, black smoke emission from the vehicles degrades the air quality. In addition, open dumping of the waste materials makes objectionable odour in the nearby area. There are currently no air quality monitoring stations are in operation within the area. The baseline air quality will be measured during detail EIA. **Table 10-3** shows the Bangladesh National Ambient Air Quality Standard comparing the WHO Guideline standard.

Table 10-3: Bangladesh national ambient air quality and WHO guideline standard

Parameter	Environmental Conservation Rules,1997				WHO
	microgram/m^3				
	Industrial	Commercial and Mix use	Residential and Rural area	Sensitive area	
SPM	500	400	200	100	-
PM 2.5	65				10
PM10	150				20
SO_2	120	110	80	30	20
NO_2	100	100	80	30	40
Pb	0.5				

10.5.2.6 Ambient Noise Level

Noise is generated mainly from the vehicle's movement and hydraulic horn. Noise is also generated due to public gathering. During construction phase, concrete mixer machine, vibrator machine, hydraulic excavator and vehicles used for transportation activities may create temporary noise nuisance within the subproject boundary. The noise level standards in Bangladesh for mixed to commercial areas are shows in **Table 10-4**.

Table 10-4: Bangladesh standards for sound level (GoB, 2006)

Locations	Noise level (dBA) at day	Noise level (dBA) at night
Silent zone	50	40
Residential area	55	45
Mixed area	60	50
Commercial area	70	60
Industrial area	75	70

[Note: Noise Levels are defined as 1-minute Leq]

10.5.2.7 Water Quality

As a part of the baseline survey, efforts will be made to collect available information on surface water and groundwater quality in and around the project areas during detail EIA. Discussing with Department of Public Health it was known that, ground water up to 100 feet contain iron, ground water from 240 to 340 feet below ground level is suitable for drink. Local people use hand tube well for drink water. **Table 10-5** shows WHO and Bangladesh standards for drinking water.

Table 10-5: Bangladesh & WHO standard for drinking water

Water Quality Parameters	Unit	WHO Guideline values 2004	Bangladesh Standard for Drinking Water (ECR'97)
pH	-	6.5 - 8.5	6.5 - 8.5
Turbidity	NTU	5	10
Color	Pt. Co Unit	15	15

Water Quality Parameters	Unit	WHO Guideline values 2004	Bangladesh Standard for Drinking Water (ECR'97)
Total Hardness as $CaCO_3$	mg/L	500	200 - 500
Iron, Fe	mg/L	0.3	0.3 - 1.0
Manganese, Mn	mg/L	0.5	0.1
Arsenic, As	µg/L	10	50
Chloride, Cl^-	mg/L	250	150 - 600
Total Coliform, TC	# / 100 ml	00 TC / 100 ml	00 TC / 100 ml
Fecal Coliform, FC	# / 100 ml	00 FC / 100 ml	00 FC / 100 ml

10.5.3 Ecological Environment

10.5.3.1 General

The Haor areas are one of the largest wetland systems in the northeast region of Bangladesh with relative natural state. The haor consists of several beels of various sizes. Field visits indicated that the project sites and adjacent floodplain ecology has largely been changed in the area. Natural factors such as flood, river erosion, climatic effects, natural calamities, etc. also have impacted on ecological characteristics; however, the study area seems to be moderate to highly disturb by the natural factors as well as anthropological activities. The beels, khals and rivers together in subprojects present a unique ecosystem in the riverine environment of the subproject areas. The environment of the northeast of Bangladesh where the subprojects are located is subjected to mainly one crop paddy cultivation having risks of damage by early flash flood. The ecosystems found today in subproject area can be categorized into three main categories

- Low lying crop cultivation area with paddy cultivations
- Homestead with home garden crops, and build up area with embankments, etc.
- Flood plains that remains under water during most of the dry period and other aquatic systems such as ponds and khals where the fisheries activities are taking place.

The environment assessment covered these three main ecosystems independently. However, the project activities are expected to take place in all three areas of the ecosystems and thus may have cumulative impacts. In view of the direct relationship between the project activities and the ecosystems mentioned above a detail flora and fauna survey of the areas was undertaken. As part of the study, an environmental baseline study was carried out in areas surrounding the project site. The specific objective of the baseline study is to gather information on the existing biological environment of the areas (ecosystems dynamics) in and around the project site; to gather and assess peoples' perception on environmental aspects of the proposed project. The baseline ecological survey primarily focused on identifying floral and faunal diversity and distribution within and surrounding of the project area.

10.5.3.2 Flora and Fauna

Flora: Flora means a catalogue of all plants and trees growing in a country or in a specified part thereof. Netrokona district borders Garo Hills of India on the north and the biggest haor

area of Sunamganj district on the east and as such a large variety of heterogeneous plants and trees grow in the district.

Among the important trees, some of which are important for timber, are the gazari (*Shorea rabusta*), banyan (*Ficus benghalensis*), tamarind (*Tamarindus indica*), karoi (*Albizzia procera*), simul (*Bombax ceiba*) and aswatha (*Ficus religlosa*).

The main fruit trees of the district are the mango (*Mangifera indica*), jackfruits (*Artocarpus heterophyllus*), litchi (*Litchi chinensis*), tamarind (*Tarnarindus indica*), peach (*Prunus persica*) guava (*Psidium guajava*), limon (*Citrus carantifolia*), pomelo (*Citrus decumana*), plantains (*Musa sapientum*),

Pineapples (*Ananas comosus*), custard apple (*Anona squamosa*), nona (*Anona retukulata*), wood apple (*Aegle marmelos*), papaw and various kinds of plums which grow practically wild. Among the fruits, the most important are certainly the plantain and the jackfruit. Both are among the chief commodities at every bazar and the latter is so prolific and grows to such an immense size that it forms a staple article of diet with the poorer people.

A very useful tree is the coconut (*Cocos nucifera*), the shell of the fruit is used for hookah, bowls and the fiber for mats coir, mattresses and for many other purposes. Coconut oil is the valuable product of the kernel. Betel nut (*Areca catechu*) is more common than the Coconut. Its trunk is remarkable for its extreme slenderness and straightness. Date-palm (*Phoenix sylvestris*) is another common tree. Parts of this tree are used for many purposes, but the fruit is hardly edible, and this palm is chiefly cultivated for juice which is made into sugar. Palmyra palm (*Borassus flabelliformis*) is useful for its juice and fruit. Its trunk is used for house building purposes.

In addition to the gazari and the mango, the other trees used for timber are: jarul (*Legerstroemia speciosa*), rangi, karoi (*Albizzia procera*), ajuli (*Dillenia pentagyma*), jackfruit (*Artocarpus heterophyllus*), jarn and roya. The chambal and the sisso (*Dalbergia sissoo*) grow on small scale in the district and are used for doorframes. The gab tree is a common one. It bears a rough fruit normally used for caulking the seams of boats. The simul or cotton (*Bombax ceiba*) tree is common all over the district. It is widely used for making tea boxes. Nearly all the common vegetables grow splendidly in the cold weather. Tomatoes, cabbages, beans, etc continues till quite late in April. The main indigenous vegetables are melons, brinjals, gourds, pumpkins and arums.

The bamboo and the cane (bet) are good examples of the complex uses to which the commonest flora of the district can be put, but the palms are equally adaptable from the economic point of view.

In addition to all the plants used mainly for medicinal purposes, doctors extract remedies for common diseases from the bark and roots of the mango (*Mangifera indica*), tulsi (*Ocimum americanum*), simul (*Bombax ceiba*) and other generally useful trees. The wood apple (*Aegle marmelos*), gab (*Diospyros precatorius*) and babul (*Acacia arabica*) trees provide gum, the seeds of the tamarind yield oil, which is used in painting idols, and the bark of the guava is

used for tanning. Scent is manufactured from the keora (*Sonneratia apetala*), a plant rather like the pineapple (*Ananas comosus*), which grows in most busti jungle.

Fauna: In the middle of nineteenth century, the chars in the north- west of the district had as many tigers as in any other district of the sub-continent and that rhinoceros had occasionally been shot. Tigers are not found at present even at the foot of the Garo Hills. Wild elephant used to play havoc in the northern villages in the middle of twentieth century. But the elephants are not seen now-a-days. Similar is the case with the buffaloes.

The pig is seldom to be found. Among the smaller animals, the mongoose and civet cat are very common. Hares (*Lepus nigricollis*) as well as foxes (*Vulpes bengalensis*) and jackals (*Canis aurues*) can be seen on an open char. The black rabbit (*lepus hespidus*) are also seen in some area of the district.

Birds: The game birds are mainly the red jungle fowl, which can be seen feeding in the evenings at the foot of the Garo Hills in parties of ten or more. Quails occur in small numbers in many scattered parts of the district. The blue breasted quail (*excalfactoria chinensis*) and gray quail (*colurmix communis*) are sometimes met with in patches of grass jungle, feeding in the recently cut paddy fields at the foot of the hills. Other birds which occur only can be seen near hills are the swam patridge or kaya (*Francolinus gularis*), the black breasted kalij or pheasant known as durug among Garos and mathura among Bengali shikaris and the rare wood snipe. On the chars of big rivers, there are all varieties of ducks, including the rare shaldrake (*Tadorna cornuta*), but they are harder to approach. The bar headed goose (*Anser indicus*) arrives about the first week of November and departs at the end of February. Besides these, the other birds of the district include bulbul (*Picnonotus cafer*), oriole, white eyed tit, brown backed tit, babbler, yellow breasted wren babbler, the common babbler or seven sisters, tailor bird (*Orthotomus sutorius*), crow (*Corvus splendens*), magpie (*Copsychus saularis*), moyna (*Sturnus malabarica*), shrike, koel (*Eudynamis scolopacea*), cuckoo (*Culculus microplerus*), canary, fly-catcher (*Anthus rufulus*), wood peaker (*Picus myrmrcophoneus*), common barbet, king fisher (*Alcedo atthis*), owl (*Bubo zeylenensis*), osprey, vulture (*Gyps bengalensis*), eagle (*Spilornis cheela*), pigeon (*Treron phoenioplera*) and dove (*Streptopelia tranquebarica*).

Reptiles and Amphibians: There are different varieties of poisonous snakes such as the krait (*Bungarus fasciatus*) and poisonous water snakes, Cobra (*Naja naja*) is rarely found in the district. Pythons are not unknown. Lizards and guisaps (*Varanus salvator*) of all sizes inhabit in patches of jungle even in the towns.

Fishes: Most of the rivers and beels abound in fish. With the drop of rains fishing starts in every paddy field and ditch. Some of the commonly available fishes are ruhi or salmon (*Labeo rohita*), mrigel (*Cirrhinus mrigala*), kalbous *(Labeo calbasu),* katla or carp (*Catla catla*), etc. Shoel fish (*Channa striatus*), scorpionfish or singi (*Heteropneuster fossilis*) are also found in large quantity in beels and khals. Many other spieces of river and freshwater fishes are also found in the district. Of these the principal varieties are boal/sheat fish (*Wallago atttu*), dhain, chital *(Notopterous chitala),* ghona, airh (*Mystas aor*), bagair, pangas (*Pangasius pangasius*), rita (*Rita rita*), bain or eel (*Mastacembelus armatus*), chapila (*Gudusia chapra*), bhagna (*Labeo*

boga), nandail bacha, pon, gargle (Arius gagora), kaulia, kapali, khorsols mehsir, golsa *(Mystus bleeker*i), tengra (*Mystus vittatus*), chanda (*Mene muculata)* tekchanda (*Gerres argyreus*), kachki (*Corica soborna*), baila (*Glossogobius giuris*), bheda (*Nandus nandus*), batashi (*Pseudoutropius atherinoides*), gulsha (*Mystus bleekeri)*, kakila (*Strogylura strogylura*), phalli or flat fish (*Notopterus notoppterus*), tatkeni (*Crosscheilus latius*), pabda or butter fish (*Ompok pabda*), chela (*Chela cachius*), gangchela, gazar (*Channa marulius*), koi or climbing fish (*Anabas testudineus*) kholisha (*Colisa fasciatus*), puti (*Barbus puntius*), sharputi (*Puntius sarana*), taki (*Channa punctatus*), walking fish (*Ophicephaalus striaxtus*), malandi, bashpata (*Danio devario*), tengra (*Mystus vittatus*), kakra (*Scylla serrata*), meani, shrimps, and prawn are found in the district. However, some of these varieties, especially those which inhabit the marshes and tanks, are dwindling due to over catching and other reasons such as use of insecticides and pesticides for crop production, etc.

10.5.4 Ecologically Critical Area, Game Reserve and Wildlife Sanctuary

Ecologically Critical Area (ECA)

It is an environmental protection zone, defined by the Government of Bangladesh under the Bangladesh Environment Conservation Act, 1995, where ecosystem is considered to be threatened to reach a critical state. The declaration states restrictions on hunting, fishing, all activities that could result in the destruction of floral or faunal habitats, activities that could destroy natural characteristics of water and soil, activities detrimental to fishery, installation of polluting industrial units, and discharge of domestic/ industrial liquid waste into the river. No ECA exists at or near the proposed project boundary.

Protected area (PA)

An area of land and/or ocean especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means is referred to as “Protected Area (PA)”. Such an area is predominantly a natural area established and managed in perpetuity, through legal or customary regimes, primarily to conserve their natural resources. No PA exists at or near the proposed project area.

National Park (NP)

A National Park (NP) is a reserve land, usually declared and owned by a national government, protected from most human development activities and pollution. No NP exists at or near the proposed project area.

Game reserve (GR)

A Game Reserve (GR) is an area of land set aside for maintenance of wildlife for tourism or hunting purposes. No GR exists at or near the proposed project area.

Wildlife Sanctuary (WS)

A Wildlife Sanctuary (WS) is an area that assures the natural conditions necessary to protect nationally significant species, groups of species, biotic communities, or physical features of the environment where these require specific human manipulation for their perpetuation. No WS exists at or near the proposed project area.

10.5.5 Socio Economic Condition of Netrokona

Total area of the Upazila is 340.35 sq km, located in between 24°47' and 24°58' north latitudes and in between 90°38' and 90°50' east longitudes. It is bounded by Durgapur (Netrokona) and Kalmakanda upazilas on the north, Kendua and Gauripur upazilas on the south, Barhatta and Atpara upazilas on the east, Purbadhala upazila on the west.

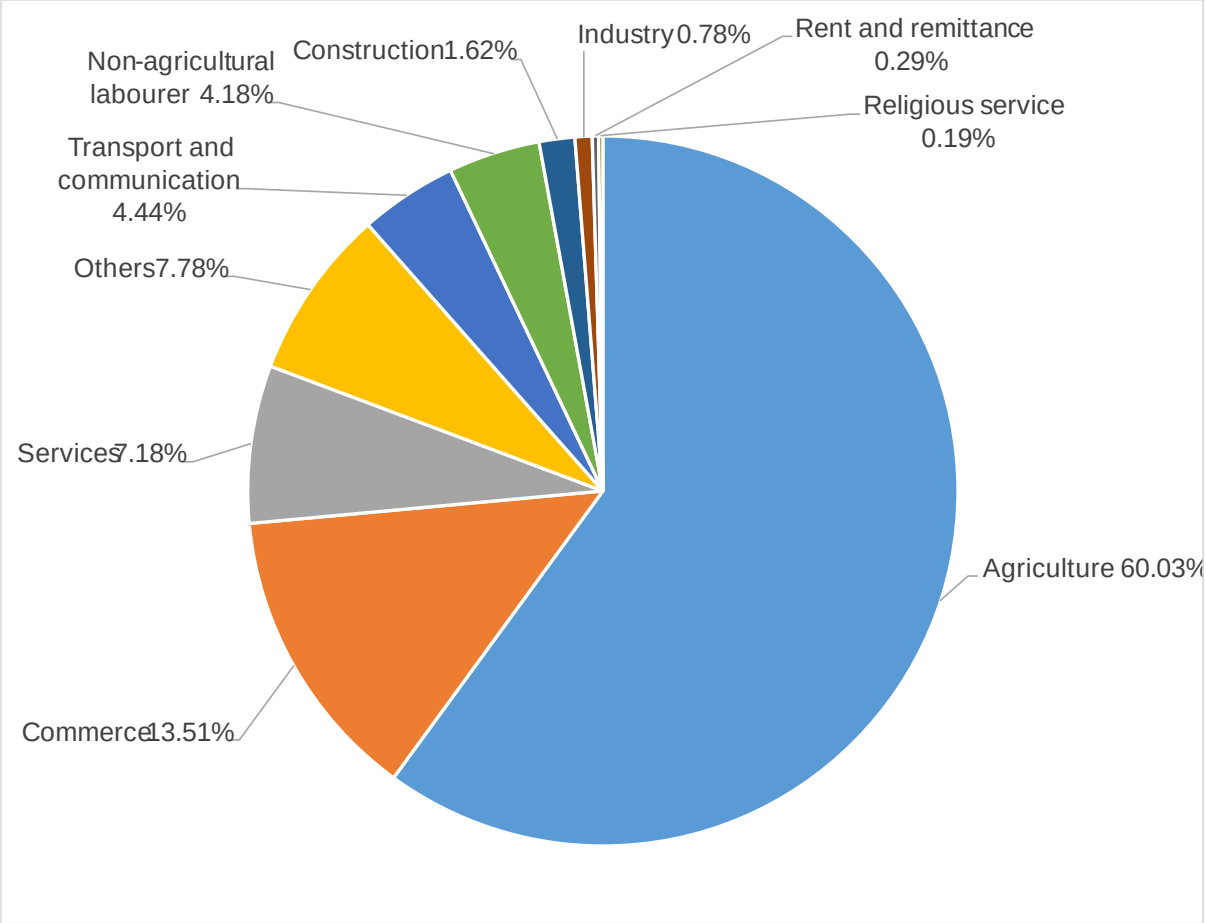
Population: According to 2011 Bangladesh census, the total population of Netrokona Sadar Upazila is 372,785 with a population density of 1094 per square km. Among the total population 187,026 are male and 185,759 are female; the sex ratio (male/female) is 101. There are 81435 HHs with average size of a HH 4.54. Based on religious identity, 336754 are Muslim, 35819 are Hindu, 12 are Buddhist, 103 are Christian and 97 are of other religions. The following table shows the demographic status of Netrokona Sadar Upazila as well as Netrokona district.

Table 10-6: Demographic Conditions of the Project Area (Netrokona Sadar Upazila)

Demographic indicators		**Netrokona District**		**Netrokona Sadar Upazila**	
Total Population	Male	2229642	1111306 (49.8%)	372,785	187026 (50.2%)
	Female		1118336 (50.2%)		185759 (49.8%)
Population Density per sq. km.		813		1094	
Number of Households		479146		81435	
Average Household sizes		4.64		4.54	
Sex Ratio (Male: Female) in Percent (%)		99		101	
Number of Population by Religion Indentity	Muslim	2001732		336754	
	Hindu	207430		35819	
	Buddhist	54		12	
	Christian	18200		103	
	Others	2226		97	
Total Number of Ethnic populations		25247		342	
Number of Ethnic Households		6021		82	

Source: BBS, 2011

Livelihood. There are various kinds of livelihood are existed in the project area. However, most of the population of the project area is agriculture dependent. The order of occupations of Netrokona Sadar Upazila is Agriculture (60.03%) > Commerce (13.51%) > Services (7.18%)> Others (7.78%)> Transport and communication (4.44%)> Non-agricultural labourer (4.18%)> Construction (1.62%)> Industry (0.78%)> Rent and remittance (0.29%)> Religious service (0.19%). The livelihood status of the population of the project area is given in the following figure.



Source: BBS, 2011

Figure 10-7: Livelihood Status of the Population of the Project Area (Netrokona Sadar Upazila)

Land use. Netrokona has a mixed land use and predominantly consists of agricultural lands and residential lands, and the rest include commercial, industrial, administrative, educational, places of worship, health, recreational, restricted, transportation, miscellaneous, mixed uses, graveyard, open spaces, and water bodies. While the heart of the *pourashava* is of high commercial, residential and administrative areas, the fringe areas include mainly low-lying agricultural lands with scattered villages for human settlement. In total, 51.23% of land is used for agriculture. Agricultural land-use dominates followed by residential (29.9%), water bodies (8.93%), commercial (2.68%) and circulation network (2.31%).

Literacy. Netrokona Sadar has an average literacy rate of 67.1% (7+ years), and the national average of 32.4% literate. (BBS, 2011)

Educational institutions: The numbers of educational institution of this district are government college 2, non-government college 31, government high school 6, non-government high school 239, madrasah 88, government primary school 629, registered primary school 504, non-registered primary school 84, primary teacher's training institute 2, law college 1, nursing institute 1, Sanskrit college 1, homeopathy college 1, technical institute 1 and music school 2.

Main sources of income: Agriculture 60.03%, non-agricultural labourer 4.18%, industry 0.78%, commerce 13.51%, transport and communication 4.44%, service 7.18%, construction 1.62%, religious service 0.19%, rent and remittance 0.29% and others 7.78%. 56.19% people have their own land; 43.81% people are landless. 45.84 % peoples of urban area and 58.24% people of rural area have agricultural land. Main crops of the area are Paddy, jute, maize. There are 20 Fishery, 10 dairies and 35 poultry firm. There is some Ice factory, flour mill, sawmill, printing press, welding factory, bidi factory. There are some cottage industries like Goldsmith, blacksmith, potteries, embroidery, woodwork.

Economic Situation: The economy of Netrokona is predominantly agricultural. Out of total 458,472 holdings of the district, 61.65 % are agriculture farm holdings that produce varieties of crops, namely, local and HYV rice, wheat, vegetables, spices, cash crops, pulses, and others. Various fruits like banana, betel nut, guava, coconut is also grown. Fish of different varieties abound in the district. Varieties of fish are obtained from rivers, channel and creeks and from paddy fields during rainy season. Catching fish is an important source of income to the fishermen, especially in haor areas. As the area is linked with the haor region of Bangladesh, the area is vulnerable to flash flood that damage the single crop grown in the area (adjacent to the subproject site) in most of the years and the surrounding people gets an enormous difficulty with poverty. The people surrounding the subproject areas so welcome such an economic zone, where they can find their way of life through employment opportunity.

Non-farm activities also play important role in economic development of this district. **Table 10-7** shows total establishments in the urban and rural areas and persons engaged by sex and activity in Netrokona.

Table 10-7: Establishments in the urban and rural areas and persons engaged by sex and activity in Netrokona

Activity	Establishments			Persons Engaged		
	Total	Urban	Rural	Total	Male	Female
Mining and quarrying	5	0	5	190	138	52
Manufacturing	6418	974	5444	20517	17240	3277
Electricity, gas and water supply	10	2	8	61	50	11
Construction	24	2	22	89	89	0
Wholesale & retail trade	25078	7413	17665	48967	48072	895
Hotels and restaurants	3432	642	2790	8092	7882	210
Transport, storage and communication	403	176	227	1110	1069	41
Bank, insurance and financial institution	148	45	103	959	844	115
Real estate and renting	382	155	227	741	728	13
Public administration and defence	276	134	142	2211	2106	105
Education	2108	194	1914	9339	7861	1478
Health and social work	578	119	459	1575	1250	325
Community, social and personal services	5430	1028	4402	8987	8466	521
Netrokona District	**44292**	**10884**	**33408**	**102838**	**95795**	**7043**

Hats, bazars and fairs: Hats and bazars are 60, fairs 3, most noted of which are Thakurakona Hat, Chuchua Hat, Hatkhola Bazar, Shimulkandi Bazar, Challisha Bazar, Dakshin Bisiura Bazar, Madanpur Bazar, Lakshmiganj Bazar, Amtala Bazar; Paush Mela at Madanpur, Baul Mela at Netrokona Town.

Water Supply:

Source of Drinking Water	Types			
	Total	**Tap**	**Tube-well**	**Other**
Netrokona District	477927	3412	31425	43090
Netrokona Sadar Upazila	81010	2012	73308	5690

Source: BBS, 2011

Sanitation: The existing sanitary condition in Netrokona is relatively poor. As per Bangladesh Bureau of Statistics data for 2011, 35.8% of the pourashava population have water sealed latrines, 31.2% have latrines that are not water-sealed, 29.6% of the population have non-sanitary facilities while the remaining 3.4% have no toilets. Netrokona has no sewerage system and disposal/treatment facilities. There are some. public toilets in Netrokona but these are in worse conditions as the pits, septic tanks and superstructures are mostly damaged. There is no arrangement for electricity and water supply. There are no separate provisions for women. Sanitation facilities in schools (primary and secondary) are found not in bad conditions.

NGO Activities: Operationally important NGOs are CARE, BRAC, Grameen Bank, ASA, Concern Bangladesh, Swabalambi, Nari Pragati Sangha, SCI etc.

Historical, Cultural and Archaeological Characteristics

Netrokona previously was known as Kaliganj where a thana (PS) was established in 1838. Later it emerged as a subdivision headquarters of Mymensingh district in 1880 and the new name of Netrokona was given to it. Netrokona became a district HQ on 01 February,1984 because of its good road and railway connection with Dhaka and Mymensingh and as an agricultural trade center of the area. The *Pourashava* is located within the floodplain of the Kangsha, Sumeswari, Magra, Dhanu and Ghoarura rivers, which act as excellent drainage channels during the rainy season.

Archaeological Heritage and Relics: Roail Bari Fort at Kendua, Khoja dighi (pond), palace of Maharaja at Susang Durgapur, dighi of Kamol Rani, Buddhist Math at Krishnapur of Atpara and the archaeological relics of Salki Matikata.

Historical Events: During the War of Liberation, Netrokona district was under Sector 11. Netrokona was liberated on 9 December 1971. During the British rule peasant revolt, Pagalpanthi revolt, Tonk and Tebhaga movements took place in the district. The leaders of the Swadeshi Movement killed Balak Saha of Village Borail in 1913 and Zamindar Mallick Bahadur of village Sahildeo in 1930 and looted their wealth. The three day All India Peasant Conference was held in Nagara of the district headquarters in 1945.

Marks of War of Liberation: Memorial 4, mass killing site 4.

10.6 Environmental and Social Management Plan (ESMP)

An Environmental and Social Management Plan (ESMP) which includes probable environmental and social impact and mitigation measures along with indication monitors has been attached in **Annex C of Volume II.**

10.7 Conclusion & Recommendation of Environmental and Social Review

Any development work is not possible without any impact on environment. Because of the proposed project, there will be some adverse impacts on environment. But it is possible to reduce or mitigate all negative impacts with proper management plan. There is no ecologically protected area or protected area by department of forest within or near the proposed project site. There is no fish breeding area within the proposed area. Total area is used mainly for paddy cultivation. Due to project activities, some trees may need to be cut. But after completion of the project trees will be planted and green areas will be developed. This report will provide a guideline during detail IEE & EIA report preparation. Detail Environmental Management plan and a monitoring program (will be prepared during detail EIA report preparation) needs to be put in place to assess any adverse impact on the environment because of the proposed project. Proposed project is a Red category project, so detail EIA (Environmental Impact Assessment) is required for the project. EIA report will have to be prepared according to the rules of Department of Environment (DoE)).

Chapter 11: Public and Stakeholder Consultation

11 PUBLIC AND STAKEHOLDER CONSULTATION

11.1 Public Consultation

People at the site of proposed Netrokona EZ was discussed for their interest on the development plan. They informed that that the proposed site is mostly single cropped while some area is double cropped. In monsoon the area serves as a fisheries ground. They want the area to be developed as industrial area. Many local skilled labourers are out migrated for their livelihood. They expressed interest for the development of the area with the hope that their out-migrated population would be with them once industries are set up. They eagerly support a road development plan from Netrokona to Sylhet. They also supported extension of railway track from Mohonganj to Gaglajur Bazar. They also supported extension of railway track from Mohonganj to Gaglajur Bazar. Photographs of Public consultation is attached in **Figure-1** of **Annex B of Volume II**.

11.2 Consultation with Netrokona Chamber of Commerce and Industry

A consultation meeting was arranged with the Chamber of Commerce and Industry of Netrokona (NCCI). The president of NCCI, Mr. M A Wahed opined that infrastructure facilities (transport system, gas & power) is the primary requirements which must be ensured. Other participants opined that competitive and economically viable industries and rightly selected entrepreneurs should be encouraged. They consider the industries for establishment are agro based, garments, fisheries, pharmaceuticals, ceramics, jute products, environment friendly brick fields, auto rice mills, light engineering (tractors, thrashing machine, mechanical harvesting machine, lathe machines for accessories, etc.). They also emphasised for road development from Netrokona to Sylhet, and extension of railway track from Mohonganj to Gaglajur. Gaglajur is a significant landing place at present for small to large cargo vessels navigating in Dhanu river. China / white clay at Bijoypur/ Durgapur, and coarse sand at Someswari is available as raw material which would be suitable for ceramic industries. They said that significant khas land would be available in the proposed EZ site. They opined that large foreign investment should be preferred for sustainable EZ at Netrokona. List of attendance in this consultation is attached in **Table-1** of **Annex B** of **Volume II**. Photographs in this consultation is attached in **Figure-2** of **Annex B** of **Volume II**.

11.3 Consultation with Netrokona BSCIC

A consultation meeting was arranged with BSCIC in its premises. It started in 2005 with 15 acres of land while leasing of industrial plots started in 2008. It is understood from discussion that many rich people with business as profession is available in Netrokona, but people with the mind set for industrialization is little available. Even the BSCIC initially started making for leasing industrial plots. However, situation is improved now and all of 103 plots are leased out among 67 industrial units. Presently 15 industries are running with some plots are in progress and some remain unused. Reasons are inappropriate selection of real entrepreneurs and lack of government incentives in the form of loan facility, tax relief, gas and electricity supply. No gas is supplied to the Netrokona BSCIC. They also propose that any bank loan to an entrepreneur

may be consulted with BSCIC prior to sanction for a review justification. There is a long list of applicants waiting for lease of plots, many are told genuine entrepreneurs and capable for industrial establishment. Netrokona BSCIC requires extension of their complex. They have undertaken steps for an additional land of 100 acres through Ministry of Industries. It is understood that they would urge for the land from the proposed EZ.

Following attachments are given as Annexes:

- List of attendance in this consultation is attached in **Table-2** of **Annex B** of **Volume II**.
- Photographs in this consultation is attached in **Figure-3** of **Annex B** of **Volume II**.
- Existing layout plan of Netrokona BSCIC **(Annex G** of **Volume II)**
- Proposal for extension of BSCIC land **(Annex H** of **Volume II)**
- List of running 15 industries **(Annex I** of **Volume II)**

11.4 Consultation with PDB

Representative from PDB were present in the consultation meeting with BSCIC. Mr. Ashraful Islam (Assistant Engr.) and Mr. Barun Banarjee (Sub Assistant Engr.) were present and discussed about the possible power facility at the EZ site. A 33 KV line of REB passes along the Netrokona-Mohonganj roadside. Another HT line of PDB passes a little off the road but non-functional. PDB is engaged for the installation of a sub-station for Sheikh Hasina University on the same road to EZ. It is told that PDB at Netrokona is capable of power arrangement for the Netrokona EZ and they require approximately one acre of land setting up an electrical sub-station. List of attendance in this consultation is attached in **Table-2** of **Annex B** of **Volume II**. Photographs in this consultation is attached in **Figure-4** of **Annex B** of **Volume II**.

11.5 Participant's Conclusive Opinion

- Local people, commerce and industrial association, and other stakeholders responds positively in favour of proposed NEZ.
- Out migrated skilled labourer and their family would be happy with the hope of their return to home once the NEZ is set up.
- Infrastructure facilities (transport system, water supply, gas & power) are their prime consideration which must be ensured.
- Competitive and economically viable industries and rightly selected entrepreneurs should be encouraged.
- It is their anticipation that local investors would be interested in industries like garments, fisheries, pharmaceuticals, ceramics, jute products, environment friendly brick fields, auto rice mills, light engineering (tractors, thrashing machine, mechanical harvesting machine, lathe machines for accessories, etc.).

- They opine that large foreign investment should be preferred for sustainable EZ at Netrokona.
- BSCIC's experiences reveal that appropriate selection of real entrepreneurs and incentives in the form of loan facility, tax relief, gas and electricity supply are needed. No gas is supplied to the Netrokona BSCIC at present. They also propose that any bank loan to an entrepreneur should be consulted with BSCIC prior to sanction for a review justification.
- BSCIC has undertaken steps for an additional land of 100 acres through Ministry of Industries. They expect the land allocation in NEZ.
- HT line of PDB passes through the NEZ site. PDB has capacity of installation of sub-station for the NEZ.
- People's livelihood is largely agro-based. Many youths remain idle and inactive during non-practicing crop season. This has resulted very unfortunate drug addiction among youths. Economic activities in the NEZ is contemplated as a blessing for the youths and society as well.

11.6 Presentation on Draft Final Report

A presentation on Draft Final Report of Feasibility Study on Netrokona Economic Zone was held on 11th December 2019 at the conference room of BEZA. Mr. Md. Harunur Rashid, Executive Member (Admin & Finance), BEZA presided over the meeting. High officials of BEZA and relevant consultants were present at the occasion. Mr. S.M. Mahbubur Rahman, Director, Water Resources Planning (WRP) Division of IWM had given the presentation on the feasibility study of Netrokona EZ. Dr. A.K. Enamul Haque, Economist, had given the presentation on the Financial and Economic Analysis on Netrokona EZ. After the presentation, the honourable chairperson and participants provided their valuable comments on different aspects of the feasibility study. The comments provided in that meeting have been incorporated in this final report.

Figure 11-1: Presentation on DFR of Feasibility Study on Netrokona EZ

The minutes of this meeting has been provided as **Annex J** of **Vol II**.

List of Participants in this meeting has been provided as **Annex K** of **Vol II**.

Matrix of Comments and Responses on this meeting has been provided as **Annex L** of **Vol II**.

11.7 Presentation on Final Report on 25/03/2020

A meeting was held on 25/03/2020 regarding the Final Feasibility Study Report of Netrokona Economic Zone. The meeting was presided by Mr. Paban Chowdhury, Executive Chairman, BEZA. The Executive Chairman and other officials made their valuable comments and suggestions on the report. Based on their comments, a thorough revision of the report has been made.

The minutes of this meeting has been provided as **Annex J** of **Vol II**.

List of Participants in this meeting has been provided as **Annex K** of **Vol II**.

Matrix of Comments and Responses on this meeting has been provided as **Annex L** of **Vol II**.

11.8 Presentation on Final Report on 15/11/2020

A meeting was held on 15/11/2020 regarding the Final Feasibility Study Report of Netrokona Economic Zone. The meeting was presided by Mohammad Hasan Arif, General Manager, Planning & Development, BEZA. Mr. Arif and other officials made their valuable comments and suggestions on the report. Based on their comments, a thorough revision of the report has been made.

Matrix of Comments and Responses of this meeting has been provided as **Annex L** of **Vol II**.

Chapter 12: Conclusion and Recommendations

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Conclusion

The strengths of NEZ are availability of labour with relatively low cost, low price of land, availability of raw materials, available transport connectivity (road, rail and river), no major settlement issue for the proposed boundary, etc. Moreover, Bangladesh is also providing high incentive in terms of tax holidays and there is a functional One Stop Service (OSS) within BEZA. On the contrary, there might be some obstacles which might hamper the establishment and operation of the NEZ such as uncertainty of insufficient gas and water, distance from the seaports, insufficient road width, etc. The opportunities may be in the forms of expansion of business, employment creation and use of domestic products (raw materials); while risks are associated with higher interest rate of bank loan for investors, weak and inadequate power and infrastructure facilities, dearth of skilled labour.

However, if investments are made to develop the proposed Netrokona Economic Zone, it will bring positive socio-economic changes in that region as well as to the country by adding value to the overall GDP, accumulation of FDI, income by BEZA authority, increase in land value in Netrokona, etc.

12.2 Recommendations

To make the project feasible, its necessary to establish some onsite and offsite infrastructures. These infrastructures are essential to establish this EZ. Without these infrastructures the project will not be feasible. These infrastructures are stated below:

- Adequate gas supply in the EZ should be ensured
- Adequate water supply in the EZ should be ensured
- Power supply should be ensured
- Road network should be upgraded as per future traffic demand.
- A railway station should be established by Bangladesh railway adjacent to the site.
- The works which are beyond BEZA's capacity such as gas and power supply, should be implemented as a deposit works.
- The land level should be raised up to 10.9 mPWD to keep the site flood free.
- The proposed Kamal beel will play a vital role in ensuring environmental sustainability by storing storm water and providing ecosystem services.
- The proposed CETP and STP will be needed to reduce the chance of environmental degradation. The discharge and sludge from CETP and STP will have to be managed carefully.
- The waste management facilities will be needed to ensure a better management of solid waste.

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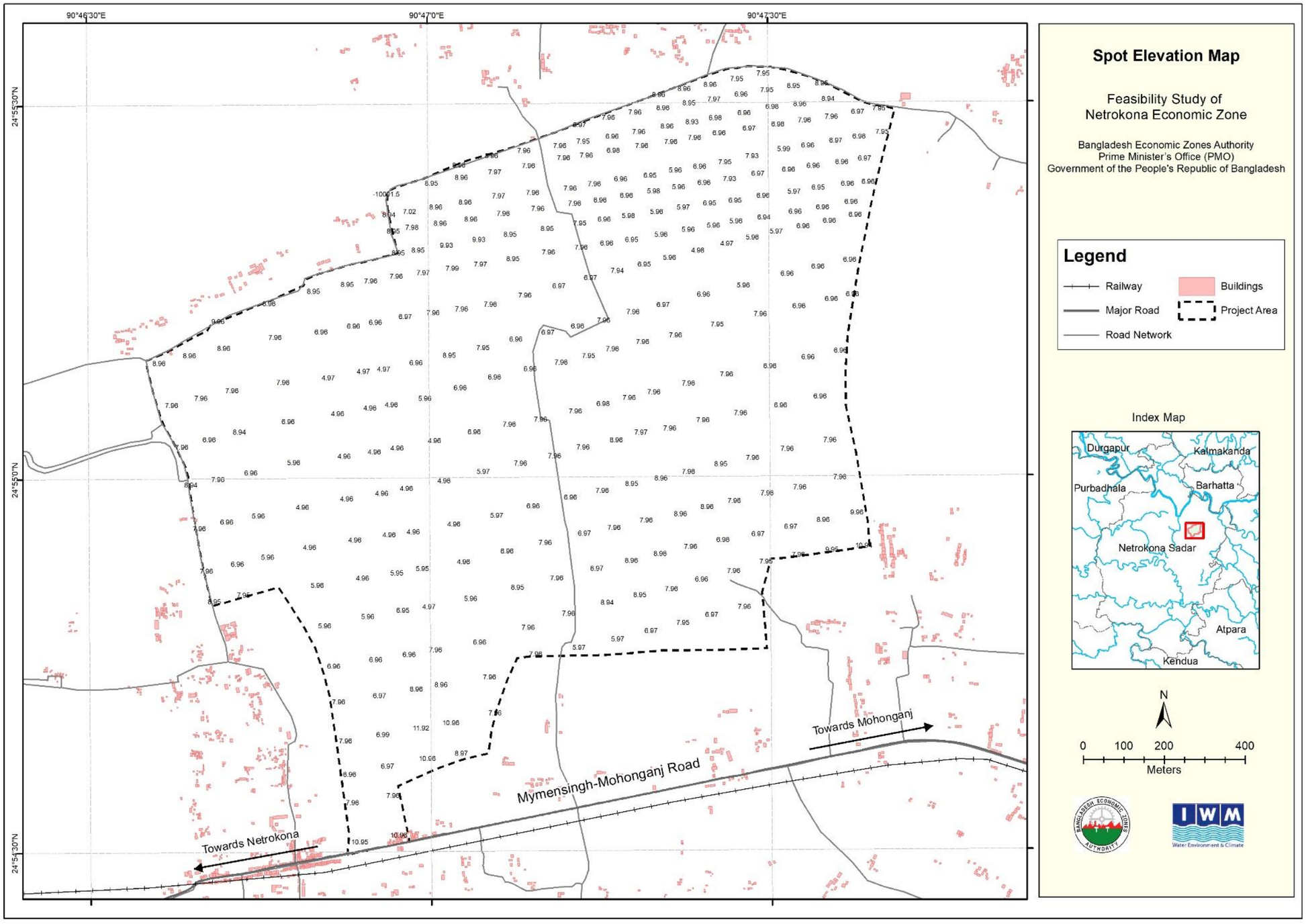

Figure 1: Spot Elevation Map

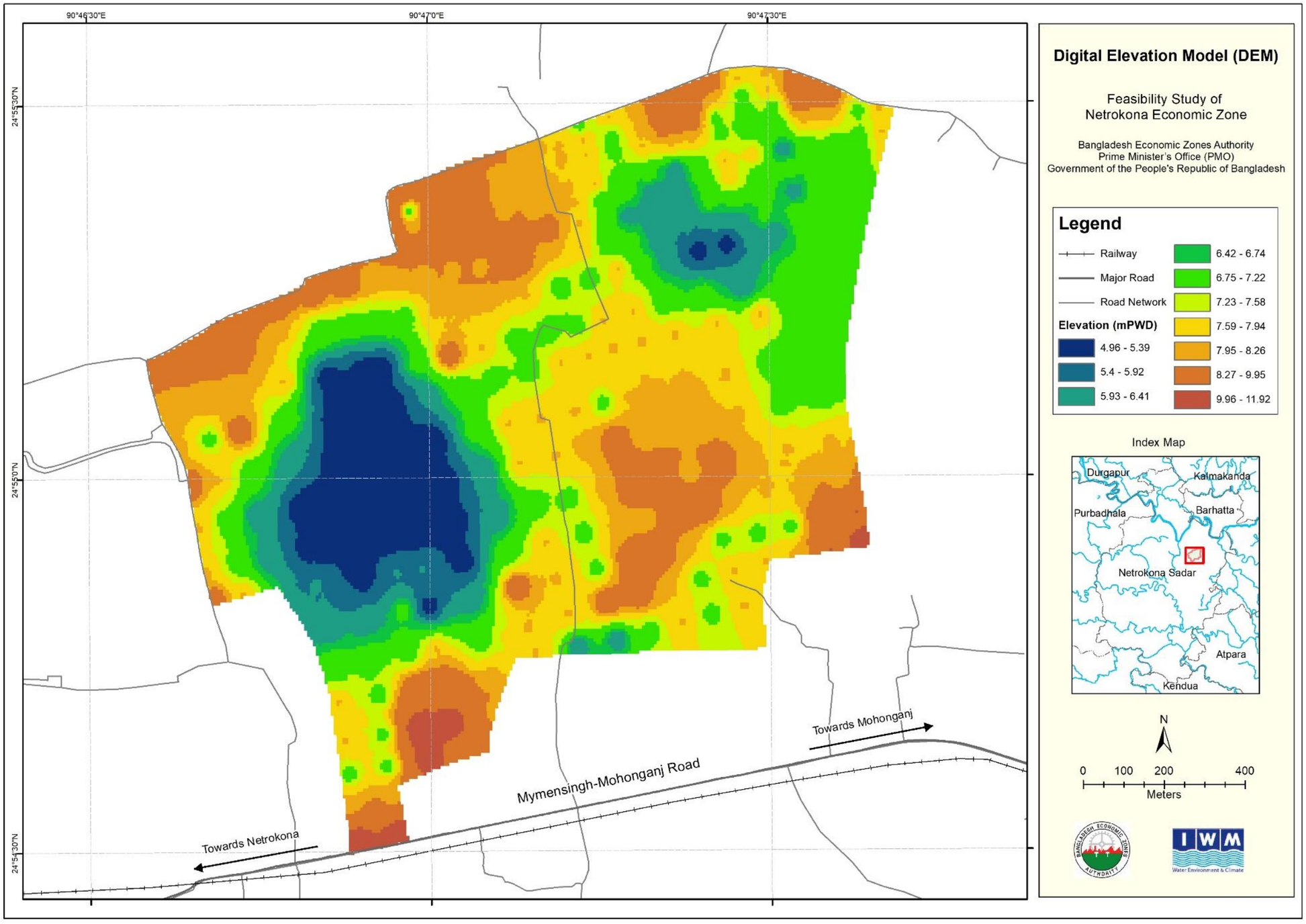

Figure 2: Digital Elevation Model (DEM) Map

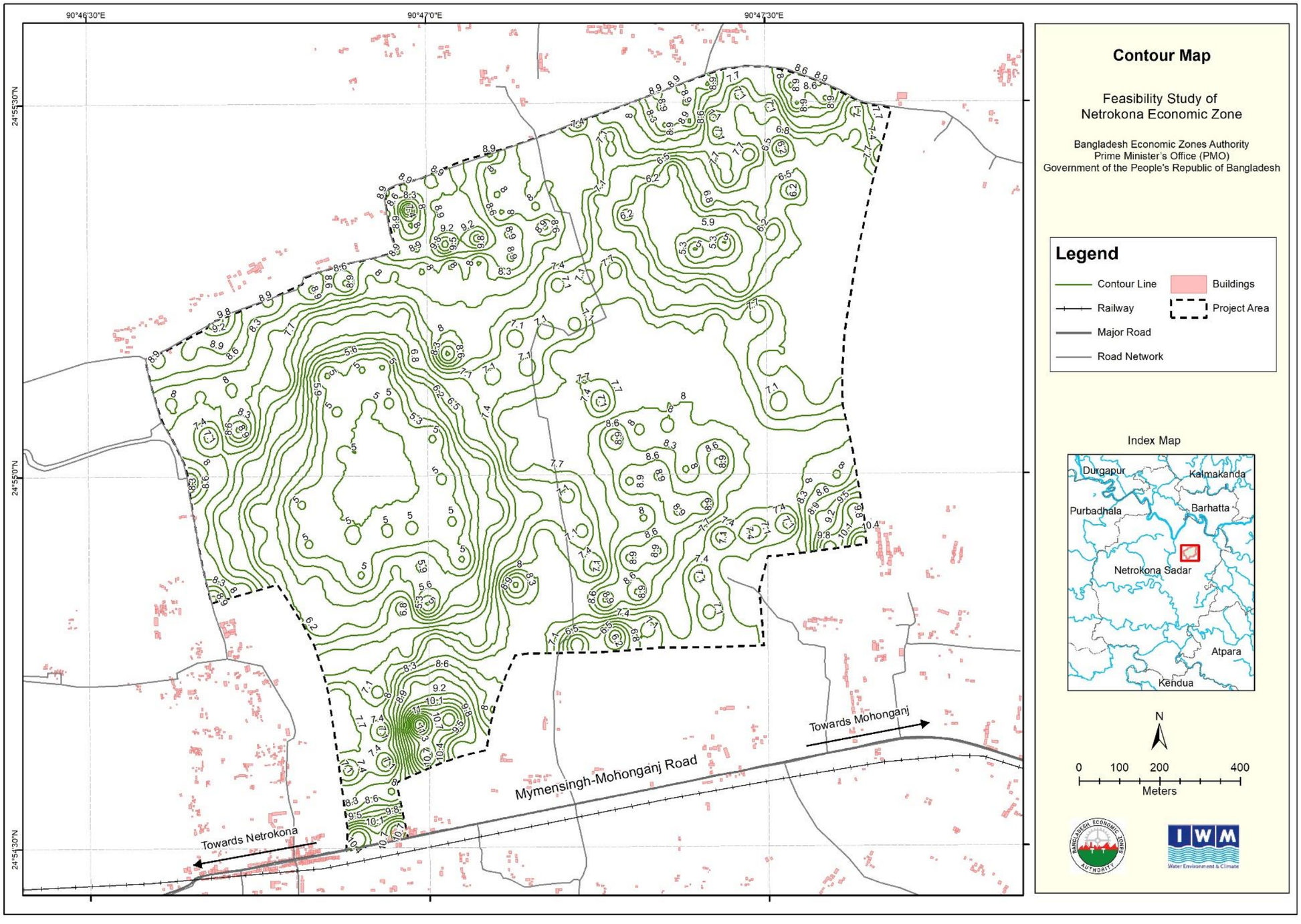

Figure 3: Contour Map

Annex B: Photographs of Consultation Meetings and List of Participants in Consultation

Figure 1: Public Consultation and Key Information Collection

Figure 2: Consultation with members of Netrokona Chamber of Commerce and Industry

Figure 3: Consultation with Netrokona BSCIC officials

Figure 4: BPDB Representatives

Table 1: List of Participants in Stakeholder Consultation

Location: Netrokona Chamber of Commerce & Industry Date: 05/09/2019

Sl. No.	Name	Organisation & Position	Address	Contact No.	Remarks
1.	Abdul Wahed	Chamber of commerce & Industry President	Chotta bazar Netrokona	01726142080	
2.	Prof Ranjit Kumar Saha	Chamber of commerce, Director Net	Azhar Road Netrakona	01711-00-7259	
3.	MD. FARIDUL HAQUE	Director of ~~FBCCI~~ NCC Netrakona BR.	Boura Bazar Netrakona BR.	01711781260	
4.	Mangalchandra Saha G. Merchant	Director Net Chamber	Barahatta Road Netrakona	01711333077	
5.	Dipak Chandra Saha	Manager Net Chamber	Baza Bagan	01913178[illegible]097	
6.					
7.					
8.					
9.					
10.					
11.					
12.					

Table 2: List of Participants in Netrokona BSCIC and BPDB

Location: Netrokona BSCIC Office Date: 05/09/2019

Sl. No.	Name	Organisation & Position	Address	Contact No.	Remarks
1.				01712-568778	
2.				01755789141	
3.				01759907719	
4.				01685-708162	
5.					
6.					
7.					
8.					
9.					
10					
11					
12					

Annex C: Environmental and Social Management Plan (ESMP) and Monitoring Indicators

1.1 Probable Environmental Impact and Mitigation measures

Environmental Impact/Issue	Severity of Adverse Impacts	Mitigation Measures
During Pre-Construction Phase		
Environmental clause in the contract	If environmental clauses are not in contact, it will create many difficulties during work	• Incorporate environmental clauses in bid and contract document
During Construction Phase		
Training for engineers and contractors	Without training work, they will have no knowledge about environmental and social considerations during construction and operation	• Provide training on environmental and social considerations to concerned engineers and contractors
Transportation	Materials carrying vehicles and construction vehicles (Excavator, pay loader, dump truck etc.) may damage environment	• Inform local people about the subproject activities; • Inspire local people to use connecting and diversion roads during the construction; • Ensure schedule deliveries of material/ equipment during off-peak hours; • Place traffic sign/cautionary sign to avoid undue traffic congestion and associated traffic control measures to limit possible disruption;
Air Pollution	Impacts on air quality during the construction phase of the project will be considerable as the amount of work involved with project construction activities is significant.	• Exhaust emissions from vehicles and equipment will comply with standards. • Water sprinkling will be carried out where needed, particularly on the earthen tracks near communities.
Water Pollution	Pile driving (if required), , mud & chemical mixed water from pile work, mud from excavation , domestic waster liquid from worker's camp,	• All chemicals and oil will be stored away from water and concreted platform with catchments pits for spills collection. • All wastes arising from the construction sites will be disposed in an environmentally accepted manner.

Environmental Impact/Issue	Severity of Adverse Impacts	Mitigation Measures
	and oil leaking from construction vessel	• All labor camps will be located at least 200 meters from rivers and to the extent possible laborers will be locally recruited to avoid large camps. • Sewage from labor camps will be treated through septic tanks..
Soil Contamination	Several activities associated with the proposed project construction, because of these work soil may get contaminated from activities such as handling of construction materials (as stones, sand, gravels, slurry, fuel, lubricants, paints, and disposal of solid waste and sewage).	• The storage area will be paved with gentle slope to a corner and connected with a chamber to collect or recover any oil spills. • Efforts will be made to design approach roads through the waste/barren land and rocky area to reduce the compaction induced impact on soil. • Temporary latrine pits will be provided in the construction camps and will be restored after the completion of activity. • Solid waste generated from construction camp will be segregated into biodegradable and non-biodegradable wastes.
Noise	Increase of noise level of the construction site.	• Timing of construction activities (beside residential areas) only between 7 AM to 6 PM to avoid disturbance to nearby communities at night; • Transportation of the construction materials and noisy construction work have to be carried during the scheduled times, and mainly during the day • Where applicable and possible exceptionally noisy machines to be fitted with noise abating gear such as mufflers for effective sound reduction.
Earthwork	Slope, erosion and dust blowing, during earth work for any open trench cutting work and for pump house foundation work	• Care to be taken during any excavation work, • Slope protection will have to be provided for more than 1.5 m earthwork depth. Contractor will use plain sheets and an I_BEAM to protect trench slope. • Dust blowing is to be controlled by providing water spray every day
Operational Phase		
Air Pollution	Significant air emissions result from light-engineering industries.	• All industries should obtain clearance from DoE, Bangladesh; • Latest technology, methodology, and machinery involving minimal air emissions should be adopted by industries;

Environmental Impact/Issue	Severity of Adverse Impacts	Mitigation Measures
		• Air pollution control measures should be taken by industries as prescribed in the mitigation plan;
Water Pollution	Industries are likely to generate domestic and industrial effluent. Liquid waste which can be generated from light industries will include waste acid, waste alkali, grease, used/spent oil, liquid metal, spent solvents etc	• Each industry should obtain an ECC from the DoE Bangladesh before construction and operation of the factory and must comply with the conditions stated in the ECC. • Industrial wastewater ill e treated in ETP of each tenant to meet national wastewater discharge standards
Soil Pollution	All waste including solid and liquid wastes may cause soil contamination After development of economic zone, disposal of industrial domestic and process waste may contaminate land and soil quality of the area.	• Implement the national 3R (Reduce, Reuse and Recycle) strategy for both solid and liquid waste management; • Treatment of the effluents and sewage and ensuring proper disposal; • Waste should be segregated at source into hazardous and nonhazardous waste. Further the waste should be segregated into recyclable and rejected waste
Noise	Traffic in the area will increase significantly Operation of water pumps, and light engineering factories to be operated in proposed EZ may increase the noise level	• Noise barriers will be mandatory for the factories generating a lot of noise during operations; • Plantation should be developed along the roads and boundary to form continuous barrier that will reduce the noise level significantly; • Green buffer should be developed all along the project boundary.

1.2 Probable Social Impact and Mitigation measures

Social Impact/Issue	Severity of Adverse Impacts	Mitigation Measures
During Pre-Construction Phase		
Legal requirement	BEZA authority will start development works after having environmental clearance from DOE.	• Obtain all necessary clearances and approvals including Environmental Clearance Certificate prior to the commencement of any development work
Project information	Disclosure of project information before construction	• Prior to start site works, local residents and establishments, local authorities and other stakeholders who are likely to be affected by the project shall be informs on the work schedule and activities, potential environmental impacts and mitigation measures through public consultation with each affected area
Land acquisition	Total 500 acres of land will be acquired for Economic Zone	• Provide adequate compensation in time to PAPs; • The authority should be careful and take necessary measures that every farmers with the concerned land area would get proper compensation.
Local conflicts of interest	candidates of construction workers may have some conflicts between communities	• Clear information about the needs of labour (number and qualification) should be provided with local people
During Construction Phase		
Work Camps	Absence of proper labour camp will create problems during construction.	• The labour shed shall be with the facilities like; mosquito nets, cooking arrangement, water supply, waste bins, lighting, sanitary latrine, proper safety etc.
Accident	Construction workers can have harmful and critical troubles. Traffic accident may occur because of improper traffic management.	• Follow Health and Safety Management Plan (HSMP) rules and regulations designated to contractors • Traffic movement along roads will be controlled during construction works. Contractor shall maintain the traffic movement those will be used in carrying materials.
Occupational Health and Safety	Construction work exposes workers to various physical hazards that may result to minor,	• Specific condition of contract, for maintaining health, safety and environmental conditions, should strictly be followed during construction and installation,

Social Impact/Issue	**Severity of Adverse Impacts**	**Mitigation Measures**
	disabling, catastrophic, or fatal injuries. Exposure to loud noise can cause temporary or permanent hearing impairment.	• PPE wearing should be ensured during any kinds of construction works, • First aid boxes will be made available at each construction site. • Emergency phone numbers (hospitals, Fire Service, Police station, etc.) will be displayed at key locations of construction areas.
Infectious Diseases such as HIV/AIDS	Moderate: Transmission of disease by inflow of migrant workers	• Workers health training programme will be organised during the construction period to be made aware of health and hygienic issues. Training to be provided by health specialist such as a local NGO.
Children's' right	Moderate: A bunch of children might come and work in construction site	• Regular monitoring of sites shall be done to guide contactors and their related firms to discourage child labour • When the child labour will be detected, necessary and decisive actions to the violating firms will be implemented • If possible, some assistance for parents of working child would be provided (like working opportunity)
Social Conflict	The presence of a large workforce, establishment of construction camps, Project-related traffic and construction activities may potentially cause conflicts with the nearby communities, privacy issues for the women and other similar problem	• Liaison with the communities will be maintained throughout the construction phase. • Grievance redress mechanism has been established at the project site. • Contractor will responsible to close monitor of the labours
Gender and Vulnerability	Women, particularly of weaker sections may be discouraged to speak and demand equitable benefits in the name of porda/ dignity of women or lineage	• Engage competent women Ward councilor speaking for women and working for them to participate in the sub-project selection, designing, implementation and participatory M&E
	Wage discrimination	• Make conditionality in the bid document to ensure equal wage for equal work

Social Impact/Issue	**Severity of Adverse Impacts**	**Mitigation Measures**
		• Ensure compliance by close supervision by the BEZA with the assistance of consultant as required • Activate GRC in this regard hearing complaints and resolving them
	Participation	• Representative of women & Vulnerable groups in GRCs • Occupational groups men and women consultation process • Beneficiary options reflected in project design and implementation
	Eve teasing and sexual abuse	• Woman-friendly design and implementation • Proper supervision by BEZA with the engagement of woman group and elected women in project management committee. • Ensures women representative in the terminal committee (woman WC)
Impacts on Conflict of Labor Influx	Conflicts may occur between local residents who may feel that they have received unfair wages.	• Local people should be employed for the construction works to the maximum extent possible, and any workers from other countries should be taught to respect local customs in order to facilitate good relationships with local people. • The lodgings of the project workers should be equipped with sufficient living facilities to keep workers at the project site as much as possible
Uneven situation:	There are so many unwanted happenings may occur during construction periods.	• All the emergency telephone numbers of all the departments like Police station, fire service & civil defines, truck & bus stands, hospitals, clinics, etc. • Standby transport facilities to deal any accidental case, • Arrangement of Safe havens (within the road construction area), preferably nearby schools premises may be used as emergency shelter during any disaster like Cyclone.
Operational Phase		
Occupational Safety	Accident and incidents are expected to occur more or less during the operation phase	• To provide OHS training program and information of basic site rules of work, basic hazard awareness, site specific hazards, safe work practices, and emergency procedure. Use of personal protection equipment will have to ensure.

Social Impact/Issue	Severity of Adverse Impacts	Mitigation Measures
		• To provide adequate lavatory facilities for the number of people expected to work in the facility; • Adequate preventive measures from negative factors such as fire precautions, lighting, safe access,

1.3 Monitoring Indicators

The physical, biological and social components which are of particular significance to the proposed project are listed below:

- Air quality
- Surface water (River, Khal & Lake) & Ground water quality
- Noise Level
- Solid & Hazardous Waste Management
- Plantation Success / Survival Rate
- Soil Erosion
- Soil Quality
- Drinking Water Quality
- Sanitation and Hygiene at Construction Labour Camps and Construction Site
- Labour Influx
- Employment
- Grievance Redress Mechanism (GRM)

These indicators will be evaluated periodically based on the monitoring results, baseline conditions, predicted impacts and mitigation measures.

Annex D: Breakdown of NEZ Cost Estimation

1. Cost Estimation of Land Development including Dredging, Boundary Wall, Landscaping and Slope Protection

1.1 Cost Estimation of Land Filling including Dredging

Description	Unit	Quantity	Unit Rate (BDT)	Amount (Million BDT)
Land Development including Dredging (Unit rate reference **Code No: 02.16.4.2** of Page 75 of PWD rate of schedule, 2018)	cum	7,142,833	195	1,392.85

1.2 Cost Estimation of Boundary Wall

Components: Intermediate RCC Column, Footing, BFS, Grade Beam, Brickwall, Plaster, Barbed Wire Fencing

Length = 6600m

Height of Boundary wall= 2.75m (1.75 of Brick wall and 1m of Barbed Wire)

Thickness of Brick wall = 125mm

Component Details	Value	Unit
Intermediate RCC Column		
Column Dimensions		
a	250.00	mm
b	250.00	mm
Cross Sectional Area	0.06	m^2
Column Height above GL	1.50	m
Depth of Footing	1.50	m
Column Depth Below GL	1.15	m
Volume of Column	0.17	m^3
No of Columns	2,200.00	Nos
Total Volume of Column	364.38	m^3
Rate	7,730.00	BDT/cum
Cost	2.82	M BDT
RCC Footing		
Footing Dimensions		
a	1.25	m
b	1.25	m
Area of Footing	1.56	m^2
Height of Footing	350.00	mm
Volume of Footing	0.55	m^3

Component Details	Value	Unit
No of Footings	2,200.00	Nos
Total Volume of Footings	1,203.13	m^3
Rate	7,517.00	BDT/cum
Cost	9.04	M BDT
BFS under Footing		
BFS Dimensions		
a	1.25	m
b	1.25	m
Area of BFS	1.56	m^2
No of Footings	2,200.00	Nos
Total Area of BFS	3,437.50	m^2
Rate	420.00	BDT/sqm
Cost	1.44	M BDT
RCC Grade Beam		
Grade Beam Dimensions		
a	250.00	mm
b	250.00	mm
Cross Sectional Area	0.06	m^2
Length	6,600.00	m
Volume	412.50	m^3
Rate	7517.00	BDT/cum
Cost	6.20	M BDT
Brickwall		
Length	6,,600.00	m
Height	1.50	m
Wall Thickness	125.00	mm
Volume	1,134.38	m^3
Rate	6,769.00	BDT/cum
Cost	7.68	M BDT
Plaster		
Thickness	12.00	mm
Area	27,225.00	m^2
Rate	228.00	BDT/sqm
Cost	6.21	M BDT
MS Rod		

Component Details	Value	Unit
Quantity	233.15	Ton
Rate	79,000.00	BDT/Ton
Cost	18.42	M BDT
Barbed Wire		
Length	6,600.00	m
Height	1.00	m
Quantity	6,600.00	m^2
Rate	2173.00	BDT/sqm
Cost	14.34	M BDT
Total Cost	**66.15**	**M BDT**

1.3 Landscaping and slope protection

Description	Unit	Quantity	Unit Rate (BDT)	Cost (Million BDT)
Landscaping and slope protection	LS			500

Hence, total cost of Land Development including dredging, Boundary Wall, landscaping and slope protection = 1,392.85+66.15+500= 1,959 Million BDT

2. Cost Estimation of Land

Description	Unit	Area	Unit Rate (BDT)	Cost (Million BDT)
Land Cost	Acres	500	7,103,025	**3,552**

3. Cost Estimation of Off-site Infrastructure

Description	Unit	Quantity	Unit Rate (BDT)	Cost (Million BDT)
4.1 Establishment of Railway Station in front of NEZ Gate	LS			800
4.2 Data Connectivity	LS			40
Total				**840**

4. Cost Estimation of On-site Infrastructure

4.1 Cost Estimation of 4 Lane Roads

Sl. No.	Description.	Unit	Rate (Tk.)	Quantity	Amount (BDT)
Earthwork					
1	Clearing and Grubbing	sqm	43	17,700	761,100
2	Preparation of Subgrade 300 mm Depth by mechanical compaction	sqm	66	17,700	1,168,200
3	Improved Subgrade (F.M = 1.2 - 1.5) with Mechanical compaction	cum	1140	3,540	4,035,600
4	Embankment fill from borrow pit in contractor's Arranged land	cum	0	0	0
				Subtotal	**5,964,900**
Pavement work					
5	Sub-Base (WBM): Materials for per cum work subject to mix design: Materials for per cum work: (a) Coarse Sand (F.M> = 1.0) 0.33 cum (b) Brick picket jamma<38mm (38 mm to 25 mm size) 0.74 cum (c) Water 1 cum.	cum	4,941	4,425	21,863,925
6	Aggregate Base Type I (Base course): Materials for per cum work subject to mix design: (a) Crushed boulder/gravel aggregate <40 mm (40 mm to 25 mm size) 0.88 (b) Sand (F.M> = 1.0) 0.44 cum (c) Water 1 cum	cum	6,687	4,425	29,589,975
7	Aggregate Base Type II(Base Course): Materials for per cum work subject to mix design a) Crushed boulder/gravel aggregate <40 mm (40 mm to 25 mm size) 0.17 (b) Sand (F.M> = 1.0) 0.33 cum (c) Brick picket jamma<38mm	cum	5,189	2,655	13,776,795
8	Bituminous Prime Coat (Plant Placed) by bitumen distributor:Materials for per sqm work: (a) Bitumen (80/100) 0.88 kg (b) Kerosene 0.44 ltr.	sqm	96	17,700	1,699,200

Sl. No.	Description.	Unit	Rate (Tk.)	Quantity	Amount (BDT)
9	Bituminous Tack Coat (Plant Work): The full width of surface to be treated shall be cleaned with a power brush to remove loose dirt, sand, dust and other objectionable material.	sqm	34	17,700	601,800
10	15 mm Compacted Premix Bituminous Seal Coat Manual	sqm	155	17,700	2,743,500
11	Dense Bituminous Surfacing,DBS -Base Course (Levelling course) (Plant Method)	cum	14,304	2,478	35,445,312
12	Double Bituminous Surface Treatment, 20mm aggregate followed by 10mm (Machine Method): Materials for per sqm work subject to mix design: (a) Bitumen (80/100 grade) 0.0023 tonne (b) Stone Chippings (pakur stone) 10mm size 0.007 cum (c) Stone Chippings (pakur stone) 20 size 0.016 cum.	sqm	315	708	223,020
				Subtotal	**105,943,527**
Incidental					
Sl. No.	**Description.**	**Unit**	**Rate (Tk.)**	**Quantity**	**Amount**
13	Pre-cast curb stone	cum	12,269	0	0
14	Thermoplastic Road Marking Paint	sqm	1,127	300	338100
15	Reflecting Road Studs	No	722	0	0
16	Traffic Signs	No	4,512	5	22560
17	Sign Post	No	2,166	0	0
18	Rumble strips (Bituminous Concrete Volume)	cum	14,717	0.40	5,861.05
				Subtotal	**366,521**
Total Cost per km					**112,274,948**

Hence, Total Cost for 4 lane road = 3.66 X 112274948 BDT = 410.59 Million BDT

4.2 Cost Estimation of 2 Lane Roads

Sl. No.	Description.	Unit	Rate (Tk.)	Quantity	Amount (BDT)
Earthwork					
1	Clearing and Grubbing	sqm	43	8,000	344,000
2	Preparation of Subgrade 300 mm Depth by mechanical compaction	sqm	66	8,000	528,000
3	Improved Subgrade (F.M = 1.2 - 1.5) with Mechanical compaction	cum	1140	1,200	1,368,000
4	Embankment fill from borrow pit in contractor's Arranged land	cum			
				Subtotal	**2,240,000**
Pavement work					
5	Sub-Base (WBM): Materials for per cum work subject to mix design: Materials for per cum work: (a) Coarse Sand (F.M> = 1.0) 0.33 cum (b) Brick picket jamma<38mm (38 mm to 25 mm size) 0.74 cum (c) Water 1 cum.	cum	4941	1,200	5,929,200
6	Aggregate Base Type I (Base course): Materials for per cum work subject to mix design: (a) Crushed boulder/gravel aggregate <40 mm (40 mm to 25 mm size) 0.88 (b) Sand (F.M> = 1.0) 0.44 cum (c) Water 1 cum	cum	6687	1,600	10,699,200
7	Aggregate Base Type II(Base Course): Materials for per cum work subject to mix design a) Crushed boulder/gravel aggregate <40 mm (40 mm to 25 mm size) 0.17 (b) Sand (F.M> = 1.0) 0.33 cum (c) Brick picket jamma<38mm	cum	5189	1,200	6,226,800
8	Bituminous Prime Coat (Plant Placed) by bitumen distributor:Materials for per sqm work: (a) Bitumen (80/100) 0.88 kg (b) Kerosene 0.44 ltr.	sqm	96	8,000	768,000

Sl. No.	Description.	Unit	Rate (Tk.)	Quantity	Amount (BDT)
9	Bituminous Tack Coat (Plant Work): The full width of surface to be treated shall be cleaned with a power brush to remove loose dirt, sand, dust and other objectionable material.	sqm	34	8,000	272,000
10	15 mm Compacted Premix Bituminous Seal Coat Manual	sqm	155	8,000	1,240,000
11	Dense Bituminous Surfacing, DBS -Base Course (Levelling course) (Plant Method)	cum	14304	640	9,154,560
12	Double Bituminous Surface Treatment, 20mm aggregate followed by 10mm (Machine Method): Materials for per sqm work subject to mix design: (a) Bitumen (80/100 grade) 0.0023 tonne (b) Stone Chippings (pakur stone) 10mm size 0.007 cum (c) Stone Chippings (pakur stone) 20 size 0.016 cum.	sqm	315	320	100,800
				Subtotal	**34,390,560**
Incidental					
13	Pre-cast curb stone	cum	12269	0	0
14	Thermoplastic Road Marking Paint	sqm	1127	300	338,100
15	Reflecting Road Studs	No	722	0	0
16	Traffic Signs	No	4512	4512	22,560
17	Sign Post	No	2166	0	0
18	Rumble strips (Bituminous Concrete Volume)	cum	14717	0.18	2,649
				Subtotal	**363,309**
Total Cost per km					**36,993,869**

Hence, Total Cost for 2 lane road =8.79 X 36993869 BDT = 325.18 Million BDT

4.3 Cost Estimation of Common Zone Facilities

Cost of Other Common Zone Facilities i.e. administration, rest house, fire station, club, logistics, helipad and religious facilities (LS) = 700 Million BDT

4.4 Cost Estimation of Social Facilities

Cost of other Social Facilities i.e. playground, education, park, green and daycare etc. (LS) =400 Million BDT

4.5 Cost Estimation of Training Center

No. of Storey of training centre = 3
Area per floor = 605 sqm
Unit rate per sqm = 25,000 BDT
Total cost =3 X 605 X 25,000 BDT = 45.38 Million BDT

4.6 Cost Estimation of Commercial Facilities

Cost of commercial facilities (LS) = 616 Million BDT

4.7 Cost Estimation of Lake and Canal Improvement including Regulator

Cost of lake and canal improvement including regulator and walkway (LS) = 820 Million BDT

Hence, total cost of on-site infrastructure = 410.59 + 325.18 + 700 + 400 + 45.38 + 616 + 820 = 3,317.14 Million BDT

5 Cost Estimation of Utilities

5.1 Cost Estimation of Water Supply and Sewerage System

5.1.1 Cost Estimation of Water Supply

Schedule No.	Description	Total Price in Million BDT
1	**General Items**	23.66
2	**Civil Works and erection of electromechanical works**	25.30
3	**Cost of materials and equipment**	
3a	Pipe materials	68.13
3b	Mechanical equipment	7.15
3c	Electrical equipment	6.75
3d	Production Tubewell	192.50
Project Cost Sub-total		**323.49**
4	**Consultant**	
4a	Consultant for Design Supervision and Construction Supervision of Treatment Plant including Intake and Transmission Main and Tertiary Network	16.17
5	**CD & VAT**	9.02
Total		**348.68**

5.1.2 Cost Estimation of Sewerage System

SN	Description	Unit	Unit Rate	Quantity	Cost (BDT)	Cost in Million BDT
Items for Sewer Network						
1	General item (5% of material and construction cost)				3,200,473	3.20
2	Sewer Material cost (uPVC, RCC and casing)				18,748,350	18.75
3	Construction Cost				45,261,103	45.26
Subtotal 1					**67,209,925**	**67.21**
4	IT and VAT deductible at source (14%of general, material and construction cost)				9,409,390	9.41
Total cost for Sewer Network					**76,619,315**	**76.62**
Items for Sewage Lift Stations (03 Nos.)						
5	General works				33,014,396	33.01
6	Civil works				25,987,793	25.99
7	Electromechanical and Generator works				14,015,338	14.02
Subtotal 1					**73,017,526**	**73.02**
8	IT and VAT deductible at source (14%of general, material and construction cost)				10,222,454	10.22
	Subtotal 2				**83,239,980**	**83.24**
9	CD and VAT for materials and equipment				3,503,834	3.50
Total Cost for the Lift Stations					**86,743,814**	**86.74**
Cost of Sewage Treatment Plant including CD and VAT					**197,312,897**	**197.31**
Total Cost of Sewer Network, Sewage Lift Station and Sewage Treatment Plant					**360,676,026**	**360.68**

Hence, total cost of water supply and sewerage system = 348.68 + 360.68 = 709.36 Million BDT

5.2 Cost Estimation of Drainage System

Construction of RCC Drain (B=1.5m X H=1.5m)					
Sl #	**Description of Item**	**Unit**	**Unit Rate**	**Quantity**	**Total Taka**
1	Picking up road surface & removing debris	cum	932	3.00	2,796.00
2	Earthwork in Excavation	cum	178	7.20	1,281.60
3	Laying of Polythene Sheet	sqm	27	2.00	54.00
4	C.C casting (1:3:6)	cum	7573	0.15	1,135.95
5	Formwork	sqm	337	9.80	3,302.60
6	Reinforced Cement concrete (f'c=25 N/mm2)	cum	11677	1.55	18,099.35
7	M.S work (fy=414 N/mm2)	mt	79324	0.24	19,289.83
8	Backfiling by sand (F.M=>0.8)	cum	858	3.40	2,917.20
9	Others	L.S	10%		4,887.65
Total Cost per meter (Taka)					**53,764.19**

Hence, total cost of drainage system = 17,544 X 53,764.19 BDT = 936.79 Million BDT

5.3 Cost Estimation of Power Supply System incl. sub station

Description of Item	Unit	Unit Rate	Quantity	Total Cost (Million BDT)
Power Supply System incl. sub station	LS			850

5.4 Cost Estimation of Gas Supply System

Description of Item	Unit	Unit Rate	Quantity	Total Cost (Million BDT)
Gas Supply System	LS			750

5.5 Cost Estimation of CETP with Industrial Effluent Network System

SN	Description	Unit	Unit Rate	Quantity	Cost (BDT)	Cost in Million BDT
Items for Effluent and Discharge Network						
1	**General item (5% of material and construction cost)**				**15,891,206**	**15.89**
2	**Effluent and Discharge Pipe Material cost (uPVC Pipe, RCC Pipe and casing)**				**93,090,591**	**93.09**
3	construction cost of Effluent and Discharge Network				**224,733,534**	**224.73**
Subtotal 1					**333,715,331**	**333.72**
4	IT and VAT deductible at source (14%of general, material and construction cost)				46,720,146	46.72
Total cost for Effluent and Discharge Network					**380,435,478**	**380.44**
Items for Effluent Lift Stations						
5	General works				23,555,753	23.56
6	Civil works				19,902,121	19.90
7	Electromechanical and Generator works				32,535,892	32.54
	Subtotal 1				**75,993,766**	**75.99**
8	IT and VAT deductible at source (14%of general, material and construction cost)				10,639,127	10.64
	Subtotal 2				**86,632,893**	**86.63**
9	CD and VAT for materials and equipment				8,133,973	8.13
Total Cost for the Lift Stations					**94,766,866**	**94.77**
Cost of Common Effluent Treatment Plant (CETP) including CD and VAT					**397,312,897**	**397.31**
Total Cost of Effluent and discharge Network, Lift Station and Common Effluent Treatment Plant					**872,515,241**	**872.52**

5.6 Cost Estimation of IWMF (Integrated Waste Management Facilities)

STS Cost Estimation		
Base of the Triangle Sized IWMF	206.00	m
Perpendicular of the Triangle Sized IWMF	71.00	m
Height	9.15	m
Thickness	250.00	mm
Component Details	**Value**	**Unit**
Intermediate RCC Column		
Column Dimensions		
a	450.00	mm
b	450.00	mm
Cross Sectional Area	0.20	m^2
Column Height above GL	8.85	m
Depth of Footing	3.00	m
Column Depth Below GL	2.10	m
Volume of Column	2.22	m^3
No of Columns	23.00	Nos
Total Volume of Column	50.98	m^3
Rate	7,730.00	BDT/cum
Cost	**0.39**	M BDT
RCC Footing		
Footing Dimensions		
a	2.50	m
b	2.50	m
Area of Footing	6.25	m^2
Height of Footing	900.00	mm
Volume of Footing	5.63	m^3
No of Footings	23.00	Nos
Total Volume of Footings	129.38	m^3
Rate	7,517.00	BDT/cum
Cost	**0.97**	M BDT
BFS under Footing		
BFS Dimensions		
Area	6.25	m^2
No of Footings	23.00	Nos
Total Area	143.75	m^2
Rate	420.00	BDT/sqm
Cost	**0.06**	M BDT

RCC Grade Beam and Floor Beam		
Dimensions		
a	500.00	mm
b	300.00	mm
Cross Sectional Area	0.15	m^2
Length	1,108.00	m
Volume	332.40	m^3
Rate	7,517.00	BDT/cum
Cost	**2.50**	M BDT
Brickwall		
Length	574.00	m
Height	9.60	m
Wall Thickness	250.00	mm
Volume	1,365.10	m^3
Rate	6,769.00	BDT/cum
Cost	**9.24**	M BDT
RCC Slab		
Length	25.38	m
Breadth	14.00	m
Perimeter	78.76	m
Area	355.32	m^2
Thickness	0.15	m
Volume	131.48	m^3
Rate	7,515.00	BDT/cum
Cost	**0.99**	M BDT
Plaster for Slab		
Thickness	12.00	mm
Area	1,217.85	m^2
Rate	243.00	BDT/sqm
Cost	**0.30**	M BDT
Pavement tiles of size 300 mm x 300 mm		
Area	14,626.00	m^2
Rate	2,481.00	BDT/sqm
Cost	**36.29**	M BDT
Plaster for Wall		
Thickness	12.00	mm
Area	11,016.60	m^2
Rate	228.00	BDT/sqm
Cost	**2.51**	M BDT

Fair Face Plaster on Out Side Wall		
Length	554.00	m
Area	5,482.57	m^2
Rate	1,775.00	BDT/sqm
Cost	**9.73**	M BDT
Interior standard acrylic emulsion paint		
Area	5,863.62	m^2
Rate	234.00	BDT/sqm
Cost	**1.37**	M BDT
MS Rod		
MS Rod		
Quantity	101.15	Ton
Rate	79,000	BDT/Ton
Cost	7.99	M BDT
Total Cost per STS	**72.34**	**M BDT**
Nos. of STS	4	Nos.
Total Cost for STS	**289.36**	**M BDT**
Area of Temporary Storage Shed & Truck Stand	1,004	m^2
Rate	5,379	BDT/sqm
Cost of Temporary Storage Shed	**5.40**	**M BDT**
Paved Area	2664	m^2
Rate	2,477	BDT/sqm
Cost	**6.60**	**M BDT**
Container	24	Nos.
Rate	240,000	BDT/Container
Cost of Container	**5.8**	**M BDT**
Compactor (Garbage) Truck	4	Nos.
Rate	15,000,000	BDT/Truck
Cost of Compactor (Garbage) Truck	**60.00**	**M BDT**
Internal Road in IWMF	0.115	km
Rate	**36,993,869**	BDT/km
Cost of Internal Road	**4.25**	**M BDT**
Boundary Wall of IWMF	492.0	m
Rate	10023	BDT/m
Cost of Boundary Wall	**4.93**	**M BDT**
Total Cost of IWMF	**376.32**	**M BDT**

Hence, total cost of Business Component (utilities/others) = 709.36 + 936.79 + 850 + 750 + 872.52 + 376.32 = 4,494.98 Million BDT

6. Project Preparatory Costs of the Sponsors

Description of Item	Unit	Unit Rate	Quantity	Cost (Million BDT)
6.1 Consultancy Fees for Feasibility Study	LS			48
6.2 Off-site Infrastructure Consultancy Fees	LS			50
6.3 Legal Support	LS			24
6.4 Administrative & Marketing Promotions	LS			10
6.5 Vehicle	LS			20
Total				**152**

7. Contingency (2% of sub-total of 1 to 6) = 2% of (1959 + 3552 + 840 + 3,317.14+ 4,494.98+ 152) = 286.3 Million BDT

8. Cost Escalation (LS) = 357.88 Million BDT

Overall Project Cost

Total Cost = 1,959+ 3,552 + 840 + 3,317.14+ 4,494.98 + 152 + 286.3 + 357.88 = 14,959.31 Million BDT

Annex E: Detail of Financial and Economic Analysis

	BEZA		82.18	1.80							0.70
	Cost	**Cost**									
	0%	0%	2.9%	5%	50%		5%				
Fiscal Year	Construction Cost	O&M cost	Exchange rate goes up by 3%	Land Lease/ sqm increases annually by 5%	Land uses rate increases by 50%	No of plots in use	Rental Rate per year for commercial and other places	Renting of commercial facilities	Renting of training facilities	Land used (sqm)	one time payment for 50 years for lease of land (cumulative)
1	2	3	4	5	6	7	8	9	10	11	12
2019-20	3552.00		82.18	1.80							
2020-21	3803.00		84.60	1.80							-
2021-22	3803.00		87.09	1.80							-
2022-23	3803.00		89.65	1.80							-
2023-24		50.63	92.29	1.89	25%	40	6,077.53	7587.85	453.75	505,857.50	1,634.07
2024-25		75.95	95.01	1.98	38%	59	6,381.41	11381.78	680.625	758,786.25	2,523.27
2025-26		113.92	97.81	2.08	56%	89	6,700.48	17072.66	1020.938	1,138,179.38	3,896.34
2026-27		170.89	100.69	2.19	84%	133	7,035.50	25608.99	1531.406	1,707,269.06	6,016.58
2027-28		202.53	103.65	2.30	100%	157	7,387.28	30351.4	1815	2,023,430.00	7,340.70
2028-29		202.53	106.70	2.41	100%	157	7,756.64	30351.4	1815	2,023,430.00	
2029-30		202.53	109.85	2.53	100%	157	8,144.47	30351.4	1815	2,023,430.00	
2030-31		202.53	113.08	2.66	100%	157	8,551.70	30351.4	1815	2,023,430.00	
2031-32		202.53	116.41	2.79	100%	157	8,979.28	30351.4	1815	2,023,430.00	-
2032-33		202.53	119.84	2.93	100%	157	9,428.25	30351.4	1815	2,023,430.00	
2033-34		202.53	120.00	3.08	100%	157	9,899.66	30351.4	1815	2,023,430.00	
2034-35		202.53	120.00	3.23	100%	157	10,394.64	30351.4	1815	2,023,430.00	
2035-36		202.53	120.00	3.39	100%	157	10,914.37	30351.4	1815	2,023,430.00	
2036-37		202.53	120.00	3.56	100%	157	11,460.09	30351.4	1815	2,023,430.00	
2037-38		202.53	120.00	3.74	100%	157	12,033.10	30351.4	1815	2,023,430.00	
2038-39		202.53	120.00	3.93	100%	157	12,634.75	30351.4	1815	2,023,430.00	
2039-40		202.53	120.00	4.13	100%	157	13,266.49	30351.4	1815	2,023,430.00	
2040-41		202.53	120.00	4.33	100%	157	13,929.81	30351.4	1815	2,023,430.00	

	BEZA		82.18	1.80							0.70
	Cost	**Cost**									
	0%	0%	2.9%	5%	50%		5%				
Fiscal Year	Construction Cost	O&M cost	Exchange rate goes up by 3%	Land Lease/ sqm increases annually by 5%	Land uses rate increases by 50%	No of plots in use	Rental Rate per year for commercial and other places	Renting of commercial facilities	Renting of training facilities	Land used (sqm)	one time payment for 50 years for lease of land (cumulative)
1	2	3	4	5	6	7	8	9	10	11	12
2041-42		202.53	120.00	4.55	100%	157	14,626.30	30351.4	1815	2,023,430.00	
2042-43		202.53	120.00	4.78	100%	157	15,357.62	30351.4	1815	2,023,430.00	
2043-44		202.53	120.00	5.01	100%	157	16,125.50	30351.4	1815	2,023,430.00	
Salvage val	89,116.43										
Interest cost											

	40%		inflation rate			5%				
				BDT	BDT	BDT m	BDT m	BDT m	BDT m	BDT m
		Revenue	**Revenue**			**Revenue**	**Revenue**	**Revenue**	**Revenue**	**Revenue**
				5%	5%		5%			
Fiscal Year	Revenue from one time lease of commercial spaces (cumulative)	One time revenue from lease of land	One time revenue from lease of commercial and other spaces	Rate of charges on CETP bills (per cum)	Rate of service charge on W&S bills per KL	Tariff on land	Power Tariff service charge add by 5%	Water Service Charge	CETP service charge	Rental income from Training facilities
1	13	14	15	16	17	18	19	20	21	22
2019-20										
2020-21										
2021-22										
2022-23										
2023-24	55.15	1,634.07	55.15	7.39	3.71	88.24	27.30	10.84	21.59	0.69
2024-25	86.87	889.20	31.71	7.76	3.90	143.07	28.67	17.07	34.00	1.63
2025-26	136.82	1,373.07	49.95	8.15	4.09	231.97	30.10	26.88	53.55	3.85
2026-27	215.48	2,120.24	78.67	8.56	4.30	376.11	31.60	42.34	84.35	9.09
2027-28	268.16	1,324.13	52.67	8.99	4.51	481.82	33.18	52.69	104.97	13.41
2028-29				9.44	4.74	520.81	34.84	55.32	110.21	14.08
2029-30				9.91	4.97	562.95	36.59	58.09	115.72	14.78
2030-31				10.40	5.22	608.50	38.42	60.99	121.51	15.52
2031-32				10.92	5.48	657.74	40.34	64.04	127.59	16.30
2032-33				11.47	5.76	710.96	42.35	67.24	133.97	17.11
2033-34				12.04	6.04	747.52	44.47	70.60	140.66	17.97
2034-35				12.65	6.35	784.90	46.69	74.13	147.70	18.87
2035-36				13.28	6.66	824.14	49.03	77.84	155.08	19.81
2036-37				13.94	7.00	865.35	51.48	81.73	162.84	20.80
2037-38				14.64	7.35	908.62	54.05	85.82	170.98	21.84
2038-39				15.37	7.71	954.05	56.76	90.11	179.53	22.93
2039-40				16.14	8.10	1,001.75	59.60	94.62	188.50	24.08
2040-41				16.95	8.51	1,051.84	62.58	99.35	197.93	25.28

	40%		inflation rate			5%				
				BDT	BDT	BDT m	BDT m	BDT m	BDT m	BDT m
		Revenue	**Revenue**			**Revenue**	**Revenue**	**Revenue**	**Revenue**	**Revenue**
				5%	5%		5%			
Fiscal Year	Revenue from one time lease of commercial spaces (cumulative)	One time revenue from lease of land	One time revenue from lease of commercial and other spaces	Rate of charges on CETP bills (per cum)	Rate of service charge on W&S bills per KL	Tariff on land	Power Tariff service charge add by 5%	Water Service Charge	CETP service charge	Rental income from Training facilities
1	13	14	15	16	17	18	19	20	21	22
2041-42				17.79	8.93	1,104.43	65.70	104.31	207.82	26.55
2042-43				18.68	9.38	1,159.65	68.99	109.53	218.22	27.87
2043-44				19.62	9.85	1,217.64	72.44	115.01	229.13	29.27
Salvage val										
Interest cos										

			BEZA Led Model							
	BDT m								Share of BEZA and PPP	
	Revenue	**Revenue**	**REVENUE**	**COST**	**NET**					
		15%		**Financial Analysis**		0%	12.0%	0%	44.4%	55.6%
Fiscal Year	Rental income from Commercial Facilities	Zone service Charges	Total Revenue	Total Cost	Net Financial Revenue	Construction cost under PPP strategy	Opportunity cost of upfront deposit	Investcost by BEZA under PPP	BEZA's operation cost	PPP Operator's Cost
1	23	24	25	26	27	28	29	30	31	32
2019-20			-	3552.00	(3,552.00)			3552.00		
2020-21			177.60	3803.00	(3,625.40)	2529.00	21.3	1054.75		177.60
2021-22			-	3803.00	(3,803.00)	2529.00	21.3	1054.75		
2022-23			-	3803.00	(3,803.00)	2529.00	21.3	1054.75		
2023-24	11.53	15.07	1,864.47	50.63	1,813.85		21.3		22.46	29.01
2024-25	27.24	25.79	1,198.37	75.95	1,122.42		21.3		33.70	43.52
2025-26	64.35	45.02	1,878.74	113.92	1,764.82		21.3		50.54	65.28
2026-27	152.02	80.58	2,975.00	170.89	2,804.11		21.3		75.82	97.92
2027-28	224.21	107.92	2,395.00	202.53	2,192.47		21.3		89.86	116.05
2028-29	235.42	115.55	1,086.24	202.53	883.71		21.3		89.86	116.05
2029-30	247.20	123.74	1,159.07	202.53	956.53		21.3		89.86	116.05
2030-31	259.56	132.54	1,237.03	202.53	1,034.50		21.3		89.86	116.05
2031-32	272.53	141.99	1,320.52	202.53	1,117.99		21.3		89.86	116.05
2032-33	286.16	152.13	1,409.93	202.53	1,207.40		21.3		89.86	116.05
2033-34	300.47	159.89	1,481.59	202.53	1,279.06		21.3		89.86	116.05
2034-35	315.49	167.89	1,555.67	202.53	1,353.14		21.3		89.86	116.05
2035-36	331.27	176.28	1,633.45	202.53	1,430.92		21.3		89.86	116.05
2036-37	347.83	185.10	1,715.13	202.53	1,512.60		21.3		89.86	116.05
2037-38	365.22	194.35	1,800.88	202.53	1,598.35		21.3		89.86	116.05
2038-39	383.48	204.07	1,890.93	202.53	1,688.40		21.3		89.86	116.05
2039-40	402.66	214.27	1,985.47	202.53	1,782.94		21.3		89.86	116.05
2040-41	422.79	224.99	2,084.75	202.53	1,882.22		21.3		89.86	116.05

			BEZA Led Model							
	BDT m								Share of BEZA and PPP	
	Revenue	**Revenue**	**REVENUE**	**COST**	**NET**					
		15%		**Financial Analysis**		0%	12.0%	0%	44.4%	55.6%
Fiscal Year	Rental income from Commercial Facilities	Zone service Charges	Total Revenue	Total Cost	Net Financial Revenue	Construction cost under PPP strategy	Opportunity cost of upfront deposit	Investcost by BEZA under PPP	BEZA's operation cost	PPP Operator's Cost
1	23	24	25	26	27	28	29	30	31	32
2041-42	443.93	236.24	2,188.99	202.53	1,986.45		21.3		89.86	116.05
2042-43	466.13	248.05	2,298.43	202.53	2,095.90		21.3		89.86	116.05
2043-44	489.43	260.45	2,413.36	202.53	2,210.82		21.3		89.86	116.05
Salvage val			89,116.43		89,116.43					
Interest cos										
		Land price increase in 25 years 25 times			25					
				FBCR	1.09					
				FNPV	1,098.19					
				Dis rate	12%					
				FIRR	12.7%					

	PPP Model									
			15%	85%			m USD		BDT m	BDT m
							20%			
Fiscal Year	Total cost of BEZA	Total cost of PPP Operator	Revenue of BEZA	Revenue of PPP Operator	Net Revenue of BEZA under PPP	Net Revnue of PPP Operator	Investment in the zone with 20% re-investment rate	Jobs created within NEZ	Value addtion to GDP	FE Benefits (addition to the Reserve)
1	33	34	35	36	37	38	39	40	41	42
2019-20	3552.00		-		(3,552.00)					
2020-21	1054.75	2706.60	-	-	(1,054.75)	(2,706.60)				
2021-22	1054.75	2529.00	-	-	(1,054.75)	(2,529.00)				
2022-23	1054.75	2529.00	-	-	(1,054.75)	(2,529.00)				
2023-24	22.46	29.01	101.29	85.06	78.83	56.04	51	25,023	454.20	4,174.74
2024-25	33.70	43.52	163.23	131.37	129.53	87.85	76	37,534	681.30	6,262.12
2025-26	50.54	65.28	265.53	218.72	214.99	153.44	114	56,301	1,021.96	9,384.96
2026-27	75.82	97.92	436.10	390.98	360.29	293.06	171	84,452	1,532.93	14,069.22
2027-28	89.86	116.05	562.28	524.31	472.42	408.25	203	100,091	1,816.81	16,666.10
2028-29	89.86	116.05	605.62	552.71	515.77	436.65	203	100,091	1,816.81	16,666.10
2029-30	89.86	116.05	652.37	582.70	562.51	466.65	203	100,091	1,816.81	16,666.10
2030-31	89.86	116.05	702.78	614.39	612.92	498.33	203	100,091	1,816.81	16,666.10
2031-32	89.86	116.05	757.16	647.87	667.30	531.81	203	100,091	1,816.81	16,666.10
2032-33	89.86	116.05	815.80	683.24	725.95	567.19	203	100,091	1,816.81	16,666.10
2033-34	89.86	116.05	857.63	717.55	767.78	601.50	203	100,091	1,816.81	16,666.10
2034-35	89.86	116.05	900.51	753.43	810.66	637.38	203	100,091	1,816.81	16,666.10
2035-36	89.86	116.05	945.54	791.10	855.68	675.05	203	100,091	1,816.81	16,666.10
2036-37	89.86	116.05	992.82	830.66	902.96	714.60	203	100,091	1,816.81	16,666.10
2037-38	89.86	116.05	1,042.46	872.19	952.60	756.13	203	100,091	1,816.81	16,666.10
2038-39	89.86	116.05	1,094.58	915.80	1,004.72	799.74	203	100,091	1,816.81	16,666.10
2039-40	89.86	116.05	1,149.31	961.59	1,059.45	845.53	203	100,091	1,816.81	16,666.10
2040-41	89.86	116.05	1,206.78	1,009.67	1,116.92	893.61	203	100,091	1,816.81	16,666.10

	PPP Model									
			15%	85%			m USD		BDT m	BDT m
							20%			
Fiscal Year	Total cost of BEZA	Total cost of PPP Operator	Revenue of BEZA	Revenue of PPP Operator	Net Revenue of BEZA under PPP	Net Revnue of PPP Operator	Investment in the zone with 20% re-investment rate	Jobs created within NEZ	Value addtion to GDP	FE Benefits (addition to the Reserve)
1	33	34	35	36	37	38	39	40	41	42
2041-42	89.86	116.05	1,267.11	1,060.15	1,177.26	944.10	203	100,091	1,816.81	16,666.10
2042-43	89.86	116.05	1,330.47	1,113.16	1,240.61	997.10	203	100,091	1,816.81	16,666.10
2043-44	89.86	116.05	1,396.99	1,168.82	1,307.14	1,230.36	203	100,091	1,816.81	16,666.10
Salvage val	0.00		89,116.43		89,116.43	776.46				
Interest cos										
			87.9%	Land price increase in 25 years 25 times						
				FBCR	1.30	0.40				
				FNPV	1722.34	(3,961.10)				
				Dis rate	12.00%	12.00%				
				FIRR	13.56%	3.72%				

	Economic Analysis		
Fiscal Year	Total Economic Benefits	Total Economic Costs	Net Economic Benefits
1	43	44	45
2019-20	-	3,552.00	(3,552.00)
2020-21	-	3,803.00	(3,803.00)
2021-22	-	3,803.00	(3,803.00)
2022-23	-	3,803.00	(3,803.00)
2023-24	6,493.42	50.63	6,442.79
2024-25	8,141.79	75.95	8,065.84
2025-26	12,285.65	113.92	12,171.73
2026-27	18,577.15	170.89	18,406.26
2027-28	20,877.91	202.53	20,675.38
2028-29	19,569.15	202.53	19,366.62
2029-30	19,641.98	202.53	19,439.45
2030-31	19,719.95	202.53	19,517.42
2031-32	19,803.43	202.53	19,600.90
2032-33	19,892.84	202.53	19,690.31
2033-34	19,964.50	202.53	19,761.97
2034-35	20,038.58	202.53	19,836.05
2035-36	20,116.37	202.53	19,913.84
2036-37	20,198.04	202.53	19,995.51
2037-38	20,283.80	202.53	20,081.27
2038-39	20,373.84	202.53	20,171.31
2039-40	20,468.39	202.53	20,265.86
2040-41	20,567.66	202.53	20,365.13

	Economic Analysis		
Fiscal Year	Total Economic Benefits	Total Economic Costs	Net Economic Benefits
1	43	44	45
2041-42	20,671.90	202.53	20,469.37
2042-43	20,781.35	202.53	20,578.82
2043-44	20,896.27	202.53	20,693.74
Salvage val			
Interest cos			
		EBCR	6.50
		ENPV	66,577.09
		dis rate	12.0%
		EIRR	43.5%

ANNEX F: QUESTIONNAIRE SURVEY

Questionnaire for Investor Survey

(for estimating demand for land and utilities and economic benefit for an economic zone)

Government of Bangladesh (GoB) has taken up economic zone program through BEZA. Institute of Water Modelling (IWM) is assisting BEZA to develop economic zones in the country. As part of the development initiative, kindly fill up the following questions:

Date: 05/09/2019

1. General information about the firm or group of companies

Name of Company	Number of employees	Year of establishment	Type of incorporation		
			Foreign (country)	Local	JV (country & local %)
M/S Rajani Huto Rice Mill. Malni P.O+Dist. Netraka	70 Person	1997		✓	

Area presently in use (Acre)	Nature of Business	Capital (Taka Crore)
Dicimal 700	Food Processing Mill	4 Core taka Investment

Main products produced	Sale Quantity		Cost of Production (Taka Crore)		Value Addition, %
	Year	Unit of Measurement	Local Sourcing	Import	
Rice	~~19~~ 5000 ~~Tons~~ 2018-	5000 Tons of Rice	All of Local Sourcing	x	5%

2. Is the company interested to lease land or ready-factory space in the proposed EZs? Write 'Y' for yes , 'N' for no	Yes

If yes, kindly rank your preference with rationale for, your answer on the scale of 1 to 10 (1 being lowest preference and 10 being highest preference)

Factors	Marks (1 to 10)	Rationale
a) Availability of labor	10	Low
b) Access to raw material	10	
c) Availability of energy	8	
d) Low price for Land	5	
e) Proposed connectivity enhancement	7	
f) Presence of backward linkages	8	
g) Proximity to local consumption center	7	
h) Any other reason (please explain in rationale)		easili Sale

3. Show company's demand for land and factory space
(kindly rank your answer on the scale of 1 to 2 (1 being highest preference and 2 being lowest preference))

Item	Preference (Please rank)	Type of Industry to be set up*	Desired Amount of Land/Space	Number of Employees to be Hired
a. Lease barren land (Acres)	2	Rice Mill		
b. Lease factory space (sft)	3000 Sft 1			40

*Example: 1. Textile and RMG Industry 2. Pharmaceutical 3. Leather Footwear 4. Shipbuilding and Repair 5. ICT Industry (computer, electronic and optical products and software) 6. Light Engineering 7. Frozen Fish 8. Food Processing 9. Cement 10. Wood and products of wood and cork 11. Paper and paper products 12. Printing and reproduction of recorded media 13. Refined petroleum products 14. Chemicals and chemical products 15. Rubber and plastics products 16. Non-metallic mineral products 17. Basic metals 18. Fabricated metal products 19. Electrical equipment 20. Machinery and equipment 21. Motor vehicles, trailers and semitrailers 22. Furniture 23. Ceramics products

4. What will be the intended market for your products?	Local (%)	International (%)	Country (if international)
	100%		

5. Please indicate your existing monthly utility requirements?	Power (KWh)	Water (m^3)	Gas (m^3)	Other (Unit)
	20000 unit	5000 litter		

6. The projected timeframe for establishing the industry in the zone?	☐ 3-6 months ☐ 6-12 months ☐ 12-24 months ✓ ☐ Others (Please specify)
7. When the company will be able to move to EZ(month & year)?	After developing the EZs ☐ Immediate after developing the EZs ☐ 3-6 months ☐ 6-12 months ✓ ☐ 12-24 months ☐ Others (Please specify)
8. Would you set-up your own ETP for your industry in the proposed Economic Zone?	☐ Yes ☐ No ✓

Remarks	Loan, comunication.
Contact, names and contact details	~~Loan~~ Ranjit Kumar Sal M/s Rogani Auto Rice Mill. Malni Road, Netrakona 01711-007259 Ex-principal & Professor Hafez Ziaur Rahman Degree. College, Shyamganj, Accounting → Netrokona.

BANGLADESH SMALL & COTTAGE INDUSTRIES CORPORATION
1ST REVISED LAY-OUT PLAN OF BSCIC I/ E ,NETRAKONA.

SCALE:1"=200'

LAND DISTRIBUTION

SL.NO	AREA UNDER	ACRE
1.A	ADMIN AND UTILITY	0.37
B	MOSQUE	0.04
2	ROAD AND DRAIN	3.00
3	PLOTS	11.35
4	P.D.Q AND W.T	0.10
5	GREEN SPACE	0.14
	TOTAL	15.00

DETAILS OF PLOT

TYPE OF PLOT	NO	SIZE	AREA
A	04	60'x100'	6000 SFT
B	54	50'X90'	4500 SFT
S	45	OTHER SIZE	

TOTAL 103

PREPARED BY	CHECKED BY			RECOMMENED BY	APPROVED BY
20/10/12	28/10/12	29/10/12	18.9.14	29/5/14	30/10/14
ESTATE OFFICER BSCIC I E,Natrakona	DEPUTY MANAGER ISC.BSCIC ,Natrakona	EXECUTIVE ENGINEER DRO.BSCIC ,Dhaka	DEPUTY CHIEF ENGINEER Civil Engg Deptt. BSCIC Dhaka	REGIONAL DIRECTOR DRO.BSCIC ,Dhaka	CHIEF ENGINEER BSCIC, Dhaka

শিল্প মন্ত্রণালয়

বাংলাদেশ ক্ষুদ্র ও কুটির শিল্প করপোরেশন (বিসিক)
১৩৭-১৩৮, মতিঝিল বাণিজ্যিক এলাকা, ঢাকা ১০০০, বাংলাদেশ।
ই-মেইল ঃ info@bscic.gov.bd, ওয়েবসাইট ঃ www.bscicgov.bd

স্মারক নং ঃ- ৩৬.০২.০১০.০২.১১.১৪৩(১).২০১৩-১৯/ ৫৪৬ তারিখঃ ২০-০৮-২০১৯খ্রিঃ

বিষয় : নেত্রকোণা বিসিক শিল্প নগরী সম্প্রসারণ

উপর্যুক্ত বিষয়ে নির্দেশক্রমে জানানো যাচ্ছে যে, বাংলাদেশ ক্ষুদ্র ও কুটির শিল্প করপোরেশন (বিসিক) এর উদ্যোগে ২০০৫ সালে নেত্রকোণায় জেলায় ১৫.০০ একর বিশিষ্ট একটি শিল্প নগরী স্থাপিত হয়। উক্ত শিল্পনগরীর প্লট সংখ্যা ১০৩ টি। উল্লেখিত প্লট সমূহ ৬৭ টি শিল্প ইউনিটের অনুকূলে বরাদ্দ দেয়া হয়েছে। শিল্পনগরীতে বরাদ্দযোগ্য আর কোন শিল্প প্লট নেই। অথচ উদ্যোক্তাদের নিকট থেকে ক্রমাগত শিল্প প্লটের চাহিদা পাওয়া যাচ্ছে। বিসিকের সচিব গত ০৮-০৮-২০১৯ ইং তারিখে বিসিক শিল্পনগরী নেত্রকোণা পরিদর্শনকালে শিল্পনগরী সংলগ্ন উত্তর পার্শ্বে চলিশা ইউনিয়নের রাজেন্দ্রপুর মৌজায় বিসিক শিল্পনগরীর সম্প্রসারণ যোগ্য জমি সরেজমিন পরিদর্শন করেছেন।

প্রস্তাবিত সম্প্রসারিত শিল্পনগরীতে দেশি বিদেশী উদ্যোগে শিল্প কারখানা স্থাপিত হবে। ফলে নেত্রকোনাসহ ভাটি অঞ্চলের জনসাধারনের বিপুল কর্মসংস্থানসহ ব্যাপক আর্থ সামাজিক উন্নয়ন সাধিত হবে । এজন্য প্রস্তাবিত জমিতে বিসিক শিল্পনগরী সম্প্রসারণের নিমিত্ত জমির মৌজা ম্যাপ, অধিগ্রহণতব্য এলাকার স্কেচ ম্যাপ, জমির সম্ভাব্য মূল্যসহ বিস্তারিত তথ্যাদি প্রয়োজন।

এমতাবস্থায়, নেত্রকোনা বিসিক শিল্পনগরী সম্প্রসারণের লক্ষ্যে উল্লেখিত মৌজায় অথবা অন্য কোন সুবিধাজনক স্থানে ১০০ একর জমির মৌজা ম্যাপ, স্কেচ ম্যাপ, জমির শ্রেণি, মৌজা রেট ও জমির সম্ভাব্য মূল্যসহ বিস্তারিত তথ্যাদি জরুরি ভিত্তিতে প্রেরণের জন্য অনুরোধ করা হলো।

২০/৮/১৯

(মোঃ খলিলুর রহমান)
যুগ্ম-সচিব
পরিচালক (উন্নয়ন ও সম্প্রসারণ)
বিসিক,ঢাকা।

জেলা প্রশাসক
নেত্রকোণা

অনুলিপি : (জ্যেষ্ঠতার ক্রমানুসারে নয়)

০১। সচিব, শিল্প মন্ত্রণালয়,মতিঝিল ঢাকা।
০২। সচিব, প্রধানমন্ত্রীর কার্যালয়, তেজগাঁও ,ঢাকা।
০৩। সচিব, ভূমি মন্ত্রণালয় বাংলাদেশ সচিবালয় ,ঢাকা।
০৪। মাননীয় মন্ত্রীর একান্ত সচিব, শিল্প মন্ত্রণালয়,মতিঝিল ঢাকা। মন্ত্রী মহোদয়ের সদয় অবগতির জন্য।
০৫। মাননীয় মন্ত্রীর একান্ত সচিব, বাণিজ্য মন্ত্রণালয়,বাংলাদেশ সচিবালয় ঢাকা । মন্ত্রী মহোদয়ের সদয় অবগতির জন্য।
০৬। আঞ্চলিক পরিচালক বিসিক,ঢাকা। (চাহিত তথ্যাদি প্রাপ্তি নিশ্চয়তা বিধান করবেন)।
০৭। উপজেলা নির্বাহী অফিসার নেত্রকোণা সদর।
০৮। উপব্যবস্থাপক শিল্প সহায়ক কেন্দ্র বিসিক, নেত্রকোণা (জলা প্রশাসক অফিসে যোগাযোগ করে তাঁকে জমির উল্লেখিত তথ্যাদি দ্রুত সংগ্রহ করে প্রেরণের জন্য বলা হলো।
০৯। চেয়ারম্যানের একান্ত সচিব, বিসিক, ঢাকা।

উৎপাদনরত উজ্জ্বল সম্ভাবনাময় ১৫ টি শিল্পের বিবরন ঃ-

০১। নবাবী ফুটওয়্যার লিমিটেড ব্যবস্থাপনা পরিচালক কে.এম জহির ফারুক প্লট নং ঃ বি-২৭(অংশ), বি-২৮,বি-২৯,বি-৩০, বি-৩১ জমির পরিমান ঃ ১৯৮০০ বর্গফুট হস্তান্তরের তারিখ ঃ ২০-০৩-২০১৭, স্মারক নং : ৩৩১(২), ৫৯৫(২) শিল্প খাত ঃ পাট ও চামড়াজাত উৎপাদিত পন্য ঃ পাটের জুতা, সেন্ডেল, ব্যাগ, মানিব্যাগ অন্যান্য উৎপাদিত পন্যের কাঁচামাল ঃ পাট, চামড়া ও রেক্সিন (দেশীয়)। বিপনন ঃ বাংলাদেশ, ফ্রান্স সহ ইউরোপিয়ান দেশসমুহ। কর্মসংস্থান - বর্তমানে ৪০ জন, পুরোমাত্রায় চালু হলে ২৫০ জন লোকের কর্মসংস্থান সৃষ্টি হবে। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৪-০৫৩৭০৫	০২। হোয়াইট স্টার ইন্ডাষ্টিজ লিমিটেড ব্যবস্থাপনা পরিচালক ফখরুল আলম প্লট নং ঃ এস-৩৬(অংশ) জমির পরিমান ঃ ৯৫০৬ বর্গফুট হস্তান্তরের তারিখ ঃ ২৭-০৩-২০১৮, স্মারক নং : ৩৭৩(২), ৭২১(২) শিল্প খাত ঃ বন ও বনজাত, ব্রিকেট জ্বালানী উৎপাদিত পন্য ঃ উড পেলেট (বিকল্প জ্বালানী) উৎপাদিত পন্যের কাঁচামাল ঃ গাছের ডাল, ধানের খড়,স মিলের ভূষি, ইক্ষুর বর্জ, কৃষিজাত শিল্পের বর্জ ইত্যাদি। বিপনন ঃ বাংলাদেশর বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ৩১ জন । বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১১-৬৬১৫৮২

০৩। মেসার্স শিমু এন্ড সাজ্জাদ ফ্যাশন ওয়্যার স্বত্বাধিকারী মোশফিকুর রহমান প্লট নং ঃ বি-৪০ জমির পরিমান ঃ ৪৫০০ বর্গফুট হস্তান্তরের তারিখ ঃ ১২-০৪-২০১৮, স্মারক নং : ১২৯(২), ৪৬০(২) শিল্প খাত ঃ বস্ত্র ও বস্ত্রজাত উৎপাদিত পন্য ঃ শার্ট, প্যান্ট সহ গামেন্টর্স পন্য। উৎপাদিত পন্যের কাঁচামাল ঃ কাপড়, জিপার, সুতা, বোতাম, প্যাকিং (দেশীয়)। বিপনন ঃ বাংলাদেশসহ বিদেশী বায়ারের মাধ্যমে ইংল্যান্ড । কর্মসংস্থান - বর্তমানে ৮০ জন, পুরোমাত্রায় চালু হলে ২০০ জন লোকের কর্মসংস্থান সৃষ্টি হবে। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৬৭০-১৮৭৮৫৯	০৪। সেফটি হেলথ স্বত্বাধিকারী কে.এম মারুফ প্লট নং ঃ এ-০১,এ-০২,এ-০৩(অংশ) জমির পরিমান ঃ ১৩৫০০বর্গফুট প্লট বরাদ্দের তারিখ : ১৫-০৫-২০১১, স্মারক নং : ৩৪৯ শিল্প খাত ঃ কেমিক্যাল এন্ড ফার্মাসিউটিক্যালস উৎপাদিত পন্য ঃ বিভিন্ন ধরনের এ্যানিম্যাল ড্রাগস ট্যাবলেট,পাউডার, তরল ঔষধ। উৎপাদিত পন্যের কাঁচামাল ঃ দেশীয় এবং চায়না, ভিয়েতনাম হতে আমদানীকৃত। বিপনন ঃ বাংলাদেশর বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ২০ জন,পুরোমাত্রায় চালু হলে ১০০ জন লোকের কর্মসংস্থান সৃষ্টি হবে। । বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১২-০১৮৯০৭
০৫। মেসার্স পোলার বেকারী স্বত্বাধিকারী মোঃ আব্দুস সালাম সেলু প্লট নং ঃ বি-০৯, বি-১০(অংশ) জমির পরিমান ঃ ৬০৩৯ বর্গফুট প্লট বরাদ্দের তারিখ ঃ ০৫-০৪-২০০৯, স্মারক নং : ৭২ শিল্প খাত ঃ খাদ্য ও খাদ্যজাত উৎপাদিত পন্য ঃ বিস্কুট,কেক,সেমাই,চানাচুর,পাউরুটি । উৎপাদিত পন্যের কাঁচামাল ঃ ময়দা,চিনি,তৈল,ডালডা,ডিম, ইষ্ট, গুড়া দুধ ও অন্যান্য। বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ১০ জন বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১১-০০৭৬৮৭	০৬। মেসার্স নেত্র ফুড প্রোডাক্টস স্বত্বাধিকারী বিপ্লব কুমার সাহা প্লট নং ঃ এস-৩৭, এ-০৪(অংশ) জমির পরিমান ঃ ১২০০০ বর্গফুট হস্তান্তরের তারিখ : ১৫-০৬-২০১৭, স্মারক নং : ৮৭৩(২), ১১৭৮(২) প্লট বরাদ্দের তারিখ : ০৪-১২-২০১৮, স্মারক নং : ২৬৮(৩) শিল্প খাত ঃ খাদ্য ও খাদ্যজাত উৎপাদিত পন্য ঃ মুড়ি উৎপাদিত পন্যের কাঁচামাল ঃ চাল,লবন, প্যাকিং সামগ্রী বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ০৮ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৯১২-৯০৯১৩২

০৭। মেসার্স মা ফাতেমা কয়েল ফ্যাক্টরী স্বত্বাধিকারী মোঃ সাইদুল ইসলাম রুবেল প্লট নং ঃ বি-৩৫(অংশ),বি-৩৬ জমির পরিমান ঃ ৬০০০ বর্গফুট প্লট বরাদ্দের তারিখ ঃ ০৯-০২-২০১২, স্মারক নং : ৪০৫ শিল্প খাত ঃ রসায়ন উৎপাদিত পন্য ঃ মশার কয়েল(প্রস্তাবিত)। উৎপাদিত পন্যের কাঁচামাল ঃ উড পাউডার,নারিকেল আচিল পাউডার,গাম,বার্লি,ক্যামিকেলন,রং,মোড়ক ও প্যাকেজিং। বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায় । কর্মসংস্থান - বর্তমানে ১৫ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১২-৯৯৪১২৯	০৮। মেসার্স এ কে মেটাল ইন্ডাষ্ট্রিজ স্বত্বাধিকারী আতিকুল ইসলাম ফরাজী প্লট নং ঃ এস-৪০ জমির পরিমান ঃ ৬০০০ বর্গফুট প্লট বরাদ্দের তারিখ : ১৫-০৫-২০১১, স্মারক নং : ৩৪৯ শিল্প খাত ঃ খাদ্য ও খাদ্যজাত উৎপাদিত পন্য ঃ মুড়ি (প্রস্তাবিত) উৎপাদিত পন্যের কাঁচামাল ঃ চাল,লবন, প্যাকিং সামগ্রী। বিপনন ঃ বাংলাদেশর বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ১২ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১২-২২৩৯৯৯
০৯। মেসার্স ইকরা প্লাষ্টিক এন্ড রিসাইক্লিন ইন্ডাষ্ট্রিজ স্বত্বাধিকারী মোঃ আবু ছিদ্দিক প্লট নং ঃ বি-২১(অংশ), বি-২২ জমির পরিমান ঃ ৭৫০০ বর্গফুট প্লট বরাদ্দের তারিখ ঃ ১০-০৫-২০১১, ১৯-১১-২০১২, স্মারক নং : ৩৪৭,৮৭(৩) শিল্প খাত ঃ রাবার এন্ড প্লাষ্টিক উৎপাদিত পন্য ঃ প্লাষ্টিক রিসাইক্লিন। উৎপাদিত পন্যের কাঁচামাল ঃ প্লাষ্টিক/বোতল,বালতি সামগ্রী বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ০৮ জন বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৮-০১৪২৩৭	১০। মেসার্স খান পিউর ড্রিংকিং ওয়াটার স্বত্বাধিকারী মোঃ কামাল উদ্দিন খান প্লট নং ঃ বি-০৩ জমির পরিমান ঃ ৪৫০০ বর্গফুট হস্তান্তরের তারিখ : ০৮-১১-২০১৮, স্মারক নং : ৬৭৪(২), ২৪৫(২) শিল্প খাত ঃ খাদ্য ও খাদ্যজাত উৎপাদিত পন্য ঃ বোতলজাত মিনারেল ওয়াটার উৎপাদিত পন্যের কাঁচামাল ঃ বোতল,পানি শোধনের মিনারেলস। বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ০৫ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৬-১০৪৭৪৩

১১। মেসার্স মাহি তাজ আয়রন ইন্ডাষ্ট্রিজ স্বত্বাধিকারী মোঃ আজিজুল হক তালুকদার প্লট নং ঃ বি-১৭,বি-১৮,বি-১৯,বি-২০(অংশ) জমির পরিমান ঃ ১৪৩৫০ বর্গফুট হস্তান্তরের তারিখ ঃ ২১-০৭-২০০৯,০৯-০৫-২০১১, স্মারক নং : ১৪,৩৪৬ শিল্প খাত ঃ প্রকৌশল উৎপাদিত পন্য ঃ এ্যালুমিনিয়াম তৈজসপত্র। উৎপাদিত পন্যের কাঁচামাল ঃএ্যালুমিনিয়াম সীট দেশীয়। বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায় । কর্মসংস্থান - বর্তমানে ১২ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ০১৭১০-৮৫৭২৫৪	১২। মেসার্স এ.এল আকন্দ ফ্যাশন (হস্তান্তর চুক্তি ইউনিট) স্বত্বাধিকারী জহিরুল হাসান আকন্দ প্লট নং ঃ বি-১০(অংশ),বি-১১,বি-১২ জমির পরিমান -১২০১২ বর্গফুট শিল্প খাত ঃ বস্ত্র ও বস্ত্রজাত উৎপাদিত পন্য ঃ শার্ট, প্যান্ট সহ গামেন্টর্স পন্য। উৎপাদিত পন্যের কাঁচামাল ঃ কাপড়, জিপার, সুতা, বোতাম, প্যাকিং (দেশীয়)। বিপনন ঃ বাংলাদেশসহ বিদেশী বায়ারের মাধ্যমে ইংল্যান্ড । কর্মসংস্থান - বর্তমানে ৫০ জন, পুরোমাত্রায় চালু হলে ১৫০ জন লোকের কর্মসংস্থান সৃষ্টি হবে। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৫-৮৮৪৪২৫
১৩। মেসার্স আবির এন্টারপ্রাইজ স্বত্বাধিকারী মোঃ ওয়ারেছ তালুকদার প্লট নং ঃ এস-২৩(অংশ),এস-২৪(অংশ) জমির পরিমান ঃ ৪৫০০ বর্গফুট প্লট বরাদ্দের তারিখ ঃ ০৮-১১-২০১২, স্মারক নং : ৬৩(৩) শিল্প খাত ঃ বন ও বনজাত উৎপাদিত পন্য ঃ অত্যাধুনিক কাঠের আসবাবপত্র । উৎপাদিত পন্যের কাঁচামাল ঃ কাঠ,বার্নিশ, রং বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ০৬ জন বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৮-০৪২২৮৪	১৪। মেসার্স সারিন্দা ফাস্ট ফুড স্বত্বাধিকারী মোঃ নুরুল ইসলাম প্লট নং ঃ এস-০১ জমির পরিমান ঃ ৪৫৮০ বর্গফুট প্লট বরাদ্দের তারিখ : ১১-১১-২০১২,২৯-০১-২০১৫ স্মারক নং : ৬৫(৩),৪১০(৩) শিল্প খাত ঃ খাদ্য ও খাদ্যজাত উৎপাদিত পন্য ঃ ফাষ্টফুড সামগ্রী । উৎপাদিত পন্যের কাঁচামাল ঃ ময়দা,ডিম,চিনি,ডালডা, তৈল বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ১৩ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১২-১০৪৮৪৩

১৫। প্রোনিট ইঞ্জিনিয়ারিং লিমিটেড ব্যবস্থাপনা পরিচালক খান আলী মর্তুজা প্লট নং ঃ বি-৪০ জমির পরিমান ঃ ৬০০০ বর্গফুট হস্তান্তরের তারিখ ঃ ১২-০৪-২০১৮, স্মারক নং : ১২৯(২), ৪৬০(২) শিল্প খাত ঃ প্রকৌশল উৎপাদিত পন্য ঃ প্রকৌশল/গার্মেন্টস শিল্পের বিভিন্ন যন্ত্রপাতি। উৎপাদিত পন্যের কাঁচামাল ঃ এমএসশীট,মেফট,পাইপ, ইলেকট্রিক যন্ত্রাংশ (দেশীয়)। বিপনন ঃ বাংলাদেশের বিভিন্ন জেলায়। কর্মসংস্থান - বর্তমানে ১১ জন। বিসিক শিল্পনগরী নেত্রকোনা। মোবাইল নং ঃ ০১৭১৩-৫৭৮০৬৪	

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বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ
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সভার তারিখ ও সময়	:	১১/১২/২০১৯ খ্রিস্টাব্দ
সভার স্থান	:	বেজা'র সভাকক্ষ
সভাপতি	:	মোঃ হারুনুর রশিদ, নির্বাহী সদস্য (প্রশাসন ও অর্থ)
উপস্থিতি	:	**পরিশিষ্ট 'ক'**

সভার শুরুতে সকলকে স্বাগত জানিয়ে সভাপতি সভার কাজ শুরু করেন। অত:পর সভাপতির আহ্বানের পরিপ্রেক্ষিতে পরামর্শক প্রতিষ্ঠান Institute of Water Modelling (IWM) কর্তৃক নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষা কার্যক্রমের আওতায় প্রণীত Draft Final Report উপস্থাপন করা হয়। Draft Final Report-টি উপস্থাপনের পর এর উপর বিস্তারিত আলোচনা ও কতিপয় সিদ্ধান্ত গৃহীত হয়।

০২। আলোচনা:

২.১। Draft Final Report এর উপর আলোচনায় অংশগ্রহণ করে সভাপতি মহোদয় বলেন যে, বেজা কোন মুনাফা অর্জনকারী প্রতিষ্ঠান নয়। বেজা মানুষের কল্যাণের জন্য কাজ করে যাচ্ছে। অর্থনৈতিক অঞ্চল স্থাপনের মাধ্যমে বেজা মানুষের কর্মসংস্থানের সুযোগ সৃষ্টি করছে। প্রস্তাবিত অর্থনৈতিক অঞ্চল তথা নেত্রকোণা এলাকাটি একটি অনগ্রসর এলাকা। এ অঞ্চলে অর্থনৈতিক অঞ্চল প্রতিষ্ঠিত হলে মানুষের কর্মসংস্থান হবে। এছাড়া অর্থনৈতিক অঞ্চল স্থাপনের মাধ্যমে দেশে শিল্প প্রতিষ্ঠান গড়ে উঠার সুযোগ পাবে। আলোচ্য নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষার রিপোর্টে এ বিষয়গুলো তুলে ধরতে হবে মর্মে সভাপতি অভিমত ব্যক্ত করেন। এছাড়া অর্থনৈতিক অঞ্চলের মানদন্ড নির্ধারণে বিদেশী অর্থনৈতিক অঞ্চলকে Benchmarking এর আওতায় আনতে হবে।

২.২। আলোচনায় অংশগ্রহন করে বেজা'র কর্মকর্তা ও পরামর্শকবৃন্দ অভিমত ব্যক্ত করেন যে, সম্ভাব্যতা সমীক্ষা রিপোর্টে ভূমি ব্যবহার সংক্রান্ত লে-আউট প্ল্যানের পাশাপাশি বিদ্যমান ভূমি ব্যবহার মানচিত্র থাকা প্রয়োজন। এছাড়া সকল প্রশাসনিক সীমানা (মৌজা, ইউনিয়ন, উপজেলা ও জেলা) সম্বলিত মানচিত্র ও একটি জোনিং মানচিত্র সম্ভাব্যতা সমীক্ষা রিপোর্টে অন্তর্ভুক্ত করা যেতে পারে। উল্লেখ্য, জোনিং মানচিত্রে বিনোদনমূলক এলাকা, শিল্প এলাকা, আবাসিক এলাকা ইত্যাদি বিষয়ে ভূমি ব্যবহার বিন্যাস নির্দিষ্ট করা যেতে পারে। এছাড়া সমীক্ষা রিপোর্টে প্রদর্শিত সকল অফ-সাইট এবং অন-সাইট অবকাঠামোর ইন্ডিকেটিভ ডিজাইনসহ ব্যয় প্রাক্কলনের বিস্তারিত ব্যয় বিভাজন ও রেট্স অফ সিডিউল উল্লেখ থাকা আব্যশক।

২.৩। সভায় আরো উল্লেখ করা হয় যে, অর্থনৈতিক অঞ্চলের জন্য নির্ধারিত জমির ভূমি উন্নয়নের ক্ষেত্রে প্রয়োজনীয় ড্রেজিং/খনন পরিকল্পনার ধারনা চলমান সম্ভাব্যতা সমীক্ষায় তুলে ধরা প্রয়োজন। কোন্ কোন্ উৎস থেকে (ভূ-গর্ভস্থ, নদী/বিলের পানি, বৃষ্টির পানি, পুনঃ চক্রায়নকৃত পানি ইত্যাদি) কি পরিমাণ পানি কোন পদ্ধতিতে আহরণ করা হবে তার সুনির্দিষ্ট পরিকল্পনা সম্ভাব্যতা সমীক্ষায় অন্তর্ভূক্ত করার বিষয়ে সভায় আলোচনা করা হয়। অর্থনৈতিক অঞ্চলটিতে ভবিষ্যতে কি পরিমাণ তরল ও কঠিনবর্জ্য সৃষ্টি হতে পারে তার ধারণামূলক বিশ্লেষণ সাপেক্ষে Common Effuent Treatment Plant (CETP) ও Solid Waste Management Facilities (SWMF) এর পরিকল্পনা সম্ভাব্যতা সমীক্ষায় সন্নিবেশিত করার বিষয়ে মতামত প্রদান করা হয়। অধিকন্তু, অর্থনৈতিক অঞ্চলে নিরবচ্ছিন্ন ও নির্ভরযোগ্য বিদ্যুৎ সরবরাহের বিষয়ে সুনির্দিষ্ট বাস্তবসম্মত সুপারিশ রাখাসহ প্রকল্পের পার্শ্ববর্তী এলাকার বিদ্যমান ট্রান্সমিশন ও বিতরণ অবকাঠামো, ক্ষমতা এবং স্কেলিবিলিটি সমীক্ষা রিপোর্টে তুলে ধরা যেতে পারে।

২.৪। এছাড়া সম্ভাব্যতা সমীক্ষায় প্রকল্পের ধারণাগত আয়-ব্যয় বিশ্লেষণে ১০% ডিসকাউন্ট রেটে আর্থিক বিশ্লেষণ করা হয়েছে। এক্ষেত্রে পরিকল্পনা কমিশনের পরিপত্রের আলোকে প্রকল্পের ধারণাগত ফিন্যান্সিয়াল এনালাইসিস সম্পাদনে ডিসকাউন্ট রেট ১২% নির্ধারণ করা আবশ্যক।

০৩। সিদ্ধান্তসমূহ:

৩.১। সম্ভাব্যতা সমীক্ষার রিপোর্টে অর্থনৈতিক অঞ্চল প্রতিষ্ঠিত হলে মানুষের কর্মসংস্থান হবে, দেশে শিল্প প্রতিষ্ঠান গড়ে উঠার সুযোগ পাবে, এলাকার উন্নয়ন সাধিত হবে ইত্যাদি বিষয়াদি অনুচ্ছেদ ২.১ এ বর্ণিত আলোচনা মোতাবেক তুলে ধরতে হবে।

৩.২। নেত্রকোণা অর্থনৈতিক অঞ্চলের মানদন্ড নির্ধারণে বিদেশী অর্থনৈতিক অঞ্চলকে Benchmarking এর আওতায় এনে অর্থনৈতিক অঞ্চল স্থাপনের মানদন্ড নিরুপন করতে হবে।

৩.৩। অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষার রিপোর্টে প্রদর্শিত সকল অফ-সাইট এবং অন-সাইট অবকাঠামোর ইন্ডিকেটিভ ডিজাইনসহ ব্যয় প্রাক্কলনের বিস্তারিত ব্যয় বিভাজন ও রেট্স অফ সিডিউল উল্লেখ থাকতে হবে এবং আর্থিক বিশ্লেষণে ডিসকাউন্ট রেট ১০% এর পরবর্তে ১২% নির্ধারণ করতে হবে।

৩.৪। সম্ভাব্যতা সমীক্ষার রিপোর্টের বিষয়ে অনুচ্ছেদ ২.২ ও ২.৩ এ বর্ণিত অন্যান্য যেসকল বিষয়াদি নিয়ে আলোচনা হয়েছে সেসকল তথ্যাদি সন্নিবেশ করে সমীক্ষা রিপোর্টটি চূড়ান্ত করতে হবে।

৪। আর কোন আলোচনা না থাকায় সভাপতি মহোদয় সকলকে ধন্যবাদ জানিয়ে সভার সমাপ্তি ঘোষনা করেন।

(মোঃ হারুনুর রশিদ)
নির্বাহী সদস্য
(অতিরিক্ত সচিব)

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বাংলাদেশ পরিকল্পনা কমিশন
শিল্প ও শক্তি বিভাগ
ইঞ্জিনিয়ারিং এন্ড ইলেকট্রনিক্স উইং
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নং- ২০.০৫.০০০০.৫৫১.১৪.০০৯.১৯-৮৭

তারিখঃ ১৭ পৌষ, ১৪২৬ বঙ্গাব্দ / ০১ জানুয়ারি, ২০২০ খ্রি:

বিষয়ঃ প্রধানমন্ত্রীর কার্যালয় কর্তৃক প্রস্তাবিত "নেত্রকোনা অর্থনৈতিক অঞ্চল স্থাপন"-শীর্ষক প্রকল্পের উপর অনুষ্ঠিত দ্বিতীয় প্রকল্প মূল্যায়ন কমিটি (পিইসি) সভার কার্যবিবরণী প্রেরণ সংক্রান্ত।

প্রধানমন্ত্রীর কার্যালয়ের আওতাধীন বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ (বেজা) কর্তৃক বাস্তবায়নের জন্য প্রস্তাবিত "নেত্রকোনা অর্থনৈতিক অঞ্চল স্থাপন"-শীর্ষক প্রকল্পের উপর দ্বিতীয় প্রকল্প মূল্যায়ন কমিটি (পিইসি)-এর সভা পরিকল্পনা কমিশনের শিল্প ও শক্তি বিভাগের সদস্য (সিনিয়র সচিব) সাহিন আহমেদ চৌধুরী- এর সভাপতিত্বে গত ১৯/১২/২০১৯ তারিখে পরিকল্পনা কমিশনে অনুষ্ঠিত হয়।

০২। উক্ত সভার কার্যবিবরনী প্রয়োজনীয় কার্যার্থে ও অবগতির জন্য (প্রযোজ্য ক্ষেত্রে) নির্দেশক্রমে এতদ্‌সঙ্গে প্রেরণ করা হলো।

সংযুক্তঃ বর্ণনা মোতাবেক।

০১/০১/২০২০

(মো: সালাহউদ্দিন আহাম্মদ)
উপ-প্রধান (চ: দা:)
ফোনঃ ৯১৮০৯৯৬

বিতরণ (জ্যেষ্ঠতার ক্রমানুসারে নয়):

১। মুখ্য সচিব, প্রধানমন্ত্রীর কার্যালয়, তেজগাঁও, ঢাকা (দৃ: আ:-পরিচালক-১)।
২। সচিব, জনপ্রশাসন মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৩। সচিব, অর্থ বিভাগ, অর্থ মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৪। সচিব, বাস্তবায়ন পরিবীক্ষণ ও মূল্যায়ন বিভাগ, শের-ই-বাংলা নগর, ঢাকা।
৫। সচিব, পরিবেশ , বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৬। সচিব, মহিলা ও শিশু বিষয়ক মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৭। প্রধান, সাধারণ অর্থনীতি বিভাগ, পরিকল্পনা কমিশন, শের-ই-বাংলা নগর, ঢাকা।
৮। প্রধান, কার্যক্রম বিভাগ, পরিকল্পনা কমিশন, শের-ই-বাংলা নগর, ঢাকা।
৯। যুগ্ম-প্রধান, এনইসি-একনেক ও সমন্বয় অনুবিভাগ, পরিকল্পনা বিভাগ, শের-ই-বাংলা নগর, ঢাকা।
১০। নির্বাহী চেয়ারম্যান, বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ (বেজা), আব্দুল মোনেম বিজনেস ডিস্ট্রিক্ট (লেভেল-১২), ১১১ বীর উত্তম সি. আর দত্ত রোড, ঢাকা-১২০৫।

সদয় অবগতির জন্য অনুলিপিঃ-

১। উপ সচিব, প্রটোকল শাখা, পরিকল্পনা বিভাগ, শের-ই-বাংলা নগর, ঢাকা।
২। সিনিয়র সিস্টেম এনালিস্ট, আইসিটি শাখা, পরিকল্পনা বিভাগ, পরিকল্পনা মন্ত্রণালয় (ওয়েব সাইটে প্রকাশের অনুরোধসহ)।
৩। সদস্য (সিনিয়র সচিব) (শিল্প ও শক্তি) মহোদয়ের একান্ত সচিব, পরিকল্পনা কমিশন, শের-ই-বাংলা নগর, ঢাকা।
৪। প্রধান (শিল্প ও শক্তি) মহোদয়ের ব্যক্তিগত কর্মকর্তা, পরিকল্পনা কমিশন, শের-ই-বাংলা নগর, ঢাকা।
৫। যুগ্ম-প্রধান (ই এ্যান্ড ই উইং) মহোদয়ের ব্যক্তিগত কর্মকর্তা, শিল্প ও শক্তি বিভাগ, পরিকল্পনা কমিশন, শের-ই-বাংলা নগর, ঢাকা।
৬। অফিস কপি।

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
বাংলাদেশ পরিকল্পনা কমিশন
শিল্প ও শক্তি বিভাগ
ইঞ্জিনিয়ারিং এন্ড ইলেকট্রনিক্স উইং
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বিষয়ঃ "নেত্রকোনা অর্থনৈতিক অঞ্চল স্থাপন"-শীর্ষক প্রকল্পের উপর অনুষ্ঠিত দ্বিতীয় প্রকল্প মূল্যায়ন কমিটি (পিইসি) সভার কার্যবিবরণী।

প্রধানমন্ত্রীর কার্যালয়ের আওতাধীন বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ (বেজা) কর্তৃক প্রস্তাবিত "নেত্রকোনা অর্থনৈতিক অঞ্চল স্থাপন"-শীর্ষক প্রকল্পের উপর দ্বিতীয় প্রকল্প মূল্যায়ন কমিটি (পিইসি)-এর সভা পরিকল্পনা কমিশনের শিল্প ও শক্তি বিভাগের সদস্য (সিনিয়র সচিব) সাহিন আহমেদ চৌধুরী-এর সভাপতিত্বে গত ১৯/১২/২০১৯ তারিখে পরিকল্পনা কমিশনে অনুষ্ঠিত হয়। সভায় উপস্থিত কর্মকর্তাবৃন্দের তালিকা **পরিশিষ্ট-'ক'** তে সংযুক্ত করা হলো।

২.০। **উপস্থাপনাঃ**

২.১। সভাপতি উপস্থিত সকলকে স্বাগত জানিয়ে সভার কাজ শুরু করেন। সভাপতি বলেন যে, "নেত্রকোনা অর্থনৈতিক অঞ্চল স্থাপন" শীর্ষক প্রকল্পের উপর গত ২৯/০৭/২০১৯ তারিখে পরিকল্পনা কমিশনে প্রকল্প মূল্যায়ন কমিটির (পিইসি) সভা অনুষ্ঠিত হয়। প্রকল্পের পুনর্গঠিত ডিপিপি-তে পিইসি সভার সিদ্ধান্তসমূহ যথাযথভাবে প্রতিফলিত না হওয়ায় এবং সিদ্ধান্ত বহির্ভূত নতুন অঙ্গ অন্তর্ভুক্তিসহ বিদ্যমান অঙ্গের ব্যয় বৃদ্ধি/হ্রাসপূর্বক প্রকল্পের মোট প্রাক্কলিত ব্যয় ১২২৪.২২ কোটি টাকা হতে বৃদ্ধি করে ১৫০৪.৬২ কোটি টাকা নির্ধারণ অর্থাৎ মোট ২৮০.৪০ কোটি টাকা (বা ২৩%) বৃদ্ধির প্রস্তাব করায় প্রস্তাবিত প্রকল্পের উপর পুনরায় পিইসি সভার আহ্বান করা হয়েছে।

৩.০। **আলোচনাঃ**

৩.১। পরিকল্পনা কমিশনের শিল্প ও শক্তি বিভাগের পক্ষ হতে পুনর্গঠিত প্রকল্পের প্রাক্কলিত ব্যয় ২৮০.৪০ কোটি টাকা বা ২৩% বৃদ্ধির কারণ সম্পর্কে জানতে চাওয়া হলে বেজা'র পক্ষ হতে সভায় জানানো হয় যে, প্রস্তাবিত প্রকল্পের বিভিন্ন বিষয়ে যথাযথ সমীক্ষা না করে ডিপিপি প্রণয়ন করায় প্রাথমিকভাবে বিভিন্ন অঙ্গের প্রকৃত ব্যয় ডিপিপি-তে প্রতিফলিত হয়নি। এছাড়া, গত ২৯/০৭/২০১৯ তারিখে অনুষ্ঠিত ১ম পিইসি সভার সিদ্ধান্ত মোতাবেক কতিপয় অঙ্গের হালনাগাদ রেট সিডিউল অনুযায়ী ব্যয় প্রাক্কলন করায় মোট ব্যয় বৃদ্ধি পেয়েছে। সভায় আরও জানানো হয় যে, কমন ইফ্লুয়েন্ট ট্রিটমেন্ট প্ল্যান্ট (সিইটিপি) ও ইন্টিগ্রেটেড ওয়েস্ট ম্যানেজমেন্ট ফ্যাসিলিটিজ (আইডব্লিউএমএফ) ইত্যাদি অঙ্গসমূহ পিপিপি মডেলে বাস্তবায়নের পরিকল্পনা নিয়ে প্রাক্কলিত ব্যয় হ্রাসপূর্বক 'থোক' বরাদ্দ রাখা হয়েছে, যা পরবর্তীতে ব্যয় পুন:প্রাক্কলনের প্রয়োজন হবে। এছাড়া, উদ্যোক্তাদের ব্যবসায়িক লাভের সুযোগ বিবেচনায় পিপিপি উদ্যোক্তা পাওয়ার ক্ষেত্রে অনিশ্চয়তা রয়েছে। এ অনিশ্চয়তা নিরসনে Build Operate Own Transfer (BOOT) প্রক্রিয়ায় এ সকল অঙ্গের বাস্তবায়নের বিষয়টি সক্রিয় বিবেচনায় রয়েছে। পরিকল্পনা কমিশনের পক্ষ হতে এ সকল অঙ্গের বাস্তবায়ন পিপিপি মডেলে সম্পাদনের বিষয়টি ডিপিপি-তে সুস্পষ্টভাবে উল্লেখের বিষয়ে মতামত ব্যক্ত করা হয়। বিভাগ প্রধান বলেন যে, প্রস্তাবিত অর্থনৈতিক অঞ্চলে ভবিষ্যতে শিল্প কারখানাসমূহ হতে প্রতিদিন কি পরিমাণ কঠিন ও তরল বর্জ্য নি:সরণ হবে তা এমুহূর্তে নিরূপণ করা বাস্তবসম্মত হবে না। বিস্তারিত আলোচনার পর এ পর্যায়ে সিইটিপি এবং আইডব্লিউএমএফ নির্মাণ না করে শুধুমাত্র পাইপ লাইনসহ প্রাথমিক অবকাঠামো নির্মাণের সংস্থান রেখে ভবিষ্যতে অর্থনৈতিক অঞ্চলে স্থাপিতব্য শিল্পের চাহিদা মোতাবেক নতুন একটি প্রকল্প গ্রহণের মাধ্যমে সেগুলো নির্মাণের বিষয়ে সভায় একমত পোষণ করা হয়।

৩.২। প্রকল্প এলাকাসহ নেত্রকোনা ও আশপাশের জেলার সড়ক পথ, রেলপথ ও নদীপথের অবস্থান নির্দেশক সুস্পষ্টকরত: জেলা, উপজেলা ও মৌজাম্যাপ ডিপিপি-তে সংযোজনের বিষয়ে আলোচনার প্রেক্ষিতে ডিপিপি-তে একটি সুস্পষ্ট মানচিত্র সংযোজনের বিষয়ে সভায় ঐকমত্য হয়।

৩.৩। পরিকল্পনা বিভাগের এনইসি-একনেক ও সমন্বয় অনুবিভাগ হতে ২৯/০৮/২০১৮ তারিখে জারিকৃত পরিপত্রের আলোকে ১০% এর পরিবর্তে ১২% ডিসকাউন্ট রেটে প্রকল্পের ফিন্যান্সিয়াল এনালাইসিস সম্পাদনের বিষয়ে সভায় একমত পোষণ করা হয়।

৩.৪। পরিকল্পনা কমিশনের মতামতে উল্লিখিত আইডব্লিউএম কর্তৃক সম্পাদিত সমীক্ষা প্রতিবেদনে প্রস্তাবিত প্রকল্পটিকে একটি রেড ক্যাটাগরীর প্রকল্প হিসেবে উল্লেখপূর্বক এর পরিবেশগত ও সামাজিক প্রভাব মূল্যায়নের (ইএসআইএ) সুপারিশের বিষয়ে সভায় আলোচনা হয়। এছাড়া, ১ম পিইসি সভায় পরিবেশগত প্রভাব মূল্যায়ন (ইআইএ) কার্যক্রম সম্পাদনপূর্বক পরিবেশগত ছাড়পত্র গ্রহণের সিদ্ধান্ত প্রতিপালিত না হওয়ায় বিষয়টি পুন:আলোচিত হয়। উক্ত বিষয়ে বিস্তারিত আলোচনার পর প্রকল্প এলাকার পরিবেশগত প্রভাব মূল্যায়ন (ইআইএ) করে পরিবেশ অধিদপ্তরের ছাড়পত্র পুনর্গঠিত ডিপিপি-তে সংযুক্তির বিষয়ে সভায় ঐকমত্য হয়।

৩.৫। শিল্প ও শক্তি বিভাগের পক্ষ হতে প্রস্তাবিত অর্থনৈতিক অঞ্চলের অভ্যন্তরে অবস্থিত কমল বিলটি বাদ দিয়ে জোনটি নির্মাণের সম্ভাব্যতার বিষয়ে জানতে চাওয়া হলে বেজা'র পক্ষ হতে সভায় জানানো হয় যে, বিলটি বাদ দিয়ে অর্থনৈতিক অঞ্চল নির্মাণ করা সম্ভব হবে না। সভায় এ বিষয়ে বিস্তারিত আলোচনার পর বিলটিকে সম্পূর্ণরূপে অক্ষত রেখে অর্থনৈতিক অঞ্চলটি নির্মাণের বিষয়ে সভায় ঐকমত্য হয়।

চলমান পাতা/২

৩.৬। অর্থ বিভাগের জনবল নির্ধারণ সংক্রান্ত কমিটির সুপারিশের আলোকে প্রকল্পে জনবল কাঠামো ও নিয়োগ পদ্ধতি নির্ধারণসহ জনবল কমিটির সুপারিশ ডিপিপি-তে সংযুক্তির বিষয়ে সভায় একমত পোষণ করা হয়।

৩.৭। প্রথম পিইসি সভায় পর্যালোচিত ডিপিপি-তে ৮.৮০ কোটি টাকা প্রাক্কলিত ব্যয়ের "সংযোগ সড়ক (ড্রেনেজ লাইনসহ)" অঙ্গটি পুনর্গঠিত ডিপিপি-তে ১০০.৮০ কোটি টাকা প্রাক্কলিত ব্যয়ে "অভ্যন্তরীণ সংযোগ সড়ক" এবং ৪৭৩.১০ কোটি টাকা প্রাক্কলিত ব্যয়ে "ড্রেনেজ স্থাপনা" হিসেবে দু'টি পৃথক অঙ্গে প্রস্তাব করা হয়েছে। এ বিষয়ে আলোচনাকালে সভাপতি এ অঙ্গসমূহের ডিজাইন ও ব্যয় প্রাক্কলনের যৌক্তিকতা আরও পরীক্ষা-নিরীক্ষাপূর্বক যৌক্তিকতাসহ ডিজাইন এবং ব্যয় প্রাক্কলনের ভিত্তিসহ যথাযথ ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্তির বিষয়ে মতামত প্রদান করলে সভায় একমত পোষণ করা হয়। এছাড়া, প্রকল্পের আওতায় ২০ মিটার দীর্ঘ ২টি ব্রীজ/কালভার্টের উচ্চতা নির্দেশিত নক্শাসহ বিস্তারিত ব্যয় প্রাক্কলন (ইনডিকেটিভ) ডিপিপি-তে সংযুক্তির বিষয়ে বিভাগ প্রধান মতামত ব্যক্ত করলে উক্ত বিষয়ে সভায় একমত পোষণ করা হয়। প্রকল্পের আওতায় পানি সরবরাহ স্থাপনা, টেলিযোগাযোগ স্থাপনা, গ্যাস সংযোগ লাইন এবং বিদ্যুৎ সরবরাহ স্থাপনা ইত্যাদি অঙ্গের 'একক' দর ও বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত না করায় উক্ত বিষয়ে বিস্তারিত আলোচনান্তে অঙ্গসমূহের বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করার বিষয়ে সভায় একমত পোষণ করা হয়। এছাড়া, কোন অঙ্গের বিপরীতে 'থোক' বরাদ্দ না রাখার বিষয়েও সভায় ঐকমত্য হয়।

৩.৮। প্রশাসনিক ভবনের ভিত্তি ও মোট তলার সংখ্যাসহ ভবনের এলিভেশন ও ড্রইং এবং পিডব্লিউডি'র হালনাগাদ রেট সিডিউল অনুযায়ী বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্তি বিষয়ে আলোচনায় সভায় ঐকমত্য হয়।

৩.৯। প্রকল্পের আওতায় বিদেশ প্রশিক্ষণ, স্টাডি ট্যুর, স্থানীয় ও আন্তর্জাতিক পর্যায়ে বিনিয়োগ উন্নয়ন সেমিনার ও কনফারেন্স আয়োজনের বিষয়ে আলোচনা হয়। সভায় প্রকল্পের আওতায় বিদেশ প্রশিক্ষণ ও স্টাডি ট্যুরের প্রয়োজনীয়তার বিষয়ে জানতে চাওয়া হলে বেজা'র পক্ষ হতে জানানো হয় যে, অর্থনৈতিক অঞ্চলে বিদেশী বিনিয়োগ আকৃষ্টকরণের লক্ষ্যে প্রচারণামূলক কার্যক্রম পরিচালনার জন্য এ অঙ্গে বরাদ্দের প্রয়োজনীতা রয়েছে। উক্ত বিষয়ে বিস্তারিত আলোচনার প্রেক্ষিতে এ খাতে অর্থ বরাদ্দের যৌক্তিকতা খতিয়ে দেখার বিষয়ে সভায় একমত পোষণ করা হয়। এছাড়া, ডিপিপি-তে সংযুক্ত অঙ্গের বিস্তারিত বিবরণে পরিলক্ষিত ত্রূটির বিষয়ে আলোচনান্তে তা সংশোধন করে সঠিক তথ্য প্রদানের বিষয়ে বেজা'কে নির্দেশনা প্রদান করা হয়।

৪.০। সিদ্ধান্তঃ বিস্তারিত আলোচনান্তে নিম্নলিখিত শর্ত প্রতিপালনপূর্বক ডিপিপি পুনর্গঠন সাপেক্ষে প্রকল্পটি অনুমোদনের সুপারিশ করা হয়ঃ

৪.১। কমন ইফ্লুয়েন্ট ট্রিটমেন্ট প্ল্যান্ট (সিইটিপি) এবং ইন্টিগ্রেটেডে ওয়েস্ট ম্যানেজমেন্ট ফ্যাসিলিটিজ (আইডব্লিউএমএফ) ইত্যাদি অবকাঠামোসমূহ আপাতত: নির্মাণ না করে এ পর্যায়ে শুধুমাত্র পাইপ লাইনসহ প্রাথমিক অবকাঠামো নির্মাণের সংস্থান রেখে ভবিষ্যতে অর্থনৈতিক অঞ্চলে স্থাপিতব্য শিল্পের চাহিদা মোতাবেক নতুন একটি প্রকল্পের মাধ্যমে সেগুলোর নির্মাণ কাজ সম্পন্ন করতে হবে;

৪.২। প্রকল্প এলাকাসহ নেত্রকোনা ও আশপাশের জেলার সড়ক পথ, রেলপথ ও নদীপথের অবস্থান নির্দেশক সুস্পষ্টকরত: জেলা, উপজেলা ও মৌজাম্যাপ ডিপিপি-তে সংযোজন করতে হবে;

৪.৩। ১০% এর পরিবর্তে ১২% ডিসকাউন্ট রেটে প্রকল্পের ফিন্যান্সিয়াল এনালাইসিস সম্পাদন করতে হবে। এছাড়া, প্রকল্প এলাকার পরিবেশগত প্রভাব মূল্যায়ন (ইআইএ) করে পরিবেশগত ছাড়পত্র পুনর্গঠিত ডিপিপি-তে সংযুক্ত করতে হবে;

৪.৪। প্রস্তাবিত অর্থনৈতিক অঞ্চলের অভ্যন্তরে অবস্থিত কমল বিলটিকে সম্পূর্ণরূপে অক্ষত রেখে অর্থনৈতিক অঞ্চলটি নির্মাণ করতে হবে;

৪.৫। অর্থ বিভাগের জনবল নির্ধারণ সংক্রান্ত কমিটির সুপারিশের আলোকে প্রকল্পে জনবল কাঠামো ও নিয়োগ পদ্ধতি নির্ধারণসহ জনবল কমিটির সুপারিশ ডিপিপি-তে সংযুক্ত করতে হবে;

৪.৬। "অভ্যন্তরীণ সংযোগ সড়ক" এবং "ড্রেনেজ স্থাপনা" অঙ্গসমূহের ডিজাইন ও ব্যয় প্রাক্কলনের যৌক্তিকতা আরও পরীক্ষা-নিরীক্ষাপূর্বক যৌক্তিকতাসহ ডিজাইন এবং ব্যয় প্রাক্কলনের ভিত্তিসহ যথাযথ ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে। এছাড়া, ব্রীজ/কালভার্টের উচ্চতা নির্দেশিত নক্শাসহ বিস্তারিত ব্যয় প্রাক্কলন (ইনডিকেটিভ) ডিপিপি-তে সংযুক্ত করতে হবে;

৪.৭। প্রকল্পের আওতায় পানি সরবরাহ স্থাপনা, টেলিযোগাযোগ স্থাপনা, গ্যাস সংযোগ লাইন এবং বিদ্যুৎ সরবরাহ স্থাপনা ইত্যাদি অঙ্গের 'একক' দর ও বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে। এছাড়া, কোন অঙ্গের বিপরীতে 'থোক' হিসেবে কোন বরাদ্দ রাখা যাবে না;

৪.৮। প্রশাসনিক ভবনের ভিত্তি ও মোট তলার সংখ্যাসহ পিডব্লিউডি'র হালনাগাদ রেট সিডিউল অনুযায়ী ভবনের এলিভেশন ও ড্রইংসহ বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে;

চলমান পাতা/৩

৪.৯। প্রকল্পের আওতায় বিদেশ প্রশিক্ষণ, স্টাডি ট্যুর, স্থানীয় ও আন্তর্জাতিক পর্যায়ে বিনিয়োগ উন্নয়ন সেমিনার ও কনফারেন্স আয়োজনের লক্ষ্যে অর্থ সংস্থানের যৌক্তিকতা খতিয়ে দেখতে হবে। যদি প্রকল্পের জন্য অঙ্গটি অপরিহার্য হয় তবে ডিপিপি-তে সংযুক্ত অঙ্গের বিস্তারিত বিবরণের ত্রুটিসমূহ সংশোধন করে সঠিক তথ্য প্রদান করতে হবে; এবং

৪.১০। অনুচ্ছেদ ৪.১-৪.৯ এ বর্ণিত সুপারিশের আলোকে ডিপিপি পুনর্গঠনপূর্বক দ্রুত পরিকল্পনা কমিশনে প্রেরণ করতে হবে।

৫.০। আর কোন আলোচনা না থাকায় সভাপতি সকলকে ধন্যবাদ জানিয়ে সভা সমাপ্ত করেন ।

১৩/১২/২০২০

(সাহিন আহমেদ চৌধুরী)
সদস্য (সিনিয়র সচিব)

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ
প্রধানমন্ত্রীর কার্যালয়
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বেজা'র নিজস্ব অর্থায়নে পরামর্শক প্রতিষ্ঠান IWM কর্তৃক পরিচালিত ৩টি সমীক্ষা স্টাডি উপস্থাপন সংক্রান্ত সভার কার্যবিবরণী।

সভাপতি: জনাব পবন চৌধুরী, নির্বাহী চেয়ারম্যান, বেজা।
তারিখ ও সময়: ২৫/০৩/২০২০ খ্রি:, সকাল ১১.০০ ঘটিকা।
স্থান: সম্মেলন কক্ষ, বেজা।
উপস্থিতি: পরিশিষ্ট 'ক'

বেজার নিজস্ব অর্থায়নে গৃহীত নিম্নরূপ ৩টি সমীক্ষা স্টাডির প্রতিবেদন গত ২৫/০৩/২০২০ তারিখে নির্বাহী চেয়ারম্যান মহোদয়ের সভাপতিত্বে অনুষ্ঠিত সভয় IWM কর্তৃক উপস্থাপন করা হয়:

ক) বঙ্গবন্ধু শেখ মুজিব শিল্পনগরে পানির প্রাপ্যতা বিষয়ে সমীক্ষা স্ট্যাডির Final Report;

খ) নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষার Final Report এবং

গ) মোহরা সারফেস ওয়াটার ট্রিটমেন্ট প্ল্যান্ট স্থাপনের লক্ষ্যে সম্ভাব্যতা সমীক্ষার Interim Report।

০২। বঙ্গবন্ধু শেখ মুজিব শিল্পনগরে পানির প্রাপ্যতা বিষয়ে সমীক্ষা স্ট্যাডির Final Report:

২.১। মিরসরাই অর্থনৈতিক অঞ্চলের পানি প্রাপ্যতার সম্ভাব্যতা সমীক্ষার বিষয়ে গত ২৭/১২/২০১৭ তারিখে পরামর্শক প্রতিষ্ঠান IWM-এর সঙ্গে চুক্তি স্বাক্ষরিত হয়। পরামর্শক প্রতিষ্ঠান কর্তৃক ইতোমধ্যে সমীক্ষা কাজ সম্পন্ন করা হয়েছে এবং চূড়ান্ত প্রতিবেদন গত ১০/০২/২০২০ তারিখে বেজাতে দাখিল করা হয়েছে। উল্লেখ্য যে, চুক্তির আওতায় উক্ত প্রতিষ্ঠান কর্তৃক গত ০৭/০১/২০২০ তারিখে বেজাতে Draft Final Report উপস্থাপন করা হয় এবং সভার সুপারিশ মোতাবেক প্রতিবেদন চূড়ান্ত করে Final Report দাখিল করা হয়।

২.২। বেজা'র অনুরোধক্রমে পরামর্শক প্রতিষ্ঠান কর্তৃক প্রণীত Final Report-টি গত ২৫/০৩/২০২০ তারিখে পুনরায় নির্বাহী চেয়ারম্যান মহোদয়ের সভাপতিত্বে অনুষ্ঠিত সভায় উপস্থাপন করা হয় এবং প্রতিবেদনটি সভায় সর্বসম্মতিক্রমে গৃহীত হয়। Final Report-টি মোট ৪টি ভলিউমে প্রণয়ন করা হয়েছে যা নিম্নরূপ:

- Volume-I: Executive Summary
- Volume-II: Main Report
- Volume-III: Annex 1to 12 এবং
- Volume-IV: Sub-soil Investigation Report

সিদ্ধান্ত: মিরসরাই অর্থনৈতিক অঞ্চলের পানি প্রাপ্যতার সম্ভাব্যতা সমীক্ষার বিষয়ে পরামর্শক প্রতিষ্ঠান IWM কর্তৃক প্রণীত Final Report-টি অনুমোদন করা গেলো।

০৩। নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষার Final Report:

৩.১। নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষার বিষয়ে গত ০৯/০৪/২০১৯ তারিখে পরামর্শক প্রতিষ্ঠান IWM-এর সঙ্গে চুক্তি স্বাক্ষরিত হয়। পরামর্শক প্রতিষ্ঠান কর্তৃক ইতোমধ্যে সমীক্ষা কাজ সম্পন্ন করা হয়েছে এবং চূড়ান্ত প্রতিবেদন গত ২৯/০১/২০২০ তারিখে বেজাতে দাখিল করা হয়েছে। উল্লেখ্য যে, চুক্তির আওতায় উক্ত প্রতিষ্ঠান কর্তৃক গত ১১/১২/২০১৯ তারিখে বেজাতে Draft Final Report উপস্থাপন করা হয় এবং সভার সুপারিশ মোতাবেক প্রতিবেদন চূড়ান্ত করে Final Report দাখিল করা হয়।

৩.২। Final Report-টি উপস্থাপনকালে প্রতিবেদনের বিভিন্ন দিক যেমন: Competitiveness Assessment, Industry Assessment, Master Plan/Land Use Plan এবং Onsite/Offsite Infrastructure বিষয়ে বিস্তারিত আলোচনা হয় এবং উক্ত অনুচ্ছেদসমূহ আরো পরীক্ষা-নিরীক্ষাপূর্বক পর্যলোচনা করে চূড়ান্ত করার বিষয়ে সভায় একমত পোষণ করা হয়।

সিদ্ধান্ত: নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষা রিপোর্টে বর্ণিত Competitiveness Assessment, Industry Assessment, Master Plan/Land Use Plan এবং Onsite/Offsite Infrastructure অনুচ্ছেদসমূহ আরো অধিক পরীক্ষা-নিরীক্ষাপূর্বক পর্যলোচনা করে চূড়ান্ত করতে হবে এবং সে মোতাবেক Final Report-টি চূড়ান্ত করে বেজাতে দাখিল করতে হবে।

০৪। মোহরা সারফেস ওয়াটার ট্রিটমেন্ট প্ল্যান্ট স্থাপনের লক্ষ্যে সম্ভাব্যতা সমীক্ষার Interim Report:

৪.১। বেজা'র নিজস্ব অর্থায়নে ডিপিজিট ওয়ার্ক হিসেবে চট্টগ্রাম ওয়াসার মাধ্যমে 'চট্টগ্রামের সীতাকুন্ড শিল্পাঞ্চল ও মিরসরাই অর্থনৈতিক অঞ্চলে চাহিদা অনুযায়ী বিশুদ্ধ পানি সরবরাহের জন্য চট্টগ্রাম ওয়াসার আওতায় একটি সারফেস ওয়াটার ট্রিটমেন্ট প্ল্যান্ট স্থাপনের লক্ষ্যে Feasibility Study সম্পাদন' সমীক্ষার বিষয়ে গত ২৭/১০/২০১৯ তারিখে পরামর্শক প্রতিষ্ঠান IWM-এর সঙ্গে চুক্তি স্বাক্ষরিত হয়। পরামর্শক প্রতিষ্ঠান কর্তৃক ইতোমধ্যে সমীক্ষা কাজের আওতায় Inception Report প্রণয়ন করা হয়েছে এবং তা গত ২৬/১২/২০১৯ তারিখে চট্টগ্রাম ওয়াসা অফিসে উপস্থাপন করা হয়েছে। চুক্তি মোতাবেক দ্রুত সমীক্ষা কাজ সম্পন্ন করে চূড়ান্ত Feasibility Study রিপোর্ট চট্টগ্রাম ওয়াসাতে দাখিল করার পাশাপাশি তা বেজাতে দাখিলের জন্য পরামর্শক প্রতিষ্ঠান IWM-কে পরামর্শ প্রদান করা হয়।

সিদ্ধান্ত: 'চট্টগ্রামের সীতাকুন্ড শিল্পাঞ্চল ও মিরসরাই অর্থনৈতিক অঞ্চলে চাহিদা অনুযায়ী বিশুদ্ধ পানি সরবরাহের জন্য চট্টগ্রাম ওয়াসার আওতায় একটি সারফেস ওয়াটার ট্রিটমেন্ট প্ল্যান্ট স্থাপনের লক্ষ্যে Feasibility Study সম্পাদন' সমীক্ষার চূড়ান্ত রিপোর্ট চট্টগ্রাম ওয়াসাতে দাখিল করার পাশাপাশি তা বেজাতে দাখিল করতে হবে।

০৫| আর কোন বিষয় না থাকায় সকলকে ধন্যবাদ জানিয়ে সভাপতি সভার সমাপ্তি ঘোষনা করেন।

০৪/১০/২০

(পবন চৌধুরী)
নির্বাহী চেয়ারম্যান

পরামর্শক প্রতিষ্ঠান IWM কর্তৃক নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা সমীক্ষা কাজের Draft Final Report উপস্থাপন সভায় উপস্থিত কর্মকর্তাদের তালিকা।

সভাপতি : নির্বাহী চেয়ারম্যান, বেজা।
তারিখ : ১১/১২/২০১৯ খ্রিঃ।
সময় : সকাল ১০.৩০ টায়।
স্থান : বেজার সভাকক্ষে।

ক্রমিক নং	নাম ও পদবী	ফোন/মোবাইল/ই-মেইল	স্বাক্ষর
১	মোঃ শোয়েব মহাব্যবস্থাপক (প্রশা/ম)	01715909009 shoab1962@yahoo.com	[signature]
২	মোঃ মনিরুজ্জামান মহাব্যবস্থাপক (বিউ), বেজা	01712-628360 monirari610@gmail.com	[signature]
৩	মোঃ মাহবুবুর রহমান ব্যবস্থাপক (পঃ ও প্রঃ-৪)	01913-066317 mahbubngamj@gmail.com	[signature]
৪	মোঃ মাহে আলম ভূঁইয়া সহঃ ব্যবস্থাপক (হিসাব ও বাজেট)	01911 731292 mahealam71@yahoo.com	[signature]
৫	এ টি এম আব্দুল আলম পরিচালক (চঃ দাঃ) আর্থ-সামাজিক ও প্রাতিষ্ঠানিক বিষয়ক বিভাগ, CEGIS	01711-936732 aalam@cegisbd.com	[signature] 11/12/19
৬	ফজলে এলাহী ওলী- উপ-ব্যবস্থাপক বেজা	01762219567 elahi1629@yahoo.com	[signature]
৭	মোঃ মাহফুজ আনোয়ার পাটওয়ারী উপব্যবস্থাপক, বেজা	01552375720 patwary1969@yahoo.com	[signature]
৮	A.K. Enamul Haque Prof-Economics, EWU	01559831421 akehaque@gmail.com	[signature]
৯	S M Mahbubur Rahman Director, WRP, IWM	01819238547 smr@iwmbd.org	[signature]

ক্রমিক নং	নাম ও পদবী	ফোন/মোবাইল/ই-মেইল	স্বাক্ষর
১০	Md. Mahmudul Haque Associate Specialist IWM	01717-320256 mdm@iwmbd.org	MHaque
১১	মো: হেলাল আহমেদ উপসচিব, [illegible]	01718074754 helal.ahmed21@yahoo.com	[illegible]
১২	Dr. Tanveer Ahmed. Env. Specialist	01783382472	[illegible]
১৩	Farzana Afroz Planner, TAS Firm, BEZA	01780014259	Farzana
১৪	Pulin Chandra Golder Sr. Urban Planner	01712288391 pulingolder@yahoo.com	[illegible]
১৫	Muhammad Nuruzzaman. Individual consultant-Electrical	01713850300 nuruzzaman.pgcb@yahoo.com	[illegible]
১৬	Nasiruddin M. Chowdhury Infrastructure Consultant	01787679241. nasirmc1955@gmail.com.	[illegible]
১৭	Mohammad Ahsan Ullah Deputy Secretary/BEZA	01819-323688 ahsanpad21@gmail.com	[illegible] 11/12/19
১৮	Tanmay Chaki Associate Specialist, IWM	01712-172305 tac@iwmbd.org	[illegible] 11.12.19.
১৯	Md. Mizanur Rahman Jr Urban planner	01737535321 mizanurrahman.buet07@gmail.com	Miz
২০			

পরিশিষ্ট-'ক'

উপস্থিত কর্মকর্তাবৃন্দের তালিকা

বিষয়ঃ "নেত্রকোনা অঞ্চল স্থাপন" শীর্ষক প্রকল্পের উপর দ্বিতীয় প্রকল্প মূল্যায়ন কমিটি (পিইসি) এর সভা।

সভার তারিখ ও দিনঃ ১৯/১২/২০১৯ খ্রিঃ; বৃহস্পতিবার।

সময়ঃ সকাল ১০:৩০ ঘটিকা;

সভার স্থানঃ পরিকল্পনা বিভাগের সম্মেলন কক্ষ, ব্লক-১০, কক্ষ-৩-৪, শেরে-বাংলা নগর, ঢাকা।

সভাপতিঃ সাহিন আহমেদ চৌধুরী, সদস্য (সচিব), শিল্প ও শক্তি বিভাগ, পরিকল্পনা কমিশন।

ক্রমিক নং	নাম ও পদবি	মন্ত্রণালয়/বিভাগ/সংস্থা	ফোন নম্বর	স্বাক্ষর
১.	ড. আবিদ হাসান [illegible] প্রধান	পরিকল্পনা কমিশন		[signature] ১৯/১২/১৯
২.	অশোক কুমার, শিল্প নির্বাহী সহায় (অপ, ইউনিট)	BEZA	01712-290787	[signature] ১৯/১২/১৯
৩.	ড. মোঃ মজিবুর রহমান যুগ্ম প্রধান	শিল্প ও শক্তি বিভাগ, পরিকল্পনা কমিশন	01517261679	[signature]
৪.	মোঃ সালাহ উদ্দিন আহমেদ উপ-প্রধান (চঃ দাঃ)	শিল্প ও শক্তি বিভাগ	৯১৮০ [illegible]	[signature]
৫.	মোঃ নূরল আখতার সহকারী পরিচালক	আইএমইডি	৯১৮০৬০৬	[signature] ১৯/১২/২০১৯
৬.	হান্নান [illegible] সিনিঃ সহঃ প্রধান	কার্যক্রম বিভাগ	01978100299	[signature] ১৯/১২/১৯
৭.	আরিফুর রহমান সি. সহকারী প্রধান	আইএমইডি	01816347339	[signature] 19/12/2019
৮.	[illegible]	BEZA	01716 818402	[signature]
৯.	[illegible] চৌধুরী Consultant.	BEZA.	01787677924	[signature]
১০.				
১১.				
১২.				
১৩.				

বেজা'র নিজস্ব অর্থায়নে Institute of Water Modelling (IWM) কর্তৃক সম্পাদিত ৩টি সমীক্ষা স্ট্যাডির প্রতিবেদন উপস্থাপন সভায় উপস্থিত কর্মকর্তাদের তালিকা।

সভাপতি : নির্বাহী চেয়ারম্যান, বেজা।
তারিখ : ২৫/০৩/২০২০ খ্রি:।
সময় : সকাল ১১.০০ ঘটিকা।
স্থান : বেজা'র সভাকক্ষে।

ক্রমিক নং	নাম ও পদবী	ফোন/মোবাইল/ই-মেইল	স্বাক্ষর
১			
২	মোঃ আব্দুল মান্নান নির্বাহী সদস্য, বেজা	01759226470	২৫.৩.২০২০
৩	মোঃ মনিরুজ্জামান মহাব্যবস্থাপক, বেজা	01712-628360 moniranib10@gmail.com	
৪	ড. সার্জা মোঃ সাইফুজ্জামান সচিব, বেজা	01713064396 saifjahan@gmail.com	২৫.০৩.২০২০
৫	ফারজানা আলম উপব্যবস্থাপক, বেজা	০১৭১৯৩১৬০২২	২৫.০৩.২০
৬	মো: আবদুল কাদের খান যোগাযোগ কর্মকর্তা SIC of BEZA	01216681456 aykbeza@gmail.com	
৭	মো: মাকসুদুল আলম সিনিয়র সহকারী সচিব	০১৭৫৪৪৬৯১১২	
৮	পুলিন চন্দ্র গোলদার সিনিয়র সহকারী প্রোগ্রামার বেজা	০১৭১২২৬৮৩৯১ pulingolder@yahoo.com	
৯	Dr. Tanveer Ahmed. Env. Specialist. BEZA	01783382472 tanveer2019.beza@gmail.com	

ক্রমিক নং	নাম ও পদবী	ফোন/মোবাইল/ই-মেইল	স্বাক্ষর
১০	Md. Mahmudul Hasan AS, IWM	01717320256	
১১	Md. Murshed Alam HG, IWM	01817040773	
১২	Md. Sadbir Rahman AS, IWM	01737918307	
১৩	Md. A. Alim Khan Manager (P&D-2)	01711069045	
১৪	Farzana Afroz Planner, TAS Firm, Phase-1, BEZA	01780014259	
১৫	Md. Helal Ahmed Manager (P&D-5)	01718074754	
১৬	Nasiruddin M. Chowdhury Infra-structure Consultant	01767679241.	
১৭	Mohammad Fayazul Islam Soman Executive Engineer	01727-262074	25/3/2020
১৮	Tushar Mohon Shadhu Khan Add. CE, DPHE	01715-034008	25/3/2020
১৯	Tanmay Chakri IWM	01712-172305	25.03.2020.
২০	Ismat Ara Reuin IWM	01841930026	25.3.2020

Annex L: Comments and Responses Matrix

Comments and Responses Matrix Based on DFR Presentation

Comments from BEZA on DFR Presentation on 11/12/2019

SN	Comments	Response
1	আলোচনা ২.১ I. Draft Final Report-এর উপর আলোচনায় অংশ নিয়ে সভাপতি মহোদয় বলেন যে, বেজা কোন মুনাফা অর্জনকারী প্রতিষ্ঠান নয় । বেজা মানুষের কল্যাণে কাজ করে যাচ্ছে । অর্থনৈতিক অঞ্চল স্থাপনের মাধ্যমে বেজা মানুষের কর্মসংস্থানের সুযোগ সৃষ্টি করছে । প্রস্তাবিত অর্থনৈতিক অঞ্চল তথা নেত্রকোণা একটি অনগ্রসর এলাকা । এই অঞ্চলে অর্থনৈতিক অঞ্চল প্রতিষ্ঠিত হলে মানুষের কর্মসংস্থান হবে । এছাড়া অর্থনৈতিক অঞ্চল স্থাপনের মাধ্যমে দেশে শিল্প প্রতিষ্ঠান গড়ে উঠার সুযোগ পাবে । আলোচ্য নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা রিপোর্টে এই বিষয়গুলো তুলে ধরতে হবে মর্মে সভাপতি অভিমত ব্যক্ত করেন । (সিদ্ধান্ত ৩.১) II. এছাড়া অর্থনৈতিক অঞ্চলের মানদণ্ড নির্ধারণে বিদেশী অর্থনৈতিক অঞ্চলকে Benchmarking এর আওতায় আনতে হবে । (সিদ্ধান্ত ৩.২)	**I.** Provided in the first paragraph of **Chapter 1.** II. Revised accordingly in **Section 6.9 and Section 6.10** of **Chapter 6.**
2	আলোচনা ২.২ I. আলোচনায় অংশগ্রহণ করে বেজা'র কর্মকর্তা ও পরামর্শকবৃন্দ অভিমত ব্যক্ত করেন যে, সম্ভাব্যতা সমীক্ষা রিপোর্টে ভূমি ব্যবহার সংক্রান্ত লে-আউট প্ল্যানের পাশাপাশি বিদ্যমান ভূমি ব্যবহার মানচিত্র থাকা প্রয়োজন । II. এছাড়া সকল প্রশাসনিক সীমানা (মৌজা, ইউনিয়ন, উপজেলা ও জেলা) সম্বলিত মানচিত্র ও একটি জোনিং মানচিত্র সম্ভাব্যতা সমীক্ষা রিপোর্টে অন্তর্ভুক্ত করা যেতে পারে । III. এছাড়া সমীক্ষা রিপোর্টে প্রদর্শিত সকল অফ-সাইট এবং অন-সাইট অবকাঠামোর ইন্ডিকেটিভ ডিজাইনসহ ব্যয় প্রাক্কলনের বিস্তারিত ব্যয় বিভাজন ও রেটস অফ সিডিউল থাকা আব্যশক । (সিদ্ধান্ত ৩.৩)	I. Provided in **Figure 8.1** and **Figure 8.2** of **Chapter 8.** II. Administrative map has been provided in **Figure 3.1 and Figure 3.2 of Chapter 3** and zoning map has been provided in **Figure 8.3 of Chapter 8.** III. Outline design drawings has been provided in **Annex N of Volume II.** Detailed cost estimation has been provided in **Annex D of Volume II.**
3	আলোচনা ২.৩ I. সভায় আরো উল্লেখ করা হয় যে, অর্থনৈতিক অঞ্চলের জন্য নির্ধারিত জমির ভূমি উন্নয়নের ক্ষেত্রে প্রয়োজনীয় ড্রেজিং/খনন	**I.** Provided in **Section 8.6.3** of **Chapter 8.**

SN	Comments	Response
	পরিকল্পনার ধারণা চলমান সম্ভাব্যতা সমীক্ষায় তুলে ধরা প্রয়োজন। II. কোন কোন উৎস থেকে (ভূ-গর্ভস্থ, নদী/বিলের পানি, বৃষ্টির পানি, পুনঃচক্রায়নকৃত পানি ইত্যাদি) কি পরিমাণ পানি কোন পদ্ধতিতে আহরণ করা হবে তার সুনির্দিষ্ট পরিকল্পনা সম্ভাব্যতা সমীক্ষায় অন্তর্ভুক্ত করার বিষয়ে সভায় আলোচনা করা হয়। III. অর্থনৈতিক অঞ্চলটিতে ভবিষ্যতে কি পরিমাণ তরল ও কঠিন বর্জ্য সৃষ্টি হতে পারে তার ধারণামূলক বিশ্লেষণ সাপেক্ষে Common Effluent Treatment Plant (CETP) ও Solid Waste Management Facilities (SWMF) এর পরিকল্পনা সম্ভাব্যতা সমীক্ষায় সন্নিবেশিত করার বিষয়ে মতামত প্রদান করা হয়। IV. অধিকিন্তু, অর্থনৈতিক অঞ্চলে নিরবচ্ছিন্ন ও নির্ভরযোগ্য বিদ্যুৎ সরবরাহের বিষয়ে সুনির্দিষ্ট বাস্তবসম্মত সুপারিশ রাখাসহ প্রকল্পের পার্শ্ববর্তী এলাকার বিদ্যমান ট্রান্সমিশন ও বিতরণ অবকাঠামো, ক্ষমতা এবং স্কেলিবিলিটি সমীক্ষা রিপোর্টে তুলে ধরা যেতে পারে।	II. Provided in **Section 8.5.6-8.5.7** of **Chapter 8.** III. Provided in **Section 8.5.10** - **Section 8.5.12** of **Chapter 8.** IV. Provided in **Section 8.5.2** of **Chapter 8.**
4	আলোচনা ২.৪ সম্ভাব্যতা সমীক্ষায় প্রকল্পের ধারণাগত আয়-ব্যয় বিশ্লেষণে ১০% ডিসকাউন্ট রেটে আর্থিক বিশ্লেষণ করা হয়েছে। এক্ষেত্রে পরিকল্পনা কমিশনের পরিপত্রের আলোকে প্রকল্পের ধারণাগত ফিন্যান্সিয়াল এনালাইসিস সম্পাদনে ডিসকাউন্ট রেট ১২% নির্ধারণ করা আব্যশক। (সিদ্ধান্ত ৩.৩)	Provided in **Chapter 9**.

Comments from PEC Meeting Held on 19/12/2019

SN	Comments	Response
1	কমন ইফ্লুয়েন্ট ট্রিটমেন্ট প্ল্যান্ট (সিইটিপি) এবং ইন্টিগ্রেটেড ওয়েস্ট ম্যানেজমেন্ট ফ্যাসিলিটিজ (আইডব্লিউএমএফ) ইত্যাদি অবকাঠামোসমূহ আপাততঃ নির্মান না করে এ পর্যায়ে শুধুমাত্র পাইপ লাইনসহ প্রাথমিক অবকাঠামো নির্মানের সংস্থান রেখে ভবিষ্যতে অর্থনৈতিক অঞ্চলে স্থাপিতব্য শিল্পের চাহিদা মোতাবেক নতুন একটি প্রকল্পের মাধ্যমে সেগুলোর নির্মান কাজ সম্পন্ন করতে হবে; **(সিদ্ধান্ত ৪.১)**	Agreed
2	প্রকল্প এলাকাসহ নেত্রকোনা ও আশেপাশের জেলার সড়ক পথ, রেলপথ ও নদীপথের অবস্থান নির্দেশক সুস্পষ্টকরতঃ জেলা, উপজেলা ও মৌজাম্যাপ ডিপিপি তে সংযোজন করতে হবে; **(সিদ্ধান্ত ৪.২)**	Demarcation of Roadway, Railway, Waterway and Airway of Netrokona and its adjacent district has been provided in **Figure 8.17** of **Chapter 8** Administrative map has been provided in **Figure 3.1 and Figure 3.2 of Chapter 3.**
3	১০% এর পরিবর্তে ১২% ডিসকাউন্ট রেটে প্রকল্পের ফিন্যান্সিয়াল এনালাইসিস সম্পাদন করতে হবে। এছাড়া, প্রকল্প এলাকার পরিবেশগত প্রভাব মূল্যায়ন (ইআইএ) করে পরিবেশগত ছারপত্র পুনর্গঠিত ডিপিপি-তে সংযুক্ত করতে হবে; **(সিদ্ধান্ত ৪.৩)**	Provided in **Chapter 9.**
4	প্রস্তাবিত অর্থনৈতিক অঞ্চলের অভ্যন্তরে অবস্থিত কমল বিলটিকে অক্ষত রেখে অর্থনৈতিক অঞ্চলটি নির্মান করতে হবে; **(সিদ্ধান্ত ৪.৪)**	Agreed
5	অর্থ বিভাগের জনবল নির্ধারণ সংক্রান্ত কমিটির সুপারিশের আলোকে প্রকল্পে জনবল কাঠামো ও নিয়োগ পদ্ধতি নির্ধারণসহ জনবল কমিটির সুপারিশ ডিপিপি-তে সংযুক্ত করতে হবে; **(সিদ্ধান্ত ৪.৫)**	Not applicable for the Consultant
6	অভ্যন্তরীণ সংযোগ সড়ক এবং ড্রেনেজ স্থাপনা অঙ্গসমূহের ডিজাইন ও ব্যয় প্রাক্কলনের যৌক্তিকতা আরও পরীক্ষা-নিরীক্ষাপূর্বক যৌক্তিকতাসহ ডিজাইন এবং ব্যয় প্রাক্কলনের ভিত্তিসহ যথাযথ ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে । এছাড়া ব্রীজ/কালভার্টের উচ্চতা নির্দেশিত নকশাসহ বিস্তারিত ব্যয় প্রাক্কলন (ইনডিকেটিভ) ডিপিপি-তে সংযুক্ত করতে হবে; **(সিদ্ধান্ত ৪.৬)**	Outline design drawings has been provided in **Annex N of Volume II.** Detailed cost estimation has been provided in **Annex D of Volume II.**
7	প্রকল্পের আওতায় পানি সরবরাহ স্থাপনা, টেলিযোগাযোগ স্থাপনা, গ্যাস সংযোগ লাইন এবং বিদ্যুৎ সরবরাহ স্থাপনা ইত্যাদি অঙ্গের একক দর ও বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে; **(সিদ্ধান্ত ৪.৭)**	Breakdown of Cost Estimation has been provided in **Annex D of Volume II**.
8	প্রশাসনিক ভবনের ভিত্তি ও মোট তলার সংখ্যাসহ পিডব্লিউডি'র হালনাগাদ রেট সিডিউল অনুযায়ী ভবনের এলিভেশন ও ড্রইংসহ	Agreed

SN	Comments	Response
	বিস্তারিত ব্যয় প্রাক্কলন ডিপিপি-তে সংযুক্ত করতে হবে; **(সিদ্ধান্ত ৪.৮)**	
9	প্রকল্পের আওতায় বিদেশ প্রশিক্ষণ, স্টাডি ট্যুর, স্থানীয় ও আন্তর্জাতিক পর্যায়ে বিনিয়োগ উন্নয়ন সেমিনার ও কনফারেন্স আয়োজনের লক্ষ্যে অর্থ সংস্থানের যৌক্তিকতা খতিয়ে দেখতে হবে। যদি প্রকল্পের জন্য অঙ্গটি অপরিহার্য হয় তবে ডিপিপি-তে সংযুক্ত অঙ্গের বিস্তারিত বিবরণের ত্রুটিসমূহ সংশোধন করে সঠিক তথ্য প্রদান করতে হবে; **(সিদ্ধান্ত ৪.৯)**	Not applicable for the Consultant
10	সিদ্ধান্ত ৪.১- সিদ্ধান্ত ৪.৯ এ বর্ণিত সুপারিশের আলোকে ডিপিপি পুনর্গঠনপূর্বক দ্রুত পরিকল্পনা কমিশনে প্রেরণ করতে হবে। **(সিদ্ধান্ত ৪.১০)**	Not applicable for the Consultant

Comments and Responses Matrix on Final Report Presentation (25/03/2020)

SN	Comments from BZA	Response
1	নেত্রকোণা অর্থনৈতিক অঞ্চলের সম্ভাব্যতা রিপোর্টে বর্ণিত Competitiveness Assessment, Industry Assessment, Master Plan/Land Use Plan এবং Onsite/Offsite Infrastructure অনুচ্ছেদসমূহ আরো অধিক পরীক্ষা-নিরীক্ষাপূর্বক পর্যালোচনা করে চূড়ান্ত করতে হবে এবং সে মোতাবেক Final Report–টি চূড়ান্ত করে বেজাতে দাখিল করতে হবে।	I. In **Chapter 6** of **Vol I**, Competitiveness Assessment has been provided elaborately. II. In **Chapter 7** of **Vol I**, Industry Assessment has been revised accordingly. III. Master Plan/Land Use Plan has been revised incorporating comments provided by BEZA. Revised Master Plan/Land Use Plan has been provided in **Chapter 8** of **Vol I**. IV. Due to the changes of Master Plan/Land Use Plan many Onsite/Offsite Infrastructures such as road network, electric lighting, power supply system, land development, water supply system, storm-water drainage system, Sewage Treatment Plant, Common Effluent Treatment Plant (CETP), Discharge path of STP and CETP and Integrated Waste Management Facilities (IWMF) has been changed. The revised version of these onsite and offsite infrastructures have been provided in **Section 8.5 and Section 8.6** of **Chapter 8** of **Vol I** respectively. V. Cost Estimation has been also revised due to the changes of Master Plan/Land Use Plan and revised cost estimation has been provided in **Annex D** of **Vol II**. Revised Financial and Economic analysis has been provided in **Chapter 9 of Vol I**. VI. Due the changes of these chapters and annexes, relevant changes have also been made in Executive **Summary** of **Main Report (Vol I).**

Comments and Responses Matrix on Final Report Presentation (15/11/2020)

SN	Comments	Responses
1	Industry assessment needs to be reviewed and elaborated.	Elaborately provided in **Chapter 6** of Main Report (**Vol I**).
2	Lake area should be minimized as possible.	The proposed lake is kept considering comments from Honorable Executive Chairman of BEZA on the existing Kamal Beel. PEC members requested to keep the Beel during PEC meeting. Also, DoE officials stressed on keeping the Beel during the draft EIA presentation.
3	Challenge of gas supply should be elaborately described.	A more detailed description on gas supply system has been provided in **Section 8.5.4** of **Chapter 8 of** Main Report (**Vol I**)
4	Challenge of Power supply system should be elaborately described.	A more detailed description on power supply system has been provided in **Section 8.5.2** of **Chapter 8 of** Main Report (**Vol I**)
5	Land filling method should be clearly defined.	Elaborately provided in **Section 8.5.5** of **Chapter 8** of Main Report **(Vol I)**.
6	Dredging (From which river, its distance and method should be clearly mentioned)	Provided in **Section 8.6.3** of **Chapter 8** of Main Report **(Vol I)**.
7	Benchmarking	In Benchmarking section comparison has been done with foreign EZs. In the previous version of the feasibility report, comparison was done with both foreign EZs and national EPZs. Upon the request of BEZA, comparison with only national EPZs has been omitted.
8	Phasing of project	Already phased in Economic and Financial Analysis (**Chapter 9**) of of Main Report **(Vol I)**.
9	Deep Aquifer/drawdown	There is no scope of primary data collection in the contract document. Hence, it not possible to provide drawdown condition due to the withdrawal of groundwater.
10	Land level re-consideration (maybe reduced for cost minimization)	Land level has been kept same.
11	Road connectivity should be elaborately described (existing adjacent road from Netrokona-Mohonganj should be made 4 lane to make the project feasible)	Elaborately described in the report under **Section 8.6** of **Chapter 8** of Main Report **(Vol I)**.
12	Railway station description	Has been described in the report under **Section 8.6.1** of **Chapter 8** of Main Report **(Vol I)**.

ANNEX M: Utility (Water Supply, Drainage, Sewerage, Industrial Effluent and Gas Supply) Network Maps

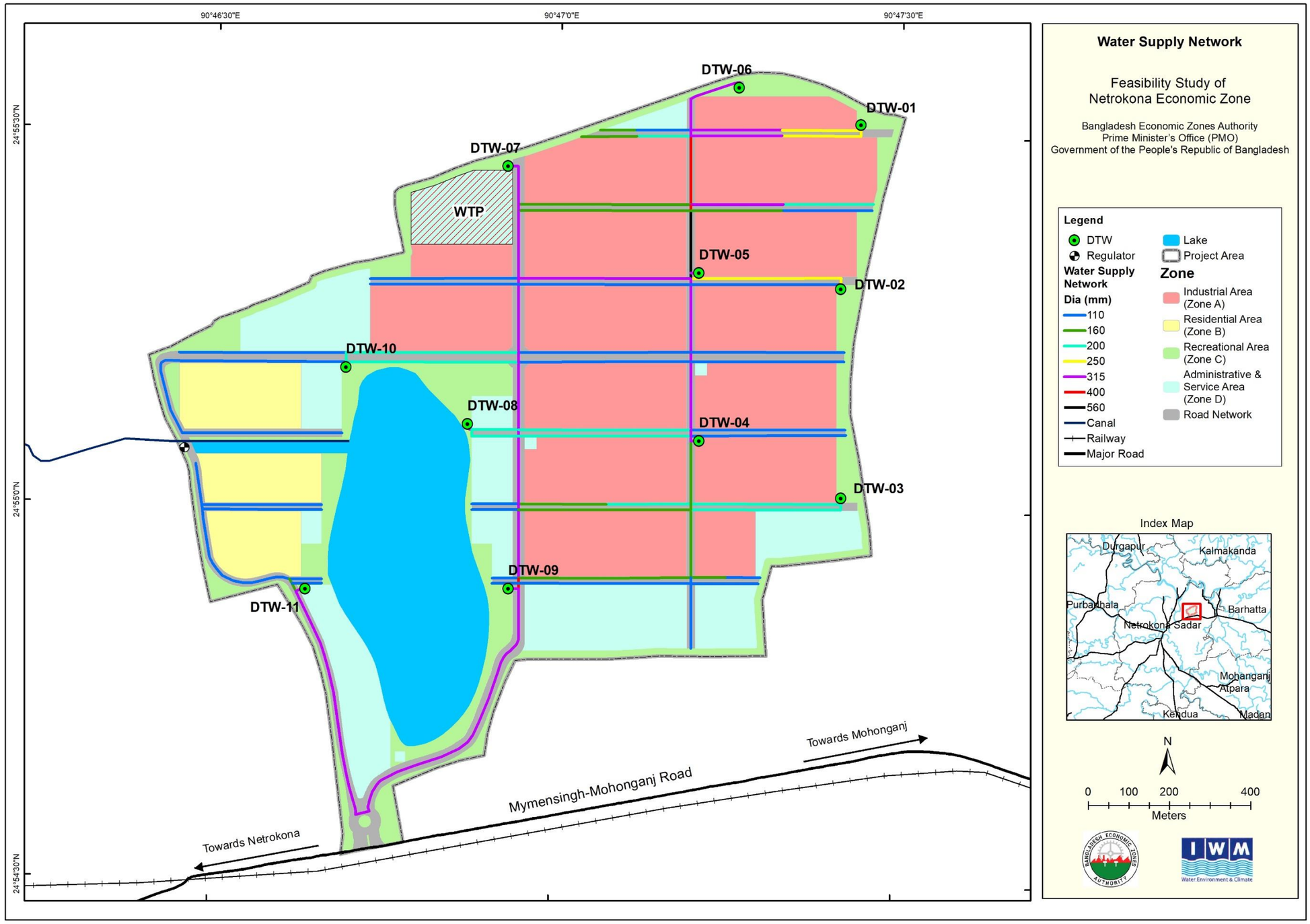


Figure 1: Water supply System Map

Figure 2: Storm Water Drainage System Map

Figure 3: Domestic Wastewater/Sewage Collection Network Map

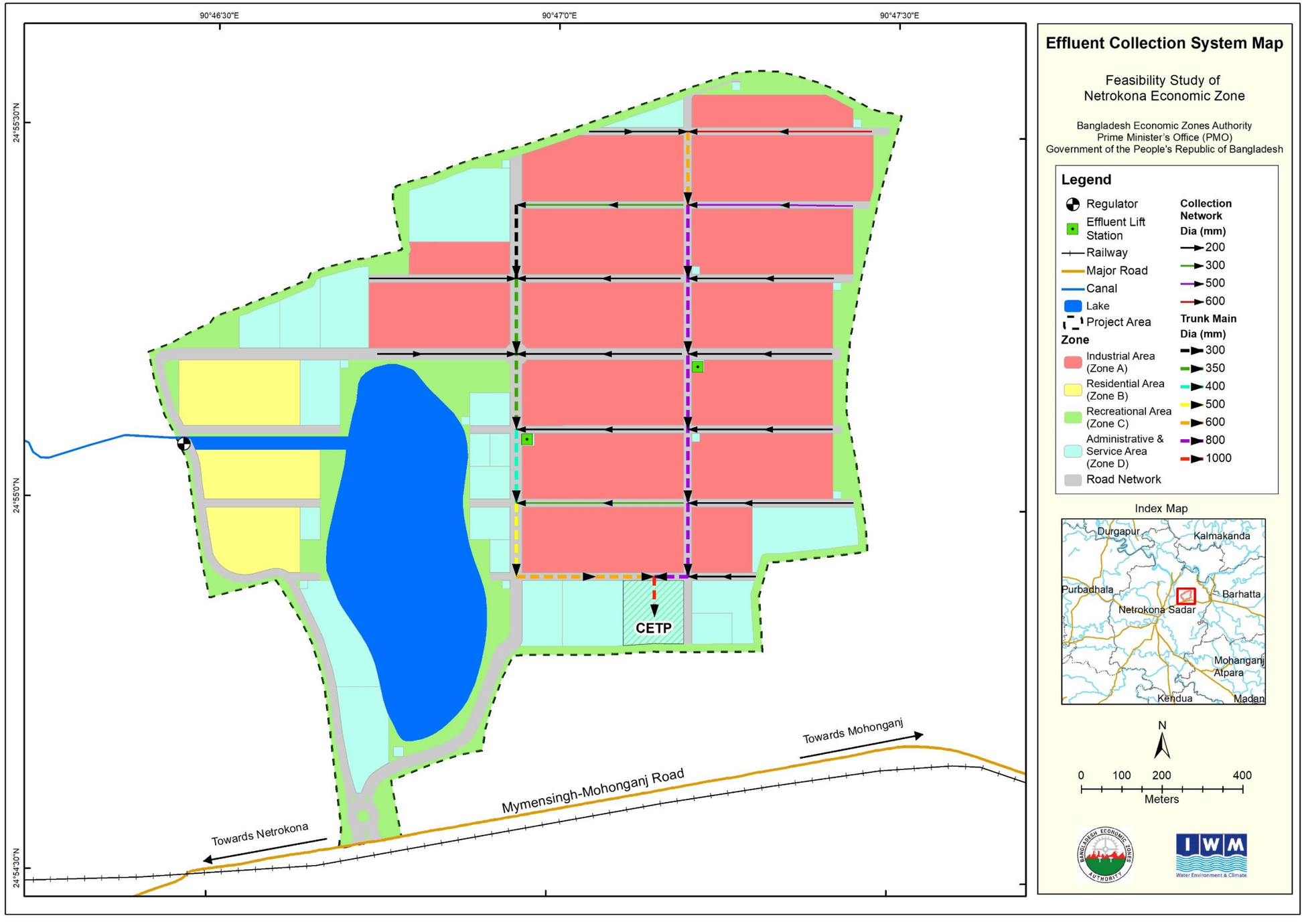


Figure 4: Effluent (Industrial Wastewater) Collection Network Map

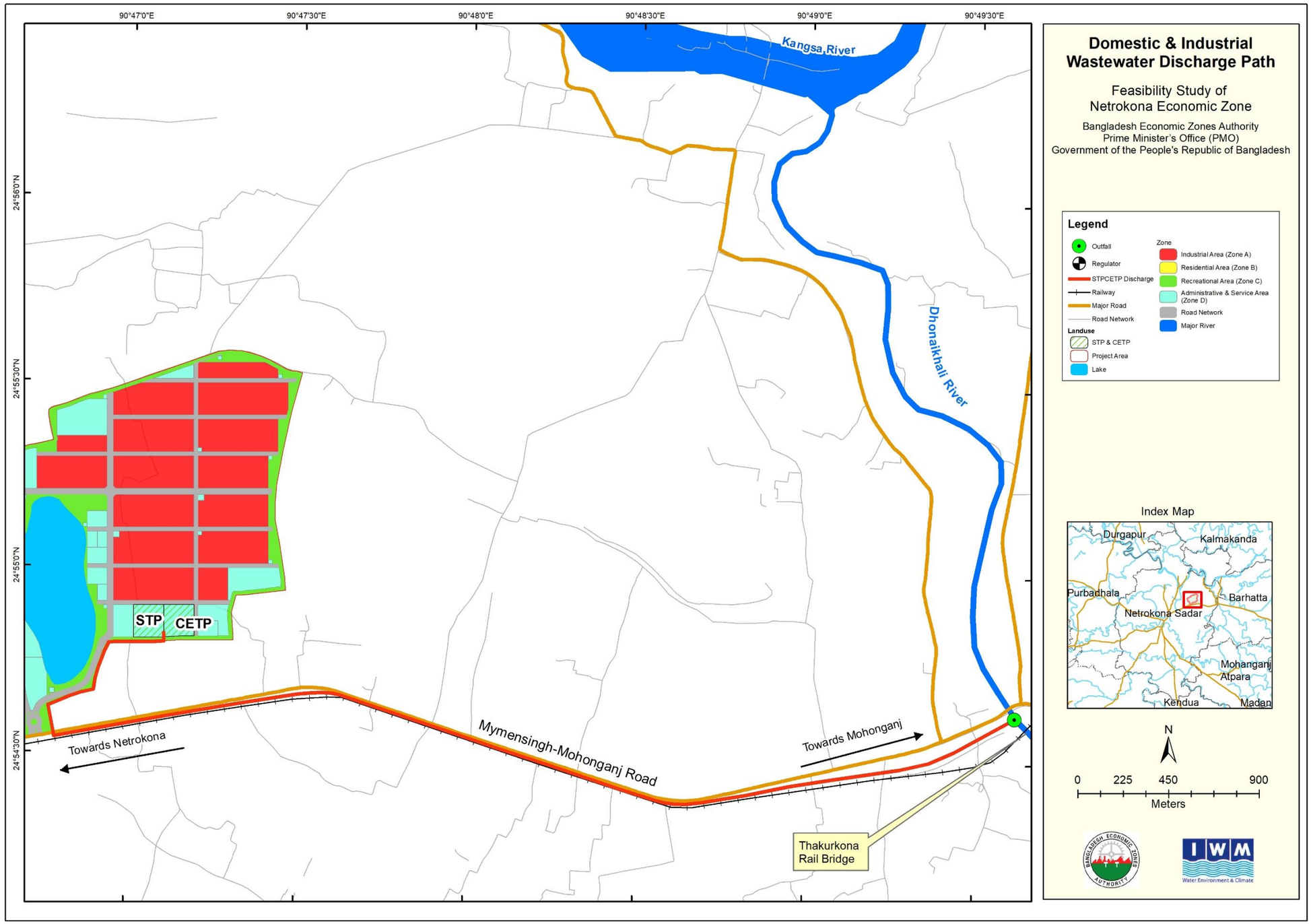


Figure 5: Domestic and Industrial Wastewater Discharge Pipe (1000mm Diameter)

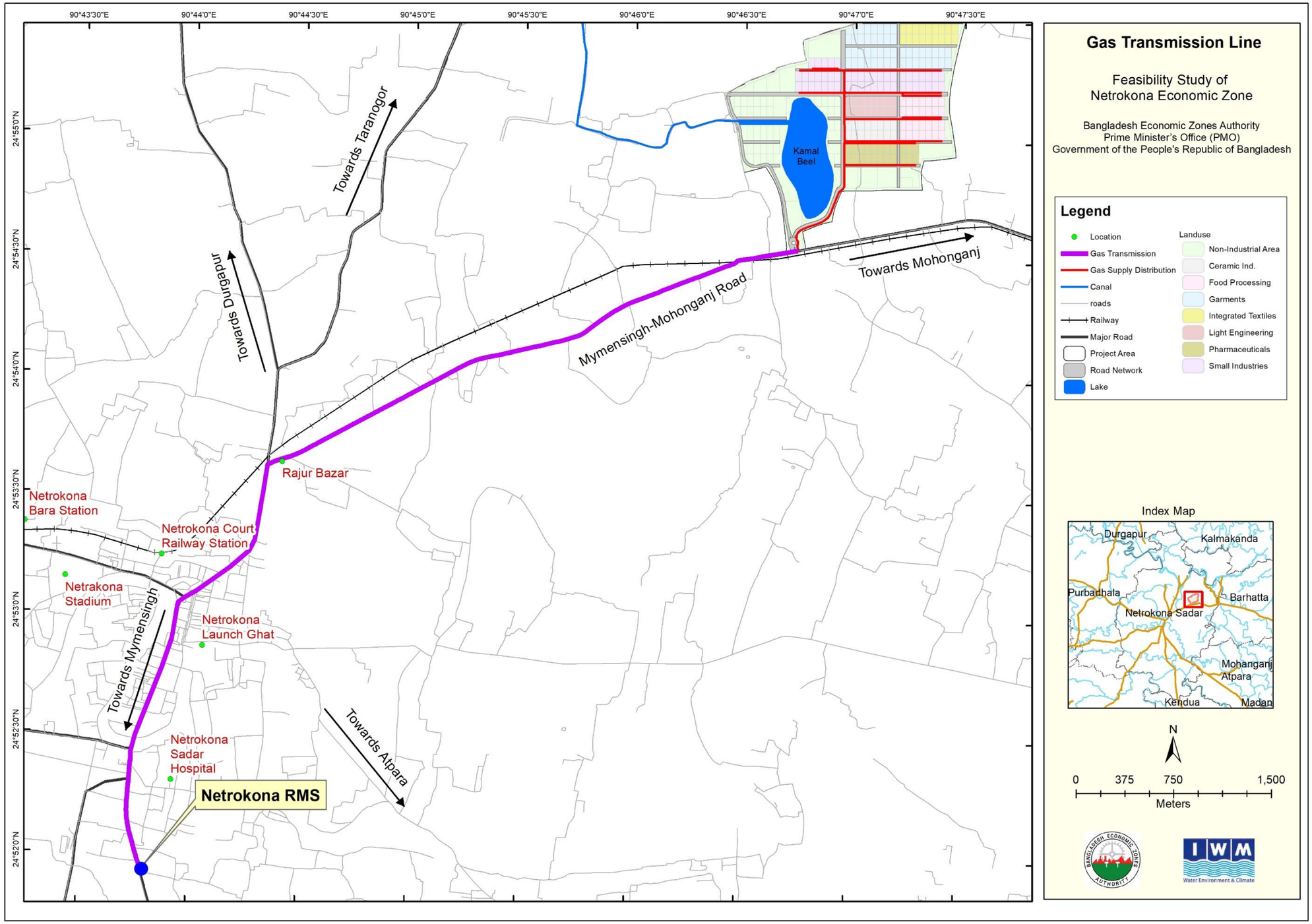


Figure 6: Gas Transmission Line to Proposed NEZ

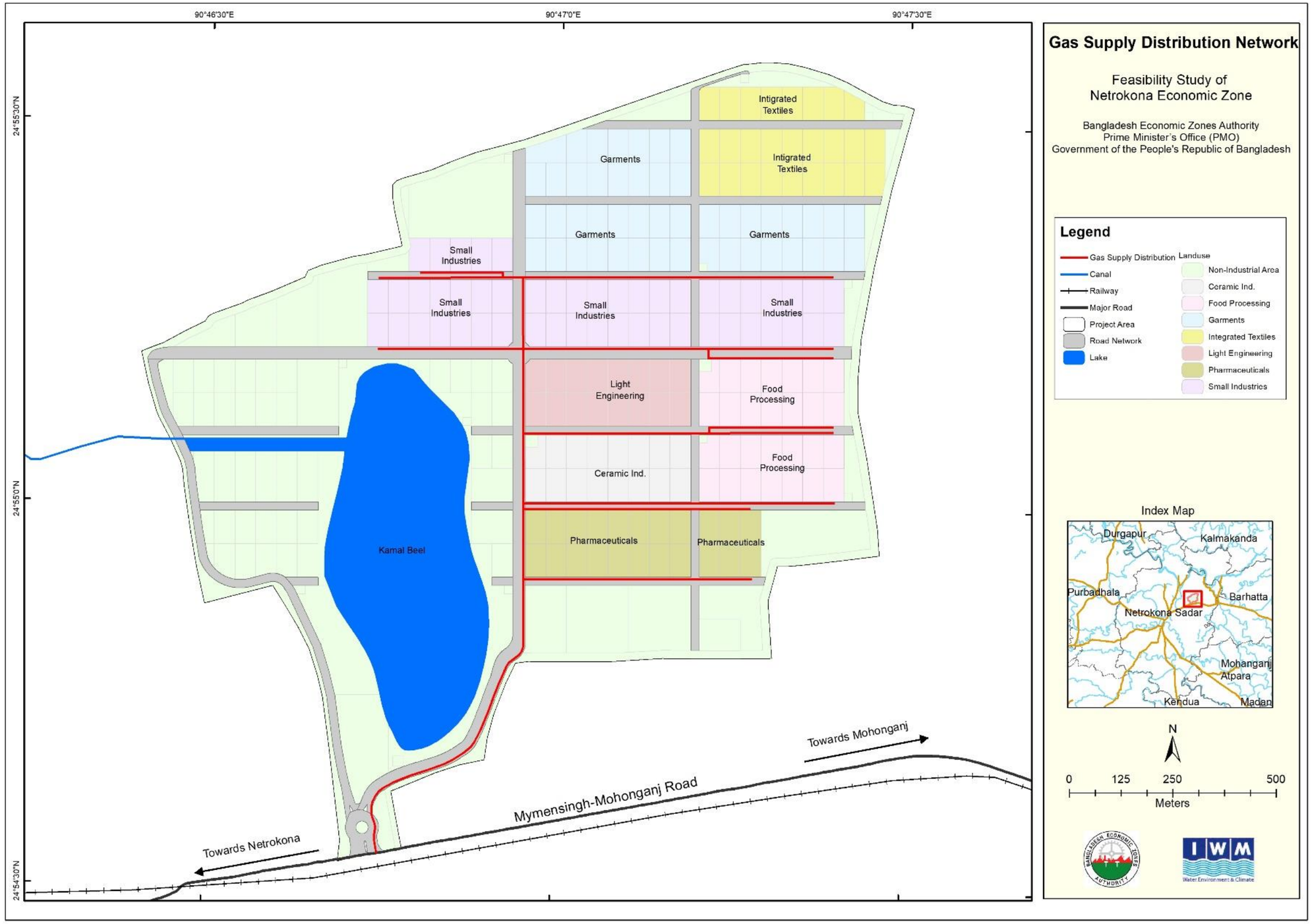


Figure 7: Gas Supply Distribution Network

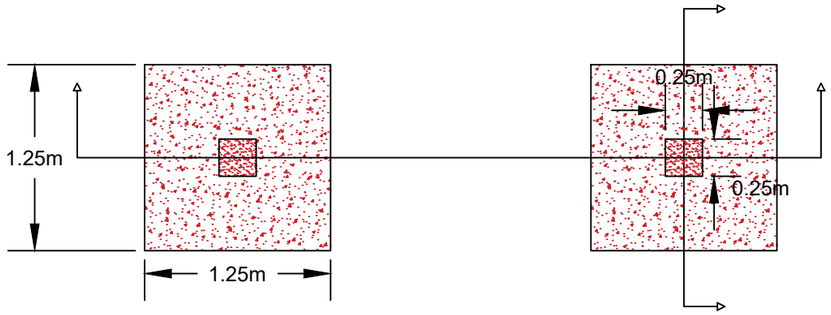


Figure: Typical Plan View of Boundary Wall

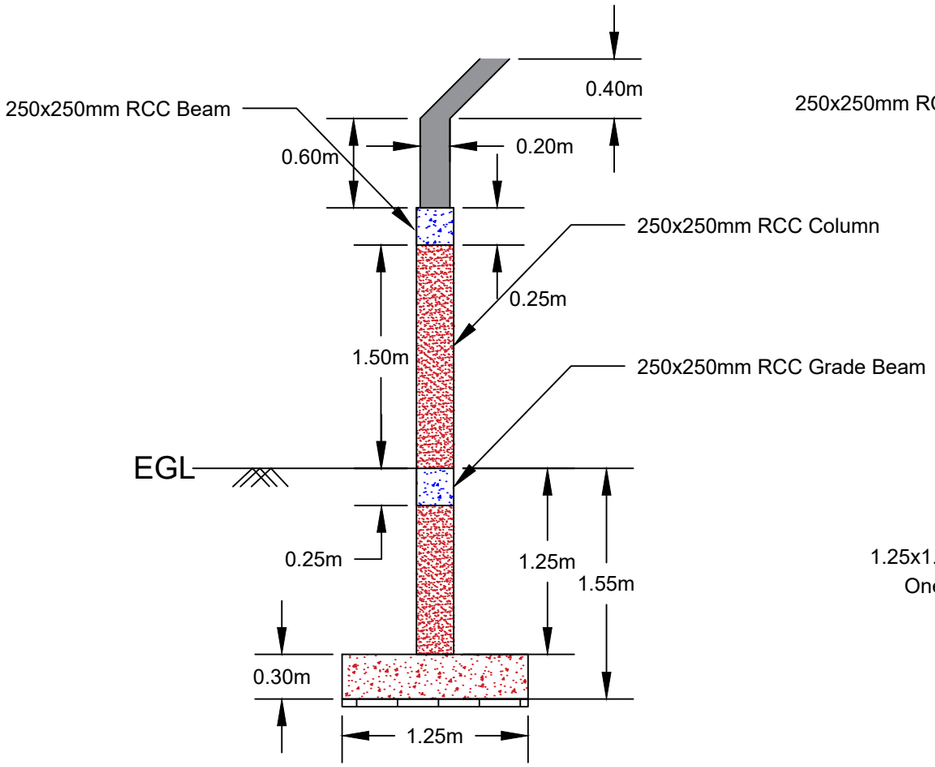


Figure: Section X-X of Boundary Wall

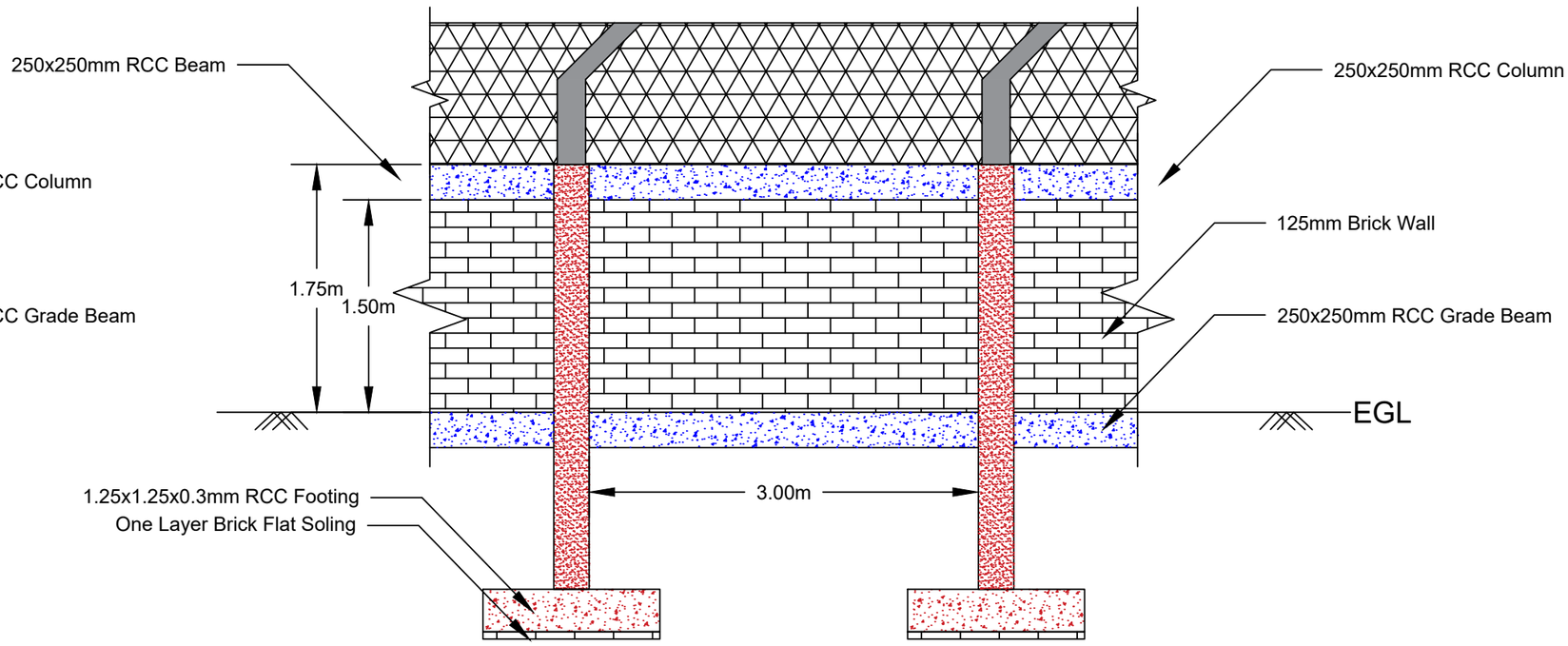
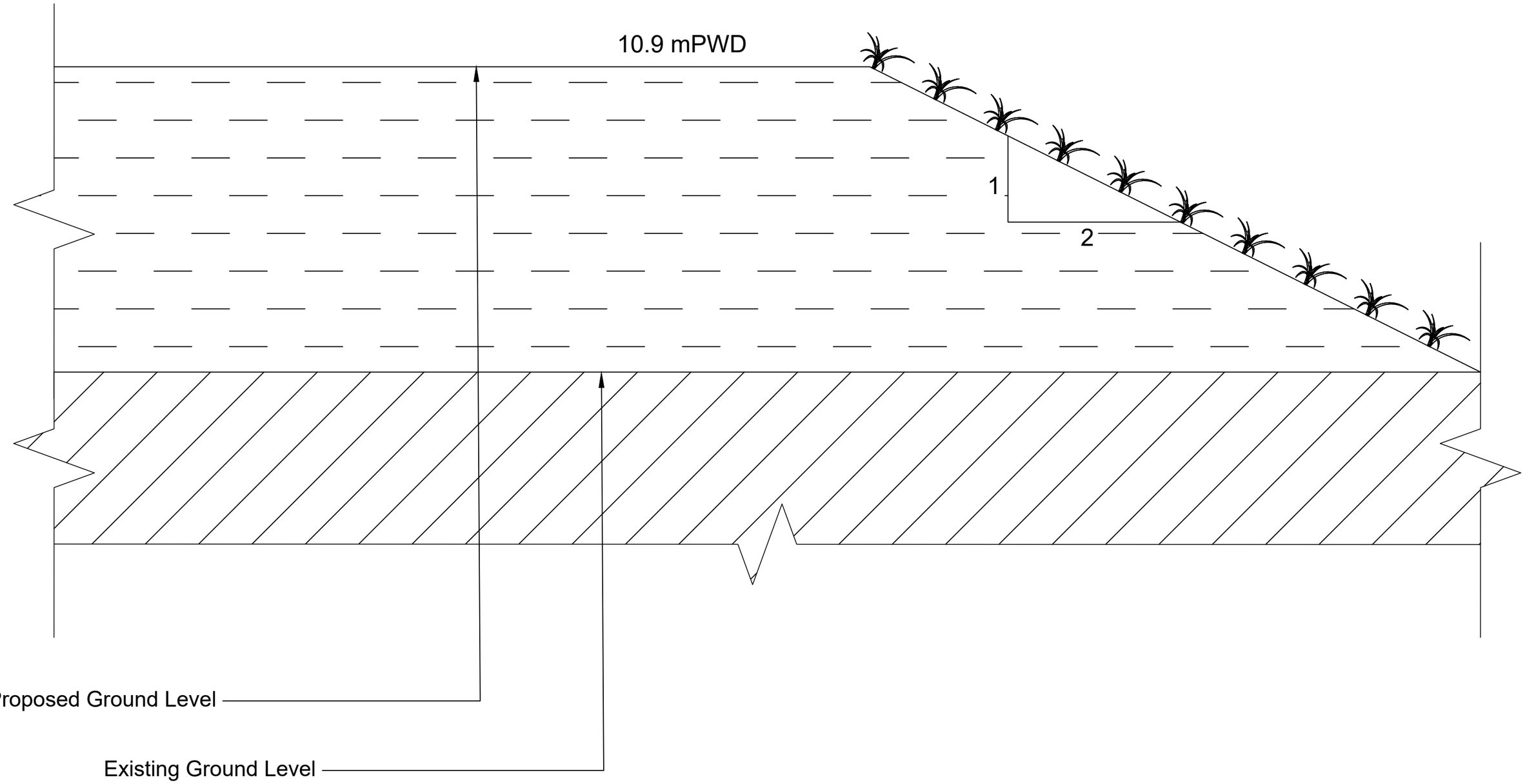
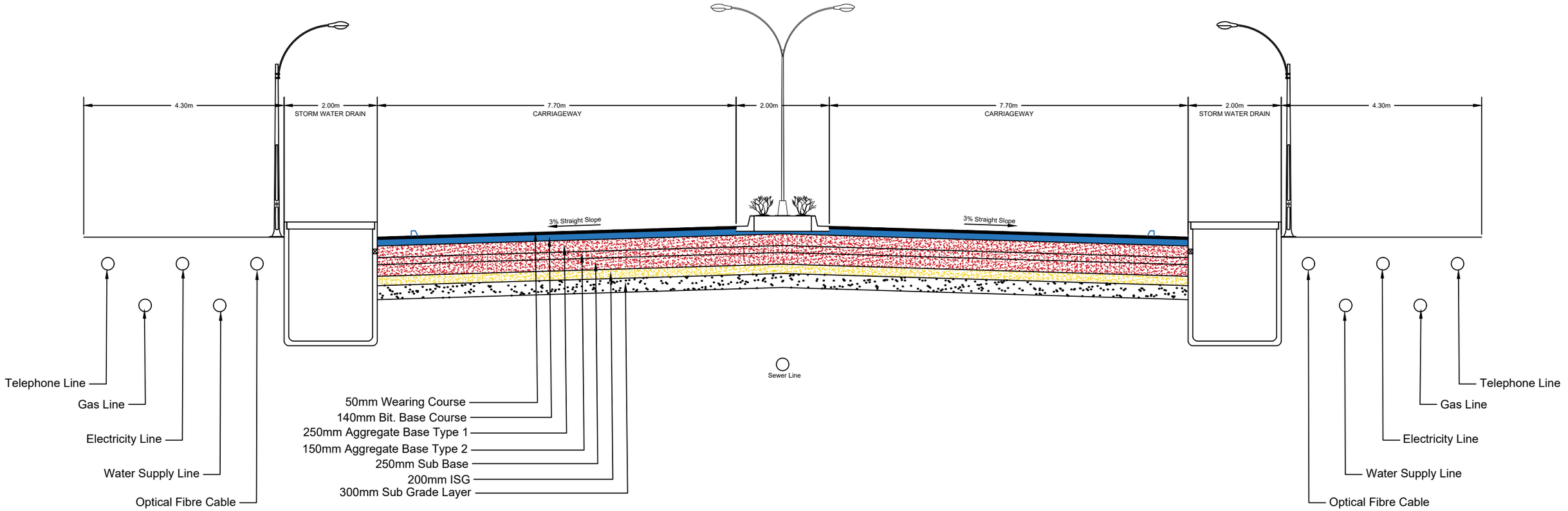


Figure: Section Y-Y of Boundary Wall

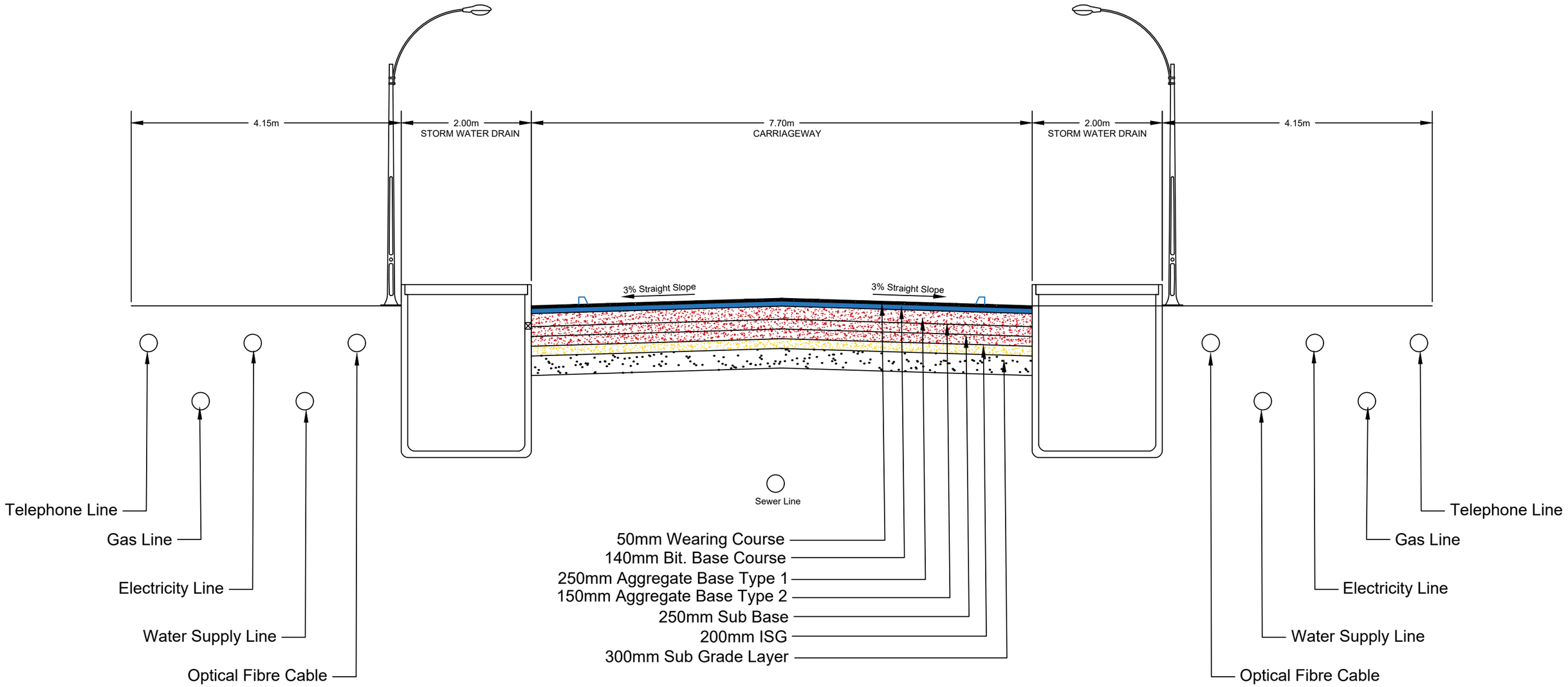
CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 01	Drawing Title Boundary Wall



CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 02	Drawing Title Landscaping and Slope Protection



CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 03	Drawing Title Typical X-Section of 4 Lane Road Including Footpath



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Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

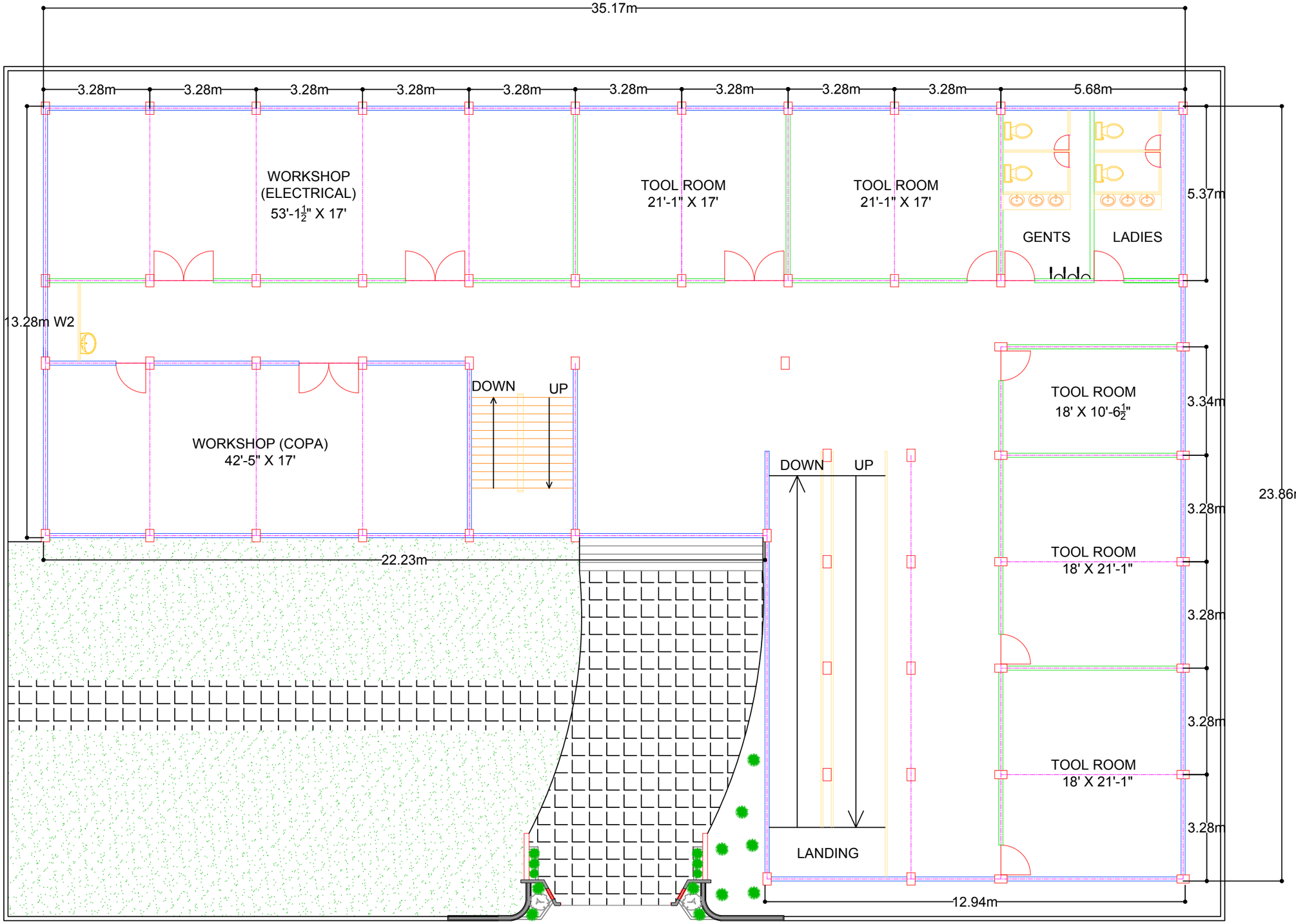
Original Drawing Size
A3 = 420x297

Not in Scale

Drawing No: 04

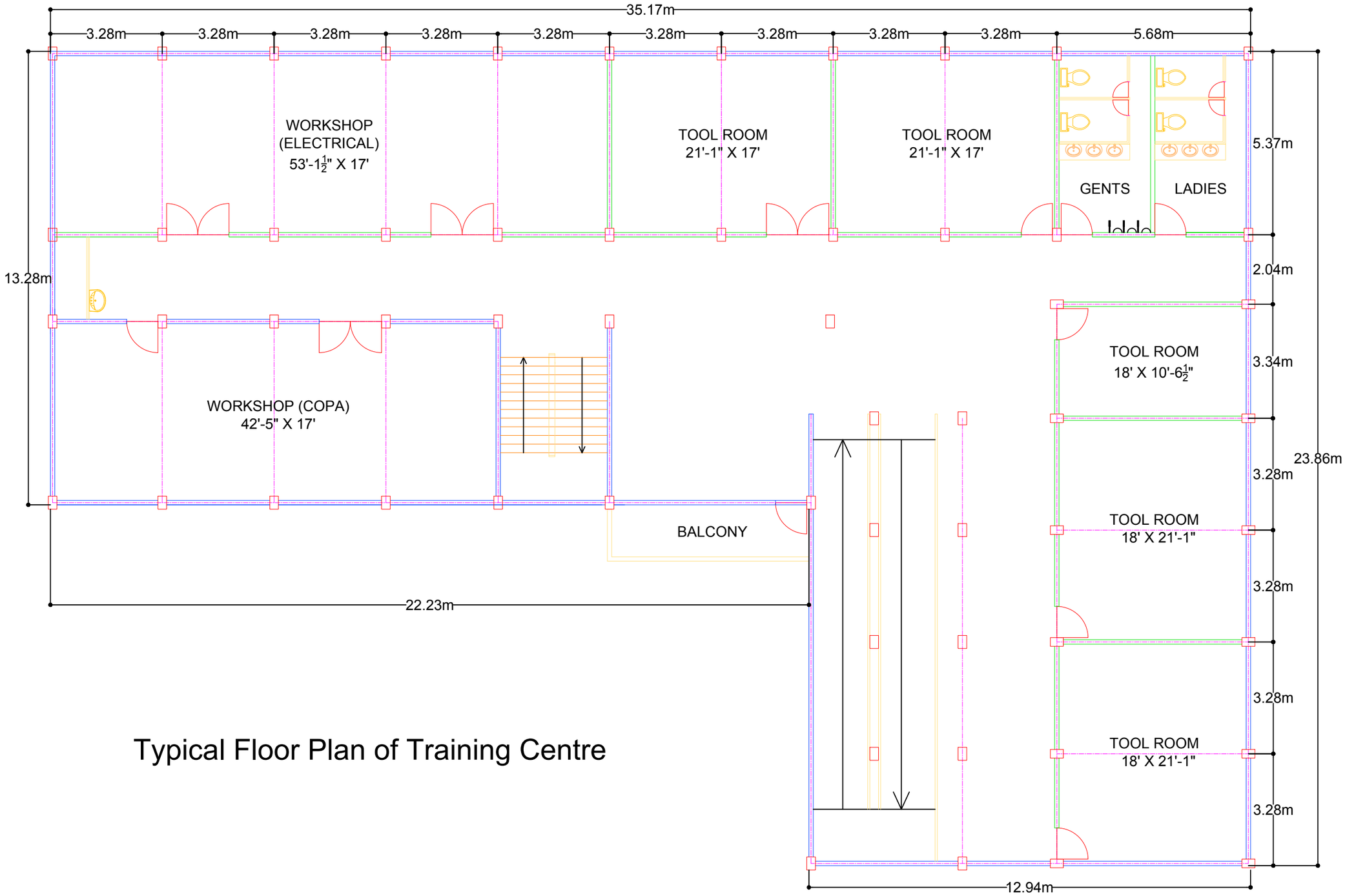
Feasibility Study of Netrokona Economic Zone

Drawing Title
Typical X-Section of 2 Lane Road Including Footpath



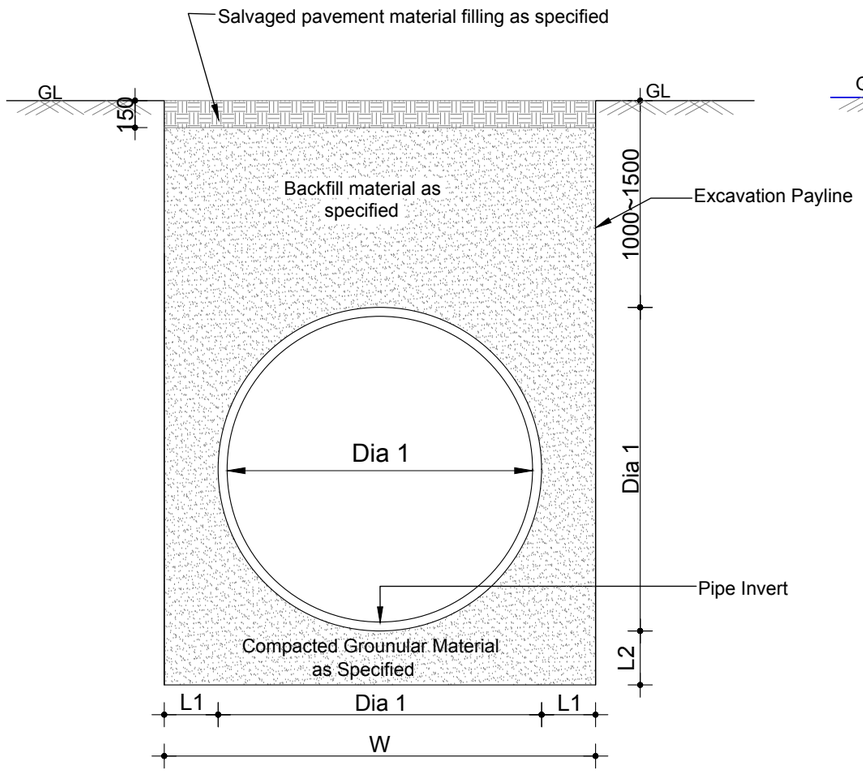
Ground Floor Plan of Training Centre

CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 05	Drawing Title Ground Floor Plan of Training Center

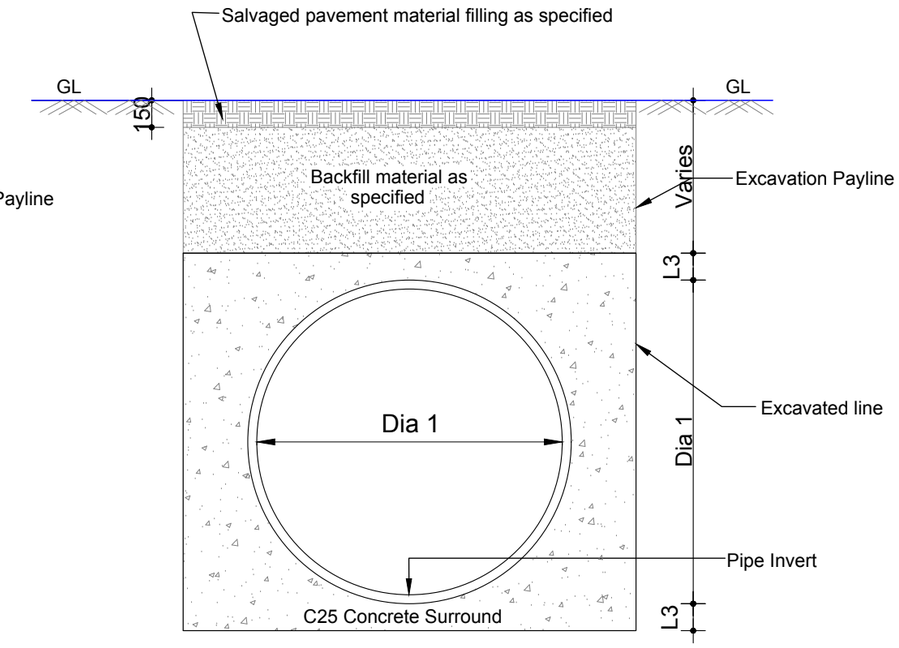


Typical Floor Plan of Training Centre

CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 06	Drawing Title Typical Floor Plan of Training Center



PIPE INSTALLATION TYPE A



PIPE INSTALLATION TYPE B

Dia 1	L1 (min.)	W * (min.)	L2 *	L3
1400	550	Dia 1 + 2xL1	1/4 Dia 1 150 min. 300 max.	200
1300	550			
1200	500			
1000	400			150
800	300			
700	300			
600	300			
500	250			
400	200			
300	200			
200	150			
150	150			
100	150			

*In all measurements make additional allowance for pipe wall thickness.

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Notes:
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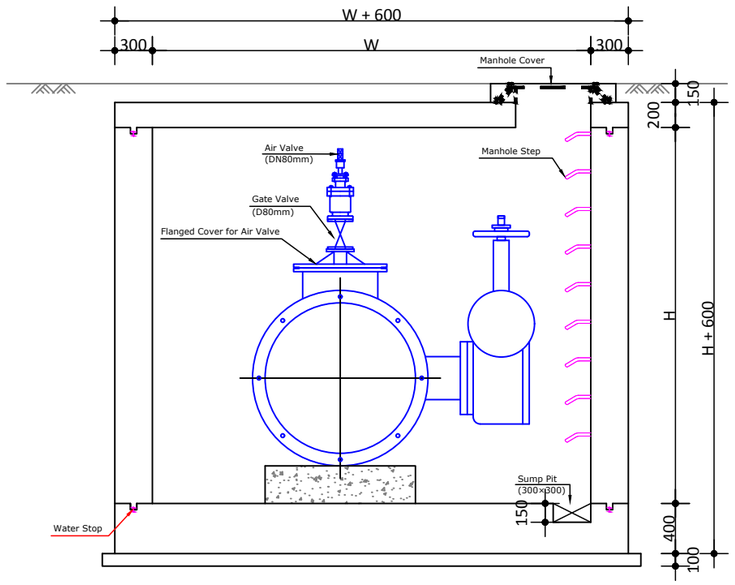
Original Drawing Size
A3 = 420x297

Not in Scale

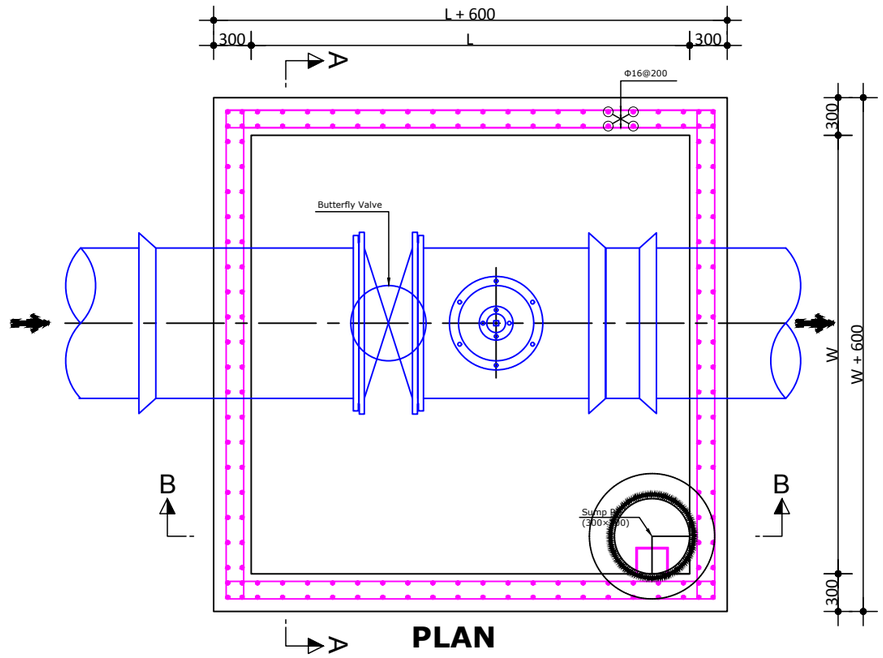
Drawing No:07

Feasibility Study of Netrokona Economic Zone

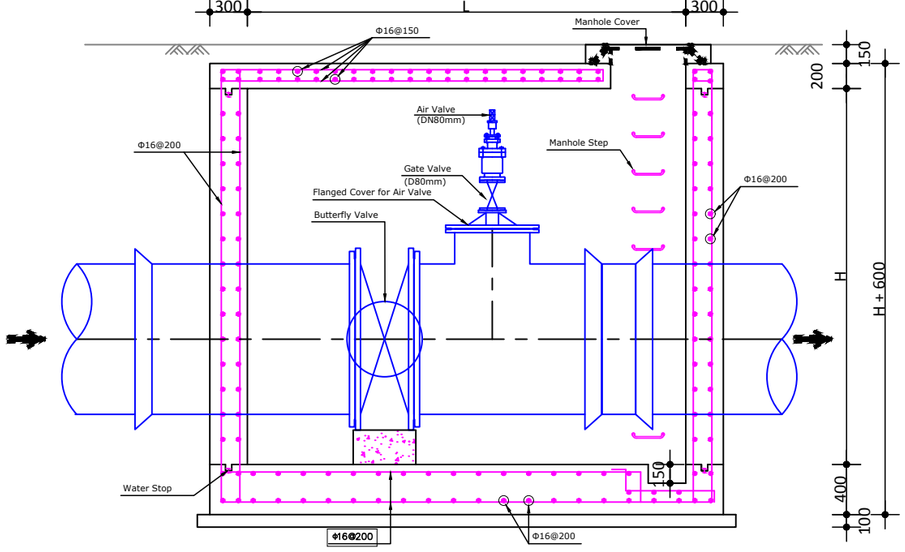
Drawing Title
Pipe Installation Details



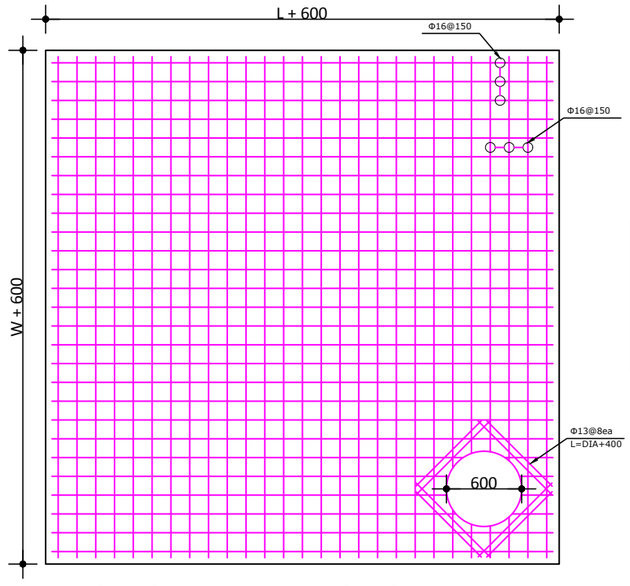
SECTION A-A



PLAN



SECTION B-B



TOP SLAB REINFORCEMENT

Dimension of Valve Chamber

Unit : mm

Diameter	W	L	H
DN300	1,800	1,800	Variable
DN400 ~ DN700	2,000	2,000	Variable
DN800 ~ DN1000	2,500	2,500	Variable
DN1100 ~ DN1200	3,000	3,500	Variable
DN1300 ~ DN1400	3,250	3,750	Variable

VALVE CHAMBER DETAILS

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Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

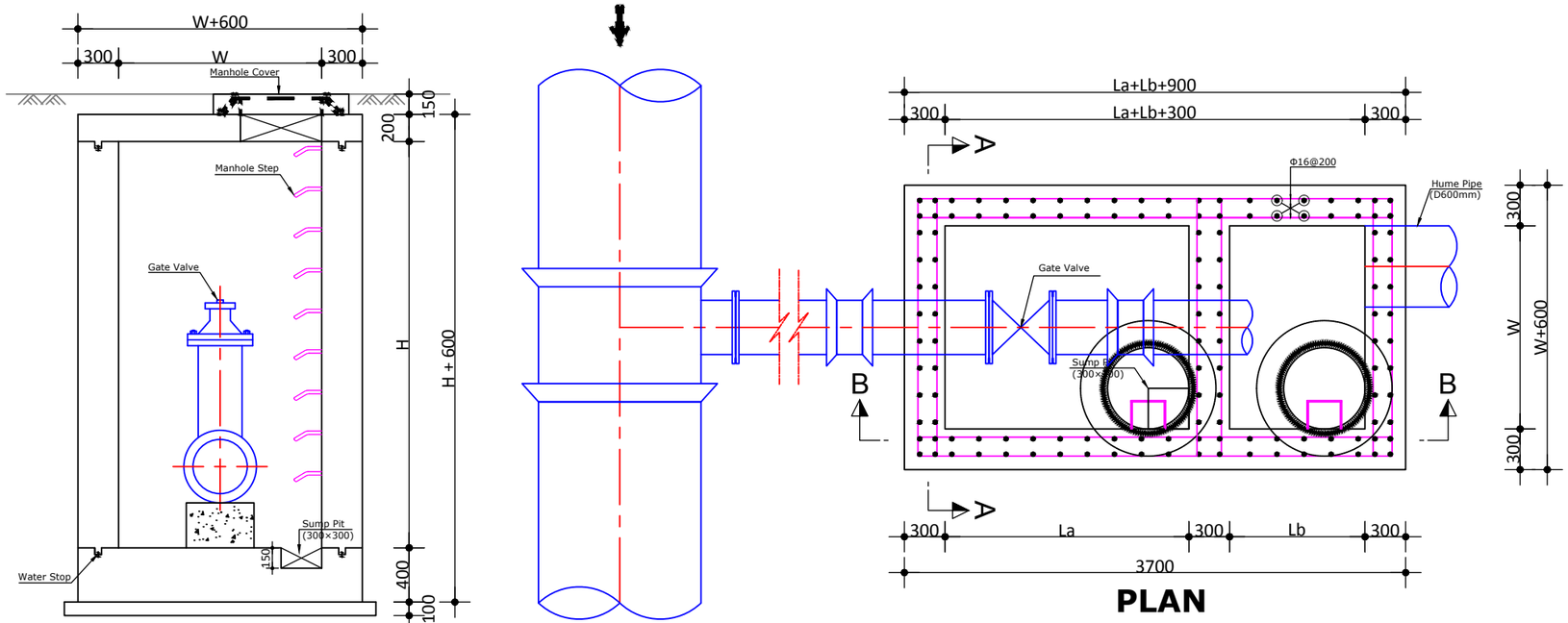
Original Drawing Size
A3 = 420x297

Not in Scale

Drawing No: 08

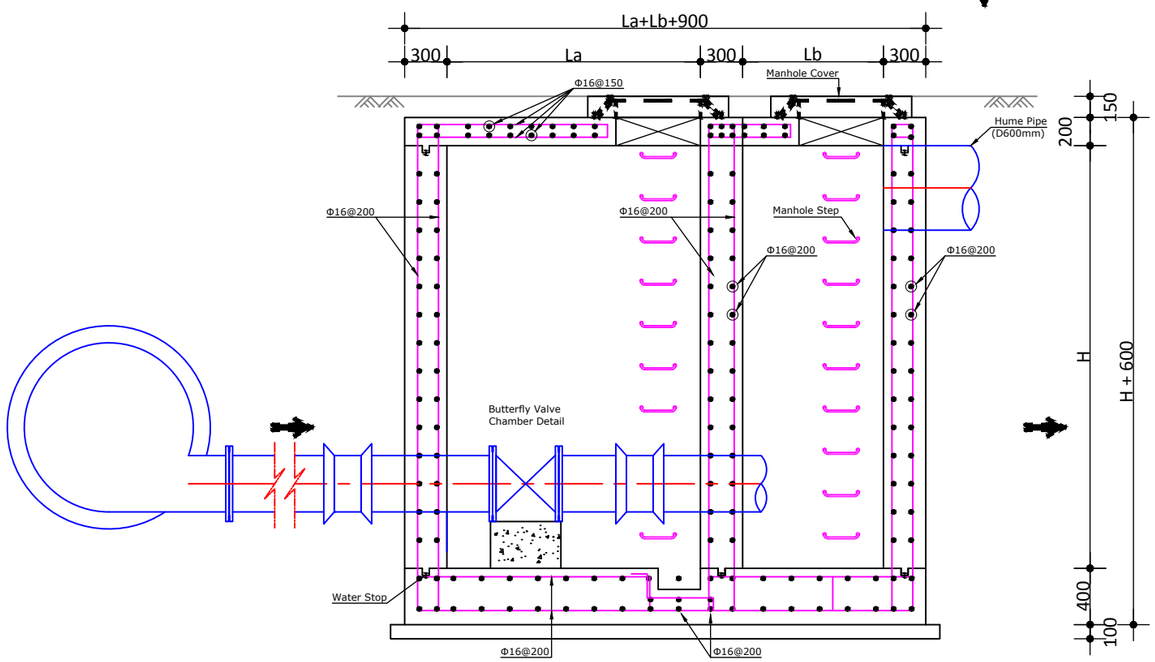
Feasibility Study of Netrokona Economic Zone

Drawing Title
Valve Chamber Details



SECTION A-A

PLAN

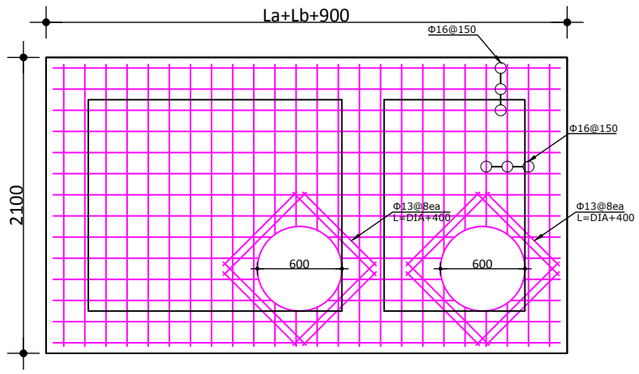


SECTION B-B

Dimension of Washout Valve Chamber

Unit : mm

Diameter		W	La	Lb	H
Main Pipe	Drain Pipe				
DN400 ~ ND600	DN200	1,500	1,800	1,000	Variable
DN700 ~ ND900	DN200	1,500	1,800	1,000	Variable
DN1000 ~ ND1200	DN300	1,500	1,800	1,000	Variable
DN1300 ~ ND1400	DN300	1,500	1,800	1,000	Variable



TOP SLAB REINFORCEMENT

WASHOUT VALVE CHAMBER DETAILS

CLIENT
Bangladesh Economic Zones Authority
Prime Minister's Office, Dhaka, Bangladesh.

CONSULTANT
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House - 496, Road - 32, Mohakhali DOHS,
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Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

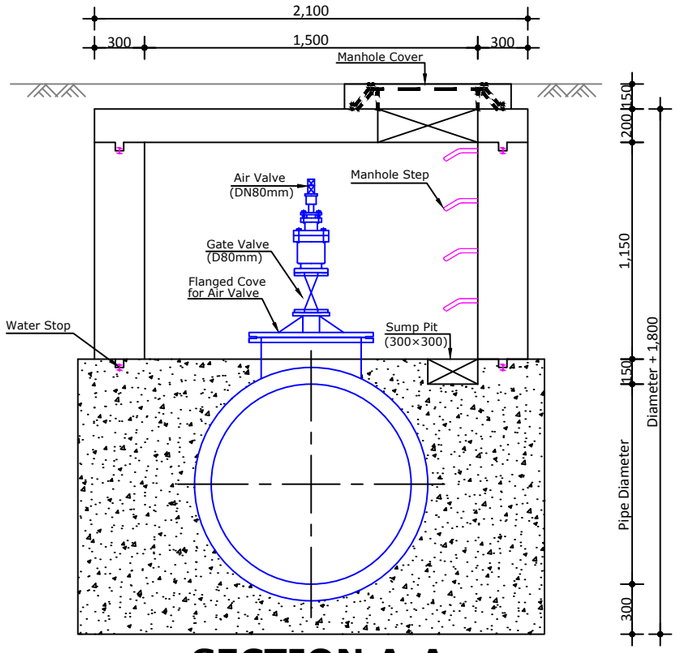
Original Drawing Size
A3 = 420x297

Not in Scale

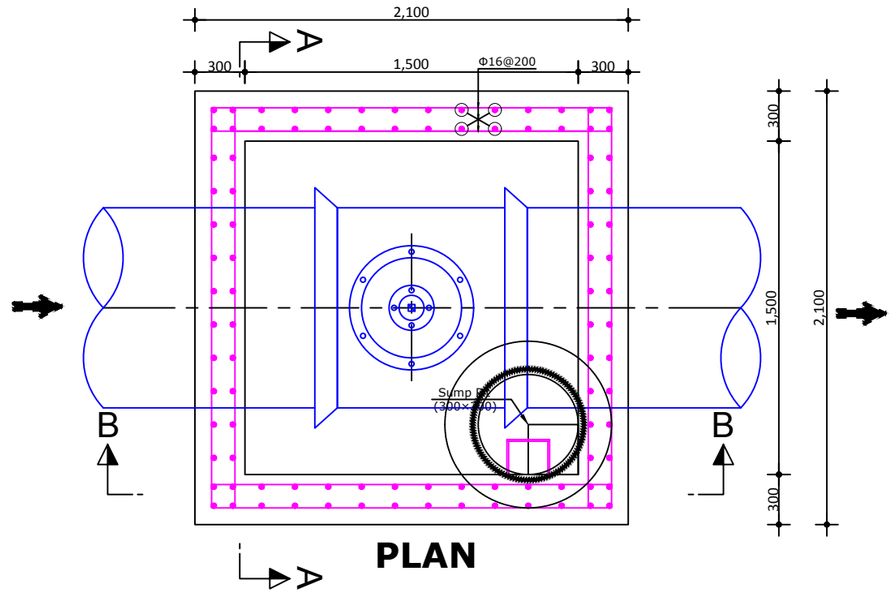
Drawing No: 09

Feasibility Study of Netrokona Economic Zone

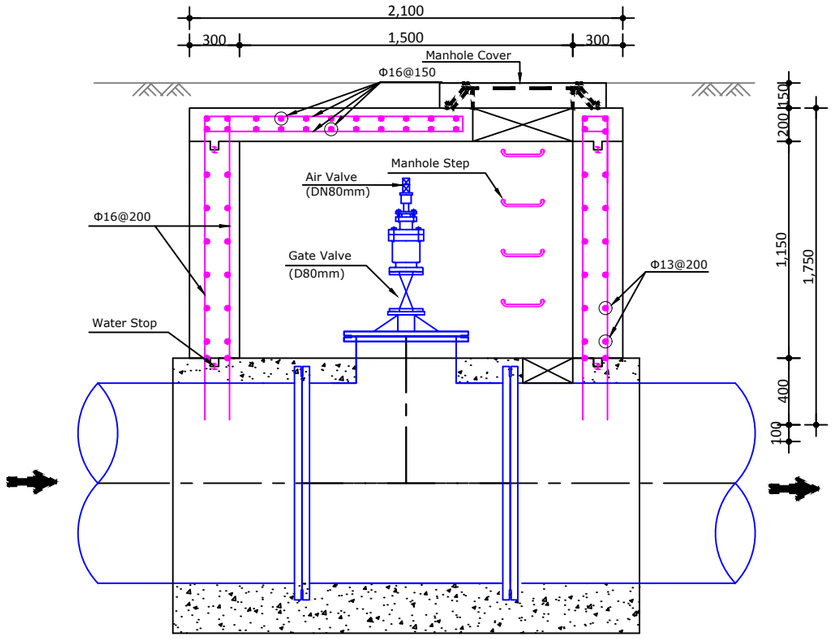
Drawing Title
Wash out Valve Chamber Details



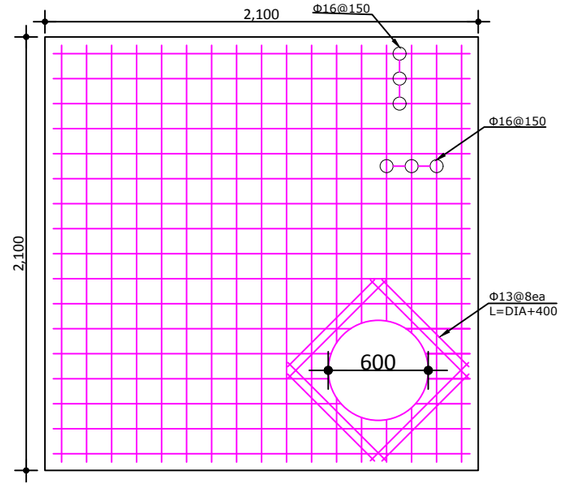
SECTION A-A



PLAN



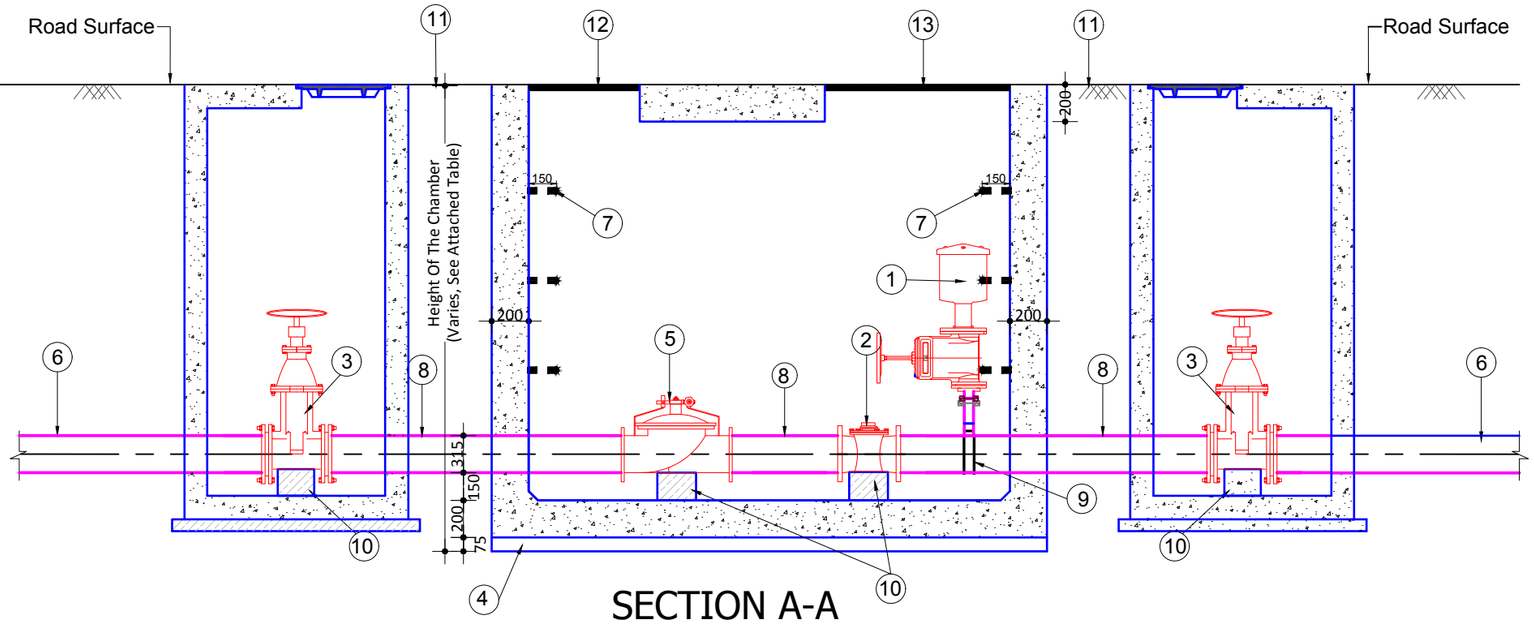
SECTION B-B



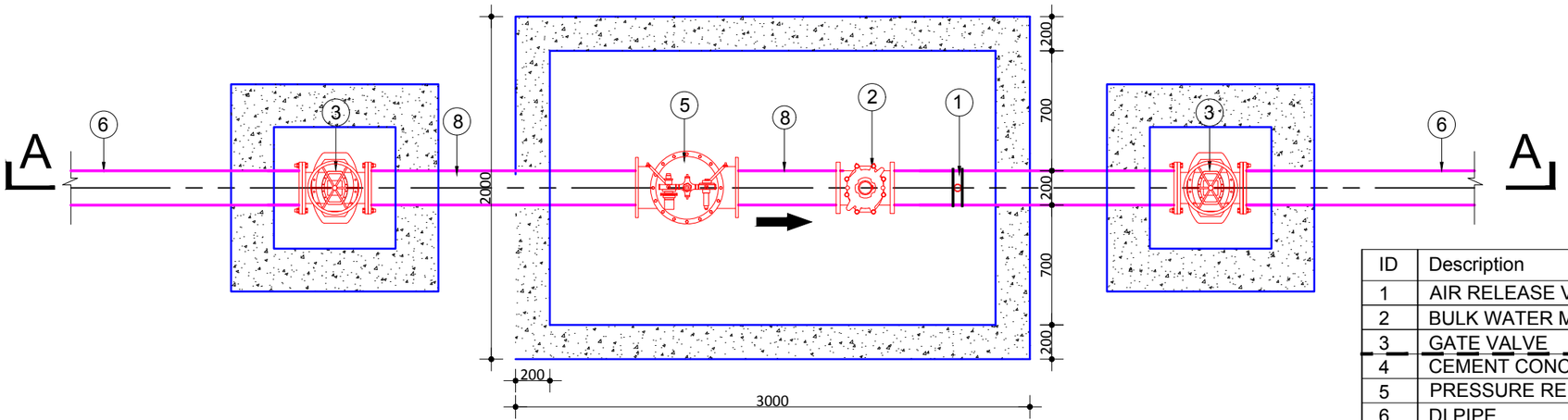
TOP SLAB REINFORCEMENT

AIR VALVE CHAMBER DETAILS

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.		Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297	Not in Scale	Drawing Title Air Valve Chamber Details
	Drawing No: 10		



SECTION A-A



PLAN OF SURFACE WATER INLET CHAMBER

ID	Description	Dimension
1	AIR RELEASE VALVE	OD 50
2	BULK WATER METER	DN 300
3	GATE VALVE	DN 300
4	CEMENT CONCRETE	M15, 4400x2200x75
5	PRESSURE REDUCING VALVE	DN 300
6	DI PIPE	Ø 300
7	IRON STEPS	Ø 20 mm At 300 mm
8	SHORT PIPES	Ø 315
9	MS CLAMP SADDLE WITH FLANGE OUTLET(for ARV)	DN 50
10	CEMENT CONCRETE BASE	M15, 200x200x150
11	ROAD SURFACE	-
12	HEAVY DUTY CAST IRON COVER WITH FARME	600x600
13	HEAVY DUTY CAST IRON COVER WITH FARME	1000x1000

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Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

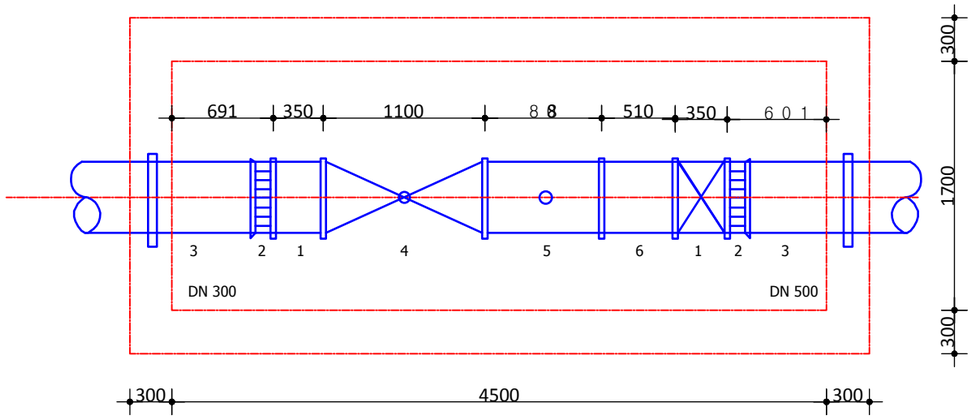
Original Drawing Size
A3 = 420x297

Not in Scale

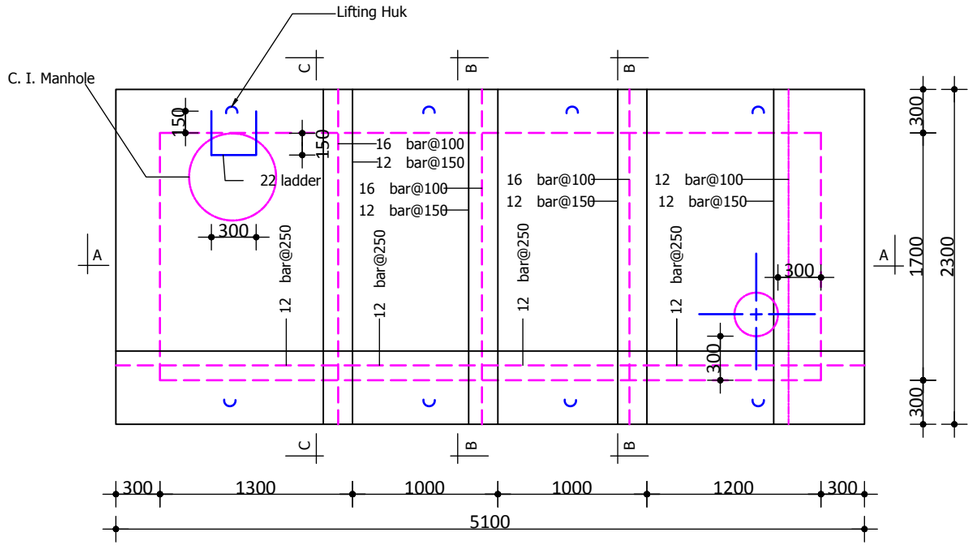
Drawing No: 11

Feasibility Study of Netrokona Economic Zone

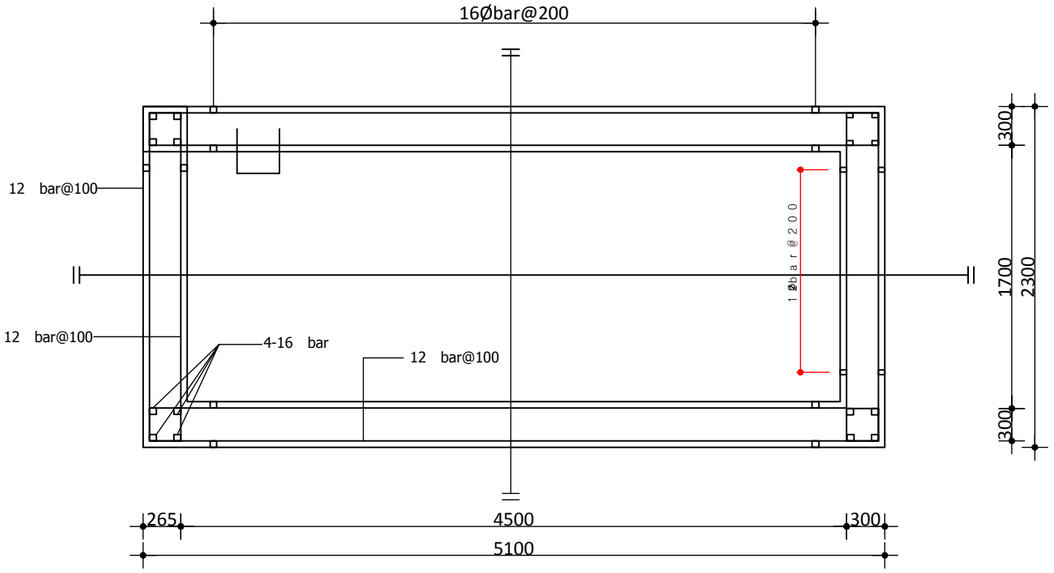
Drawing Title
Typical Drawing of Surface Water Inlet Chamber



Plan Showing Fitting Details



Typical Pre-Cast (Four Parts) Top Slab Reinforcement Plan



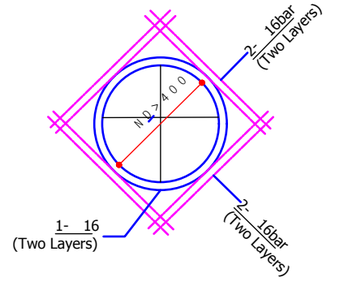
Typical Wall Reinforcement Plan

Note:

1. All dimensions are in millimetres and all levels are in mPWD unless shown otherwise.
2. The Covering of the reinforcement will be 40mm
3. The lap length of steel is 50d. (d: steel bar diameter)
4. The concrete wall will be C30 excepted Lean Concrete
5. The hole reinforcement should be placed under the 600 heavy duty cast iron manhole.

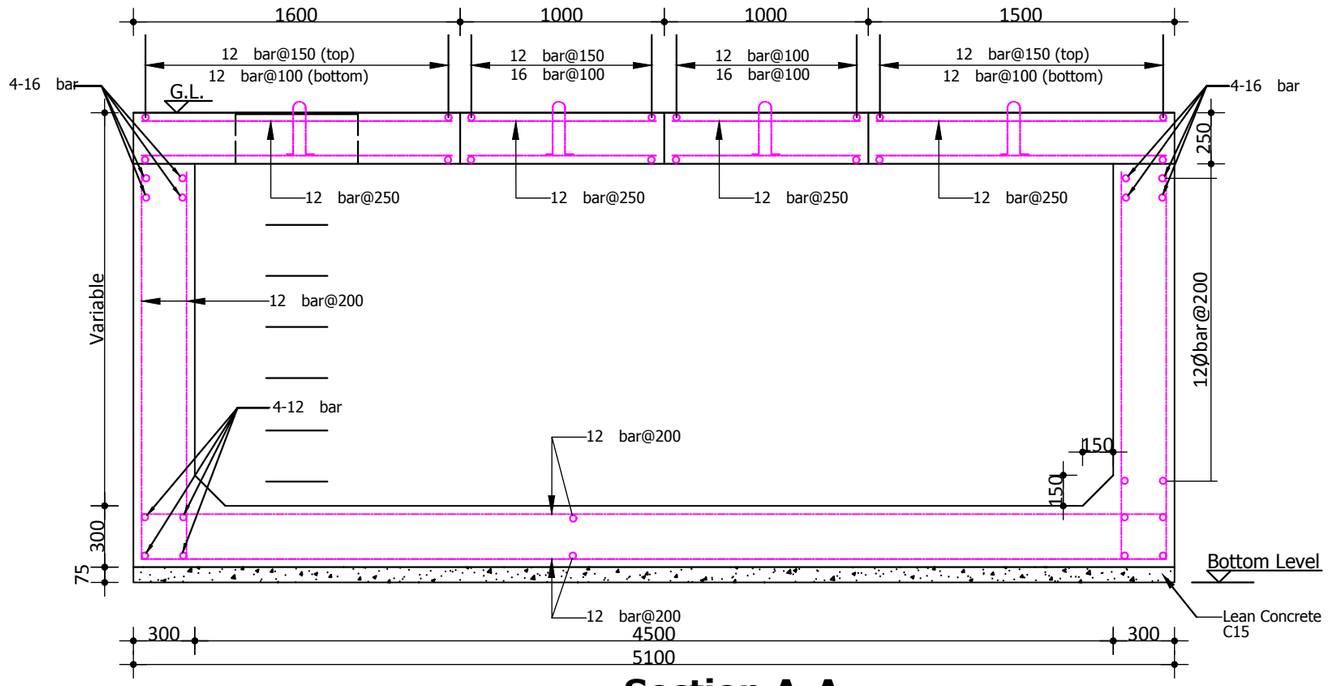
Legend:

1. Butterfly Valve
2. Self Locking Dismantling Joint
3. Puddle Flanges
4. PRV
5. Water Meter
6. Flange Pipe

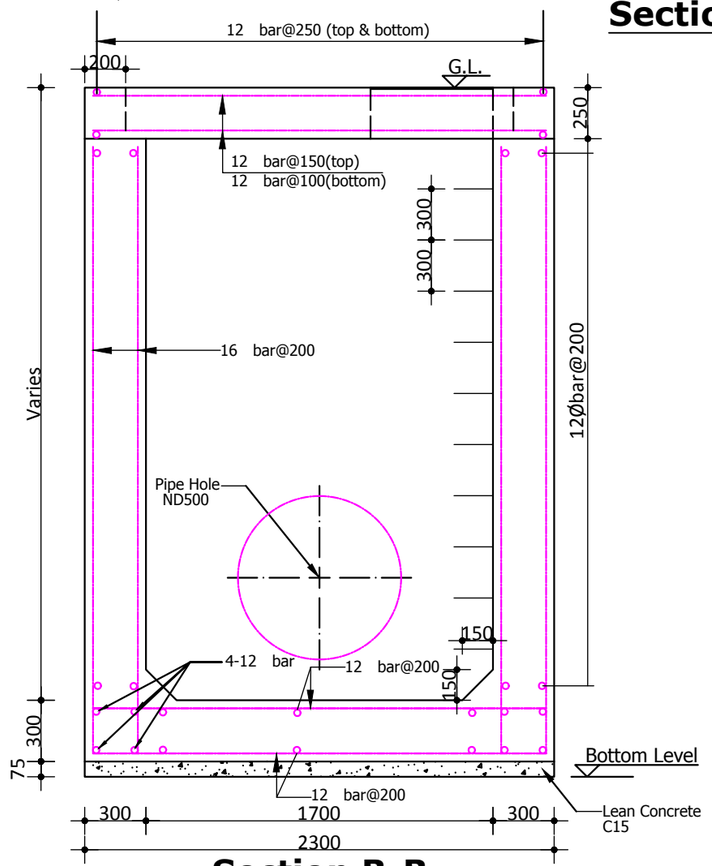


Hole Reinforcement

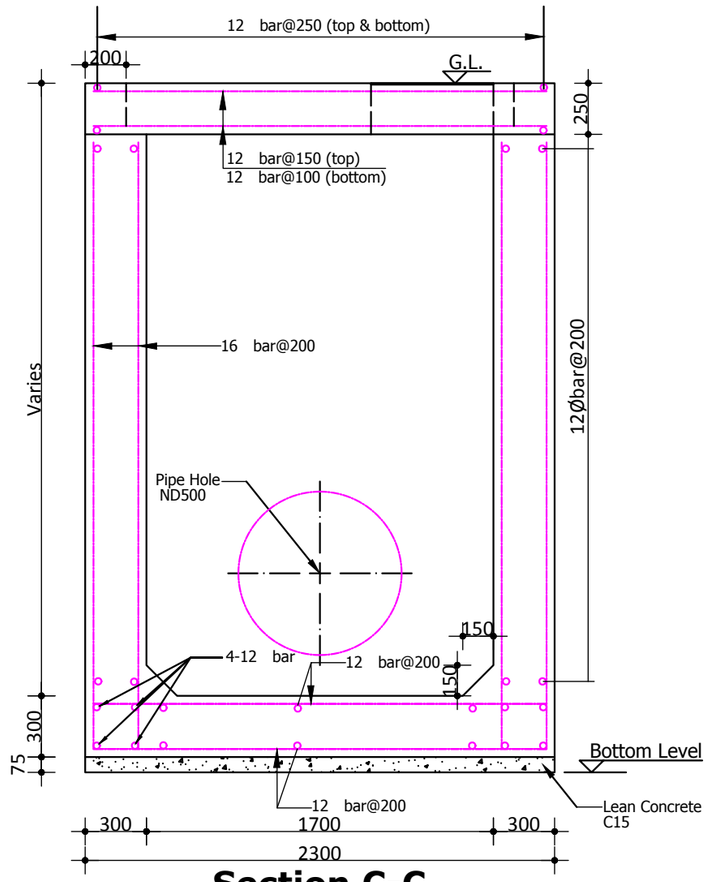
CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 Not in Scale Drawing No: 12	Drawing Title PRV Flow Meter and Isolating Valves



Section A-A

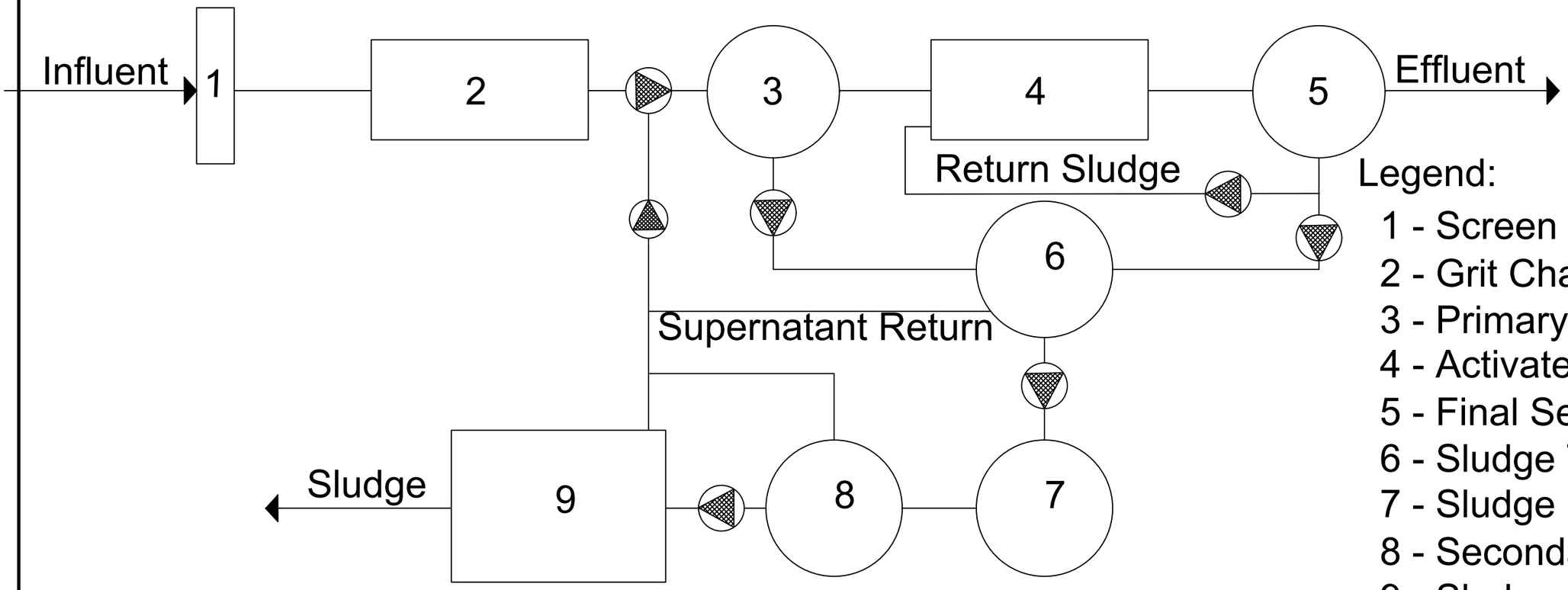


Section B-B



Section C-C

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 Not in Scale Drawing No: 13	Drawing Title PRV Chamber Construction Details

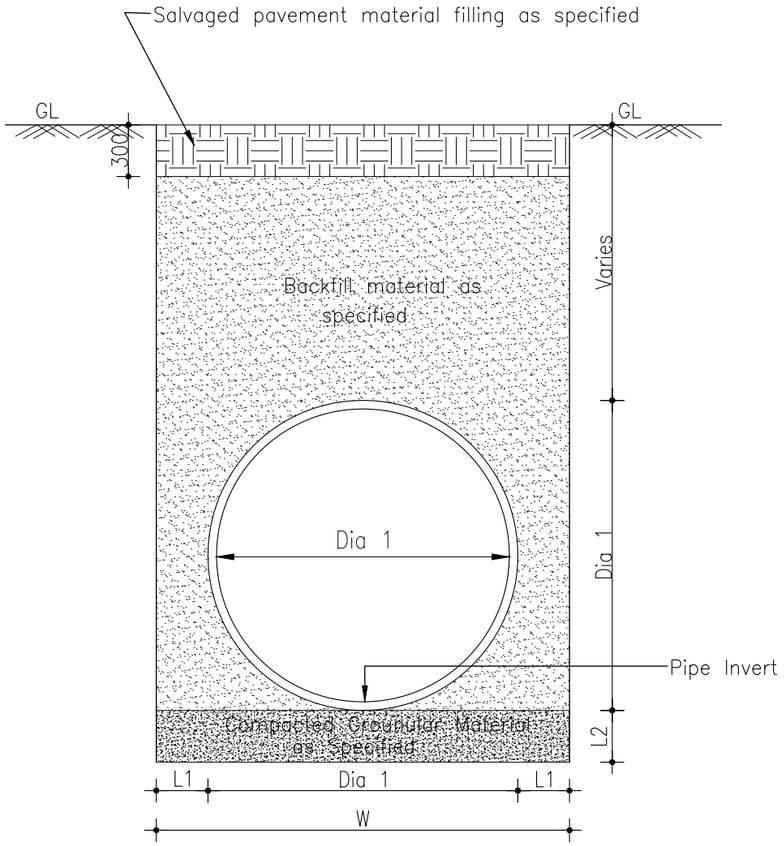


Legend:

1 - Screen
2 - Grit Chamber
3 - Primary Sedimenation
4 - Activated Sludge
5 - Final Sedimentation Tank
6 - Sludge Thickener
7 - Sludge Digester
8 - Secondary Thickener
9 - Sludge Drying Bed
Pump Station

Process Diagram of Medium Loaded Activated Sludge Treatment

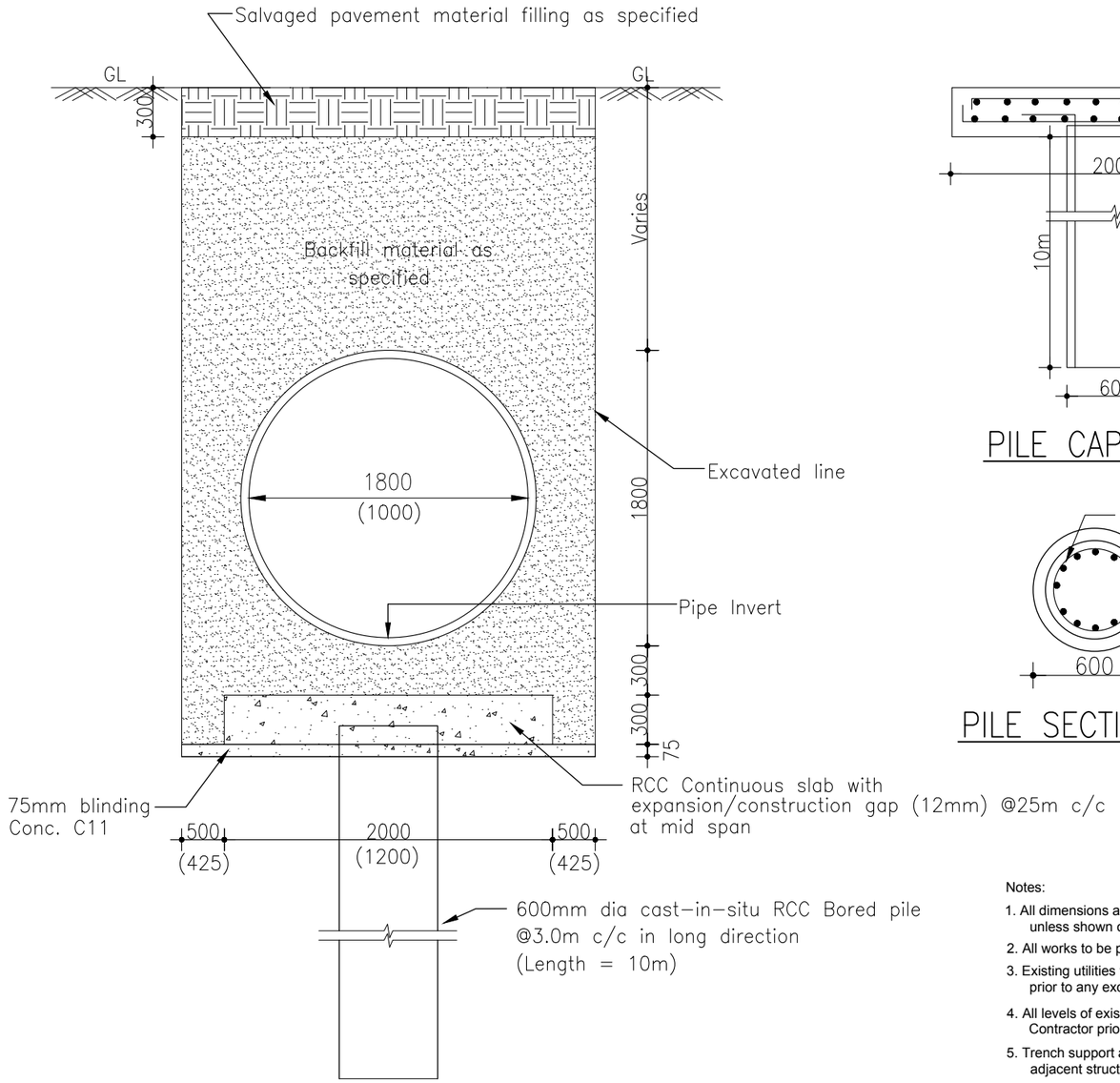
CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 14	Drawing Title Process Diagram of Medium Loaded Activated Sludge Treatment



PIPE INSTALLATION TYPE–A

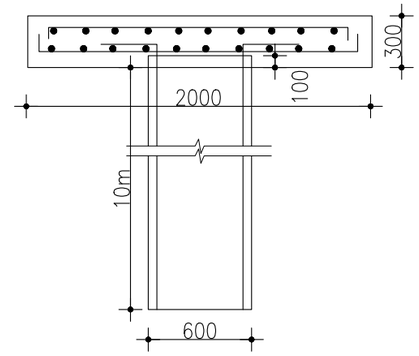
Dia 1	L1 (min.)	W * (min.)	L2	L3
1800	500	Dia 1 + 2xL1	1/4 Dia 1 150 min. 300 max.	300
1300	500			250
1200	425			
1100	425			200
1000	425			
700	350			150
600	350			
500	350			
400	350			
350	250			
300	250			
250	250			
200	200			

* In all measurements make additional allowance for GRP pipe wall thickness.

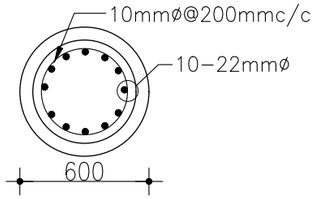


PIPE INSTALLATION TYPE–B

1800 (1000)mm–TRUNK SEWER ON PILE FOUNDATION



PILE CAP DETAILS

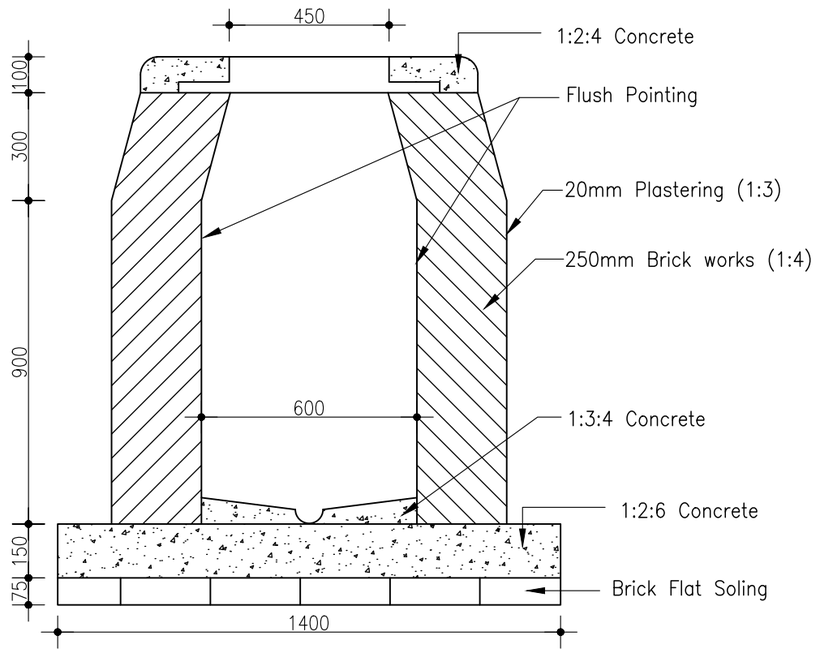


PILE SECTION DETAILS

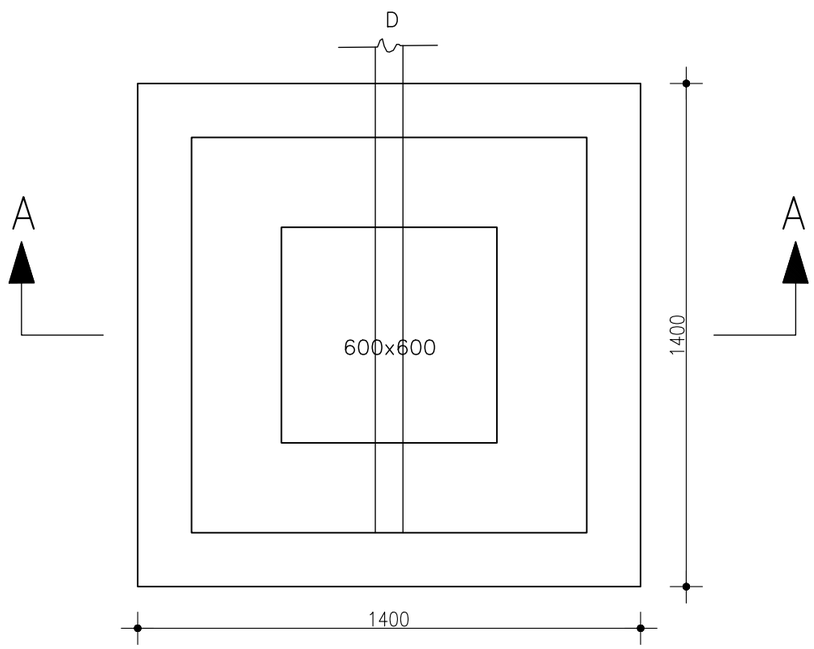
Notes:

1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. All levels of existing pipelines and structures to be confirmed by Contractor prior to construction.
5. Trench support as necessary to ensure safety of works and adjacent structures and buildings.
6. Pipe Installation Type B to be used when pipe cover is less then 1m (1.5m under crossings with heavy traffic), when crossing significant existing utilities with a clearance less than 0.5m, or when instructed by the Engineer.
7. Pipe Installation Type C to be used as specified in "Trunk Sewer Installation Details" Table and when necessary as per ground investigations to be conducted be the Contractor.
8. Static pile load test shall be carried out by the Contractor in accordance with the technical specification . The workload on the pile shall be 500 KN.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 15	Drawing Title Sewer System Standard Details Cross Section of Pipe Installation



SECTION A–A

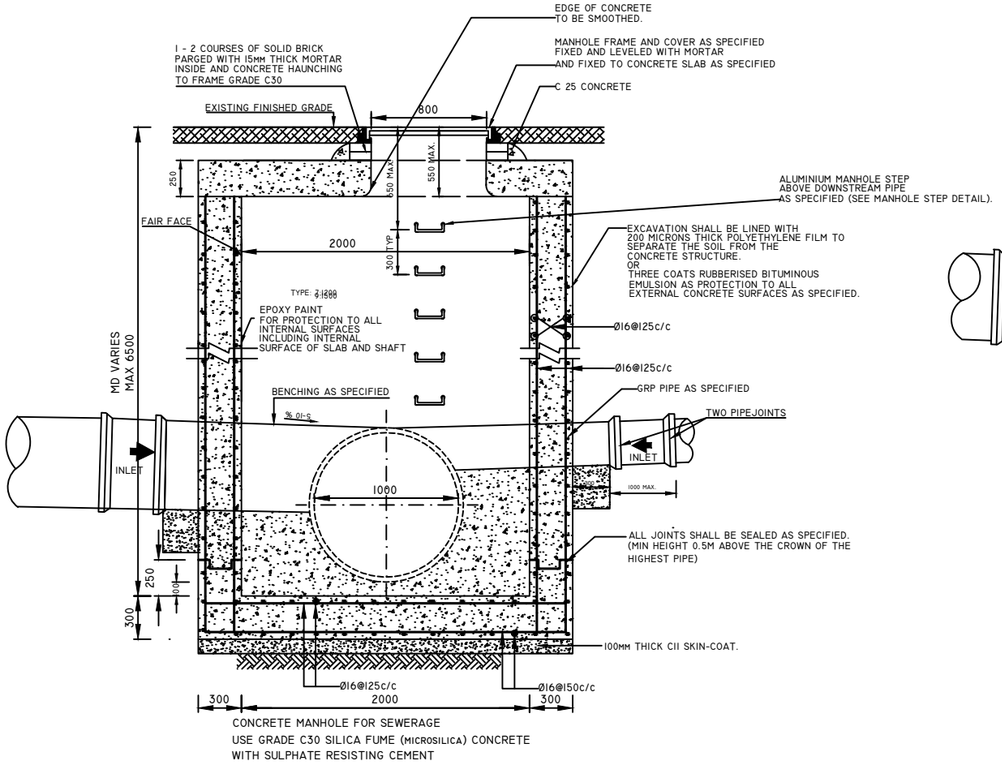


PLAN VIEW

Notes:

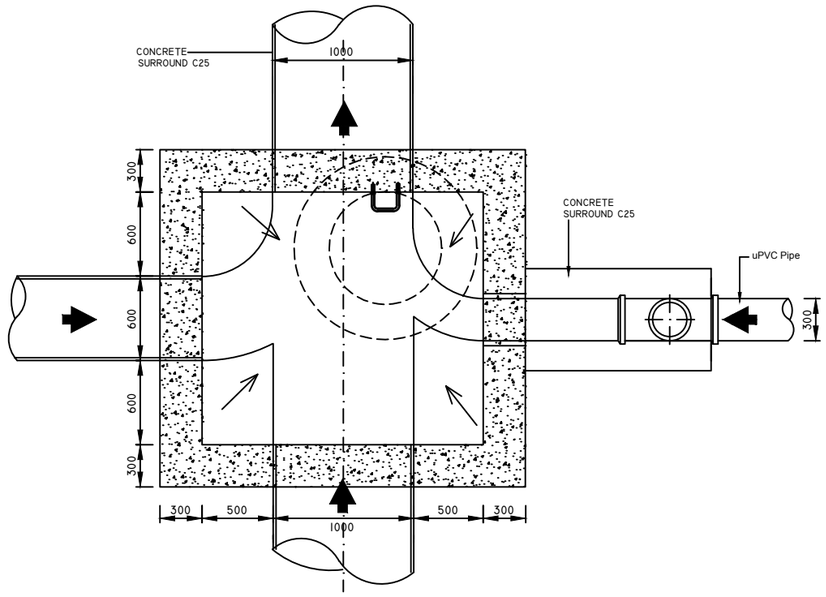
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.
5. All levels of existing pipelines and structures to be confirmed by Contractor prior to construction.

CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale; Drawing No: 16	Drawing Title: Sewer System Standard Details, Typical Service Pit

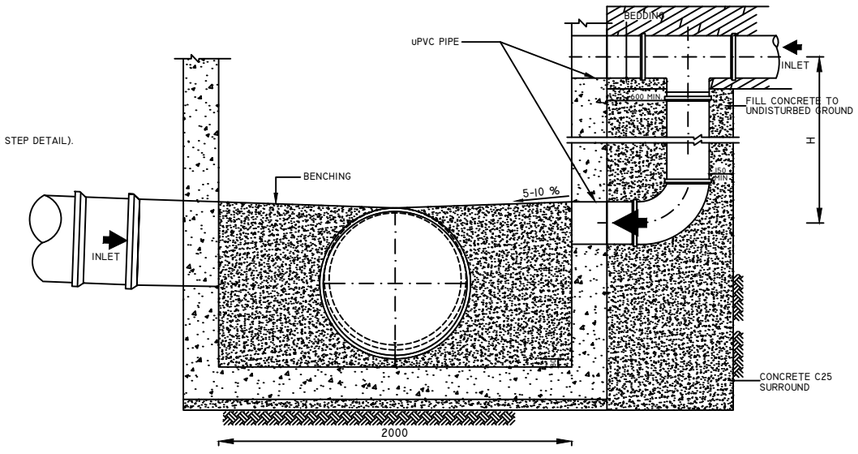


CONCRETE MANHOLE FOR SEWERAGE
USE GRADE C30 SILICA FUME (MICROSILICA) CONCRETE
WITH SULPHATE RESISTING CEMENT

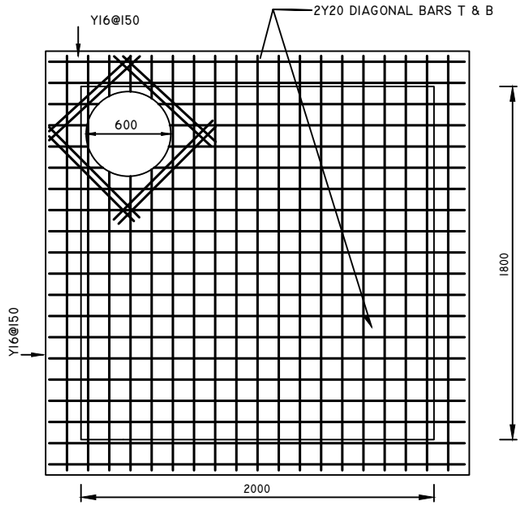
SECTION
(BASE AND WALLS CAST IN PLACE)



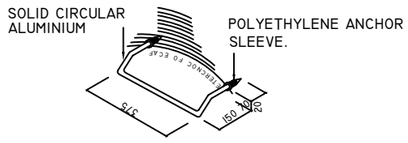
PLAN



DROP STRUCTURE TO BE USED WHEN H > OR EQUAL TO 700 mm



TOP SLAB REINFORCEMENT

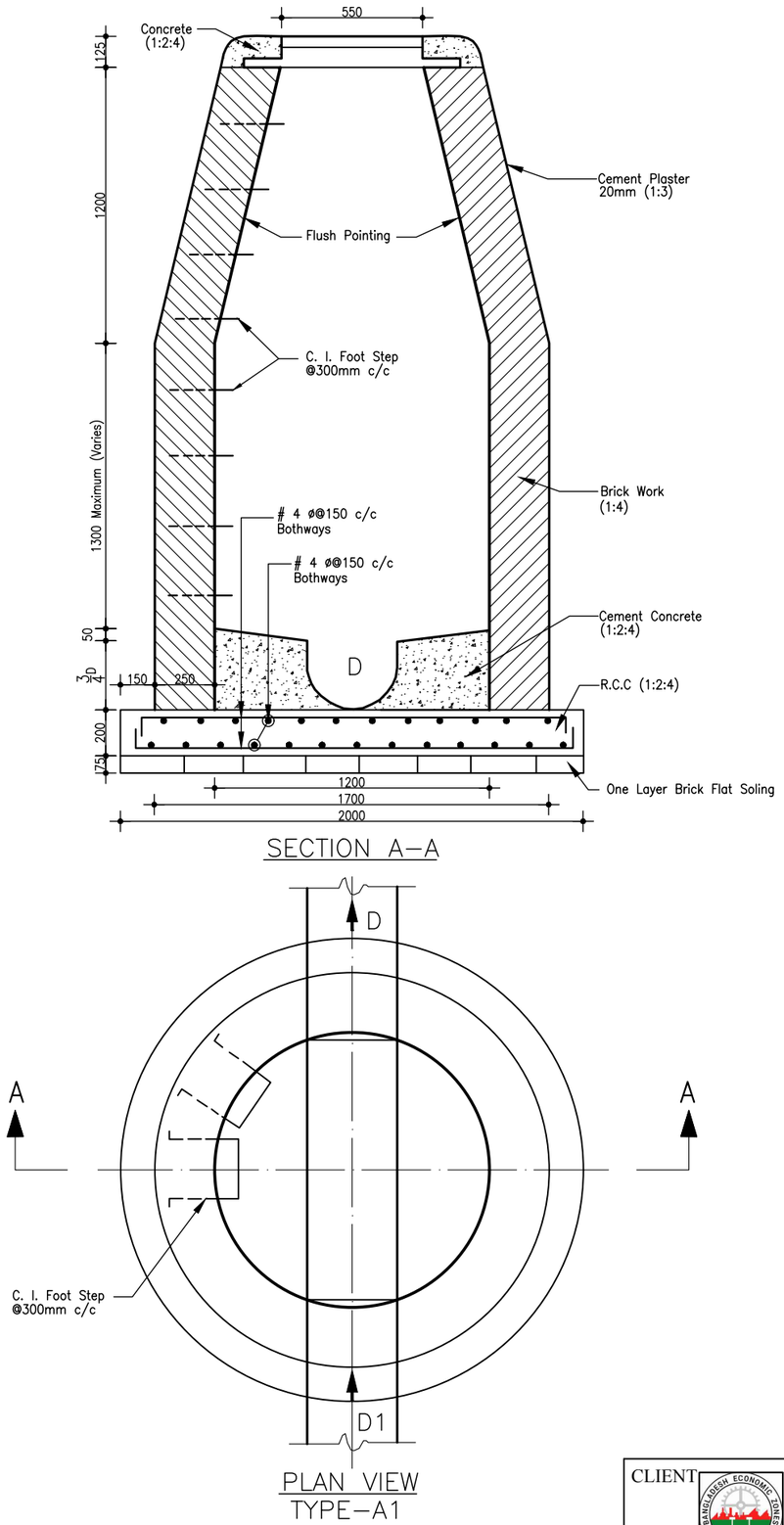


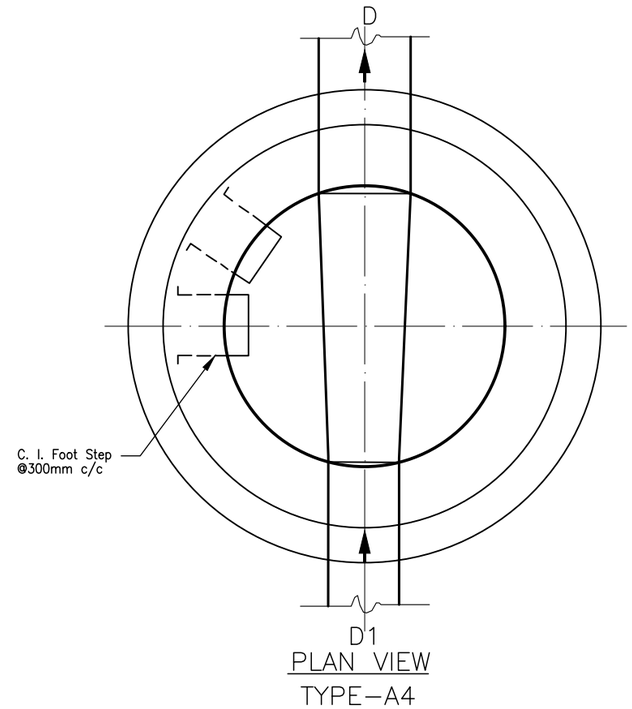
(AS SPECIFIED)
THE DIMENSIONS ARE APPROXIMATE

MANHOLE STEP DETAIL

Notes:
1. All dimensions in millimeters and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. All levels of existing pipelines and structures to be confirmed by the Contractor prior to construction.
5. Trench support as necessary to ensure safety of works and adjacent structures and buildings.
6. All structural concrete to be grade C30 with sulphate resisting cement and 10% B.W. silica fume unless otherwise shown on the drawings.
7. Manhole Type 4 to be used only after approval by the Engineer.
8. The exact location of the manholes shall be determined by the Contractor during Setting Out after approval by the Engineer.
9. The drawing shows only a typical concrete manhole For Lateral Connection. The actual design shall be modified by the Contractor to suit the sizes and requirements of each particular manhole when necessary. The Contractor shall submit the revised drawings to the Engineer for approval.

CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale; Drawing No: 17	Drawing Title: Sewer System Standard Details, Manhole Type : Concrete Rectangular

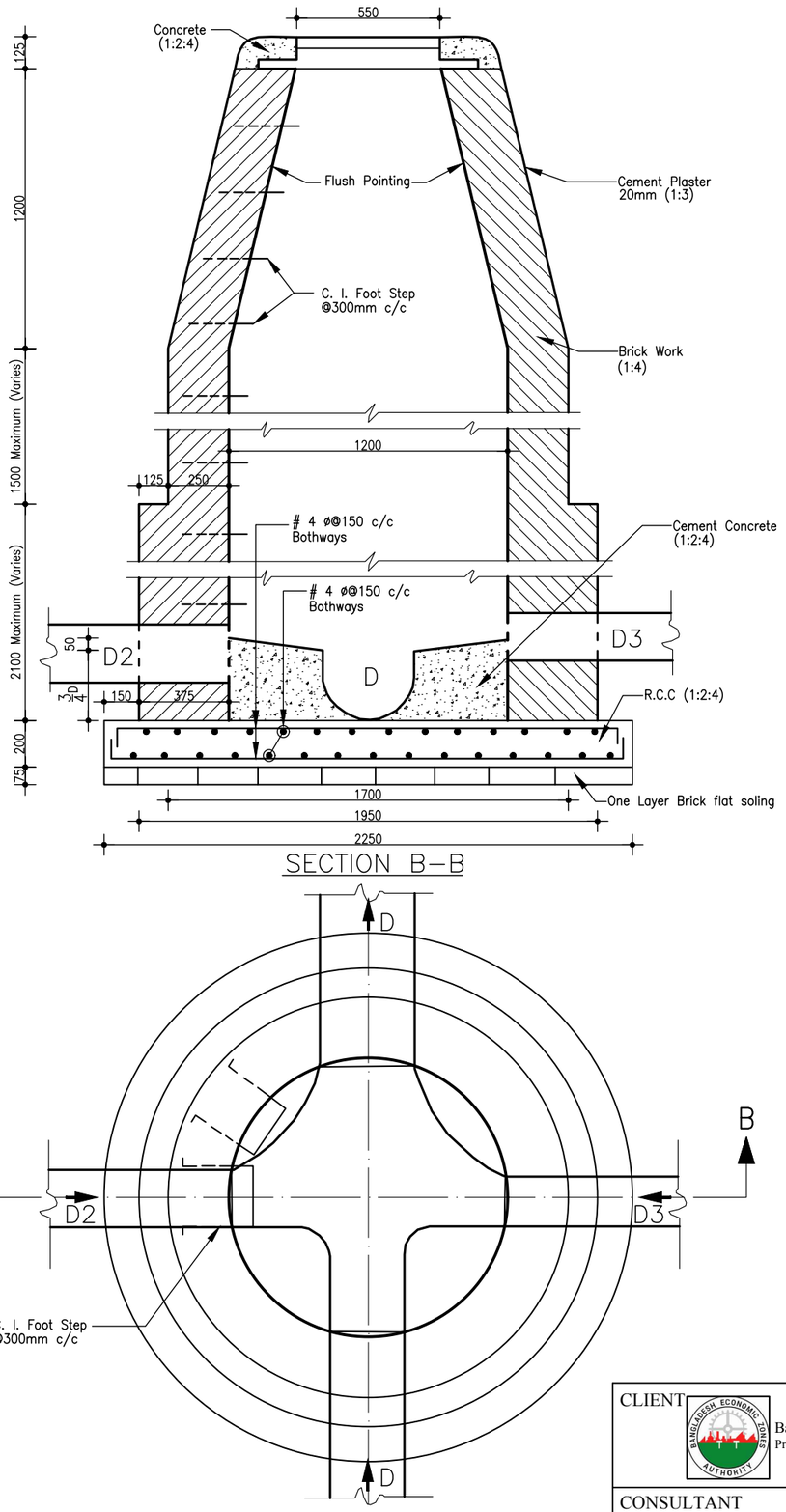


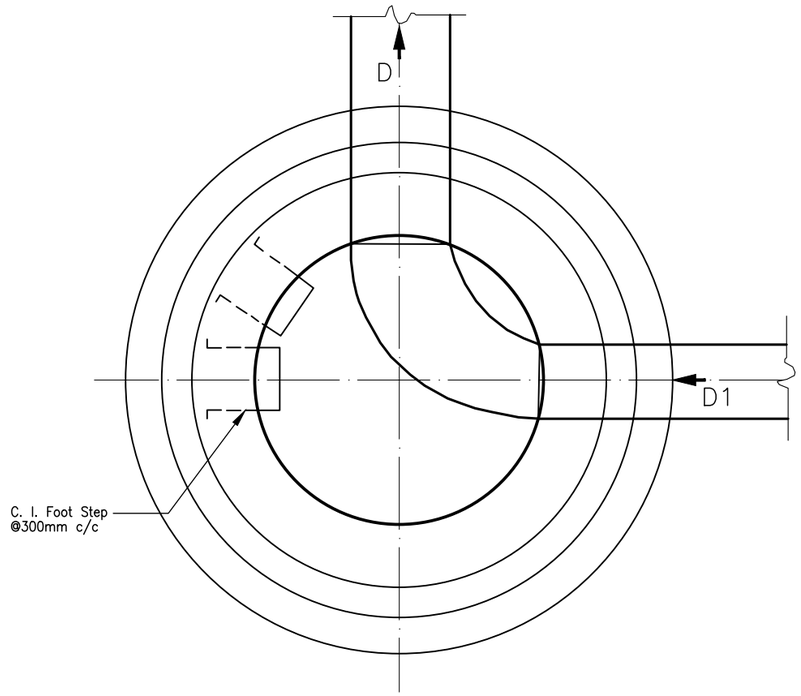


Notes:

1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.
5. All levels of existing pipelines and structures to be confirmed by Contractor prior to construction.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 18	Drawing Title Sewer System Standard Details Manhole Type A: Depth Up to 3m Sec A-A

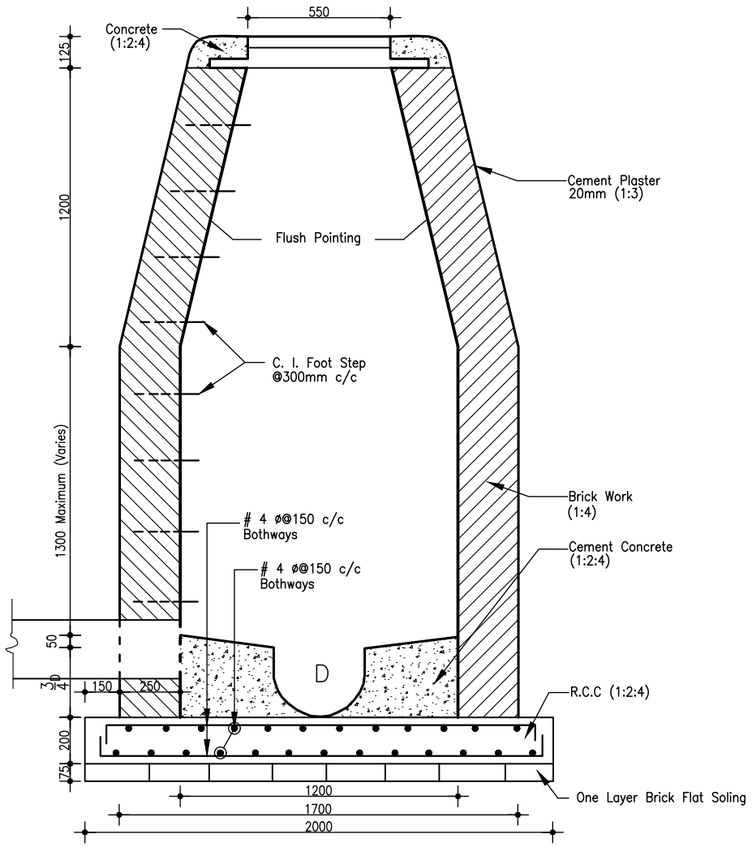




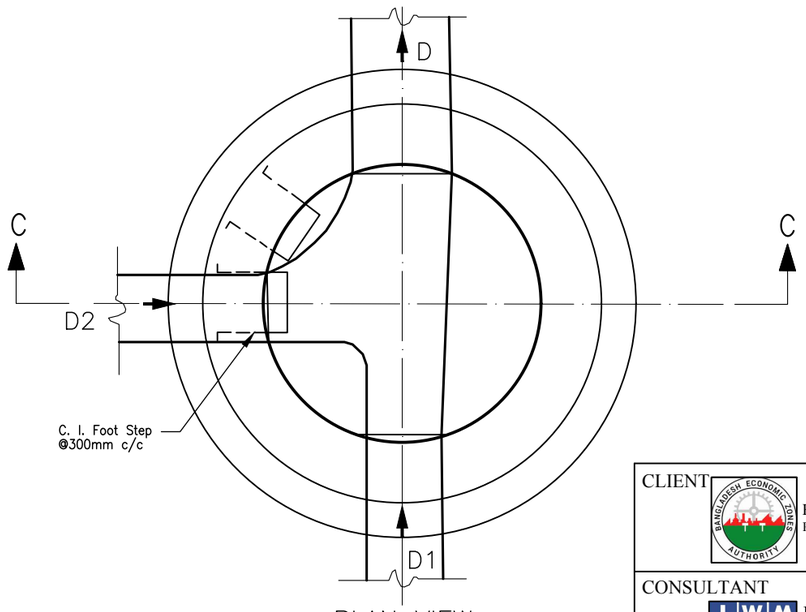
PLAN VIEW
TYPE–B5

Notes:
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

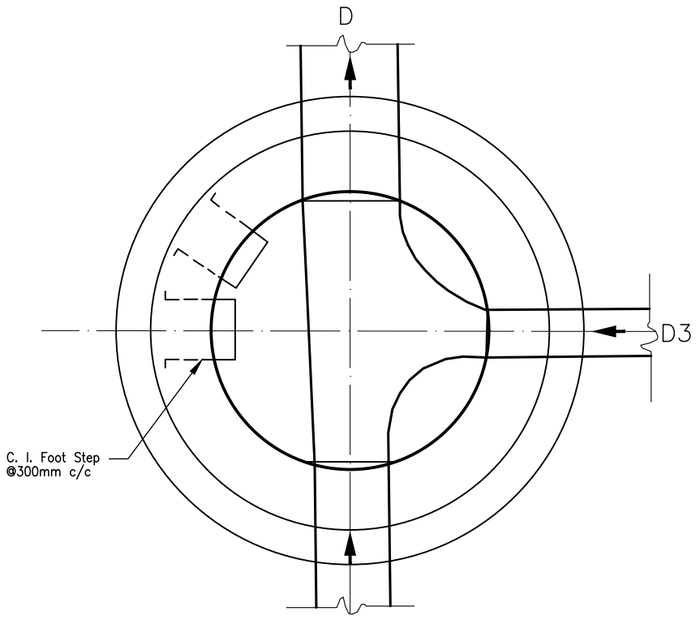
CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 19	Drawing Title Sewer System Standard Details Manhole Type A: Depth Up to 3m Sec B-B



SECTION C–C



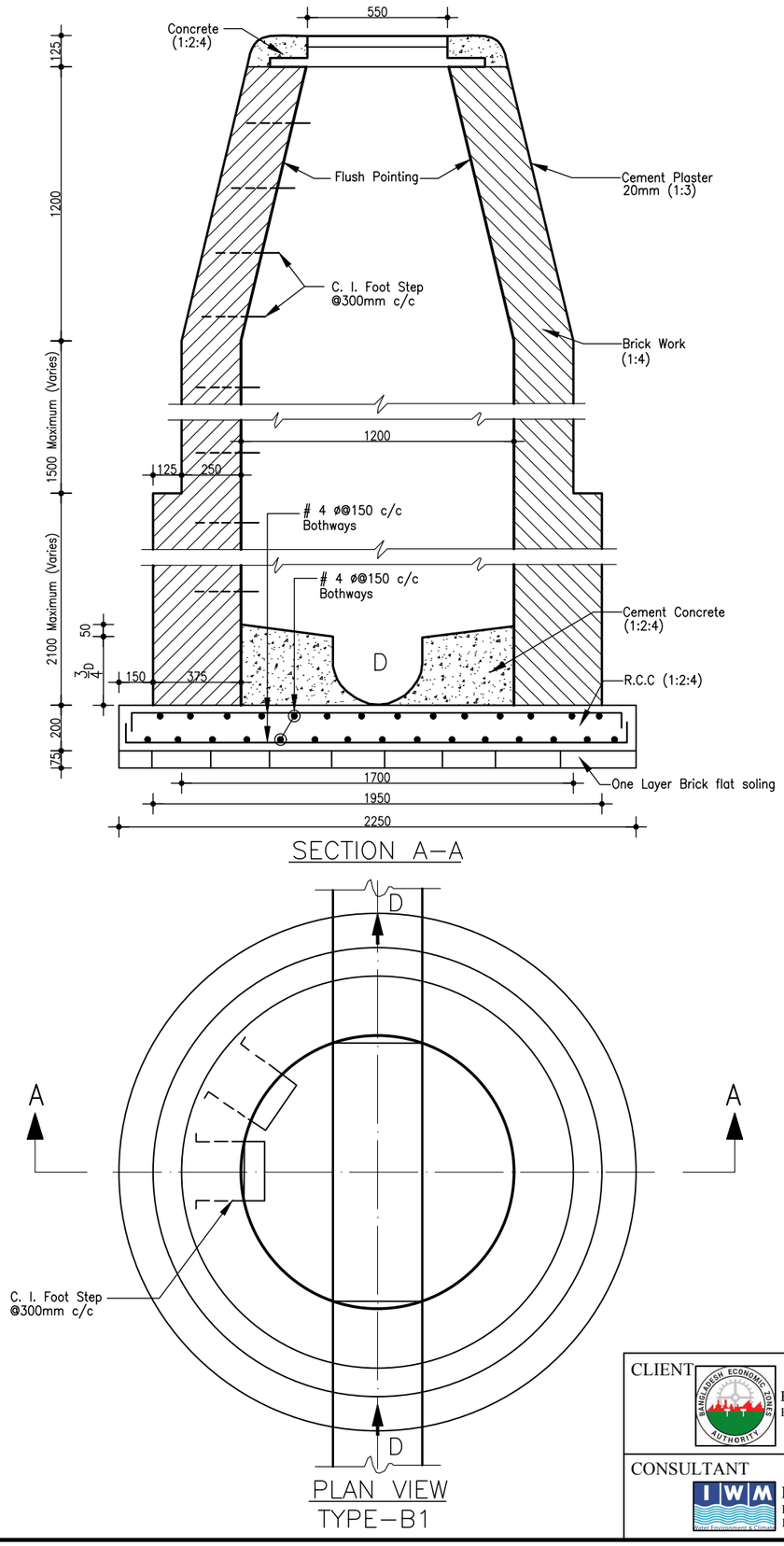
PLAN VIEW
TYPE–A3



PLAN VIEW
TYPE–A6

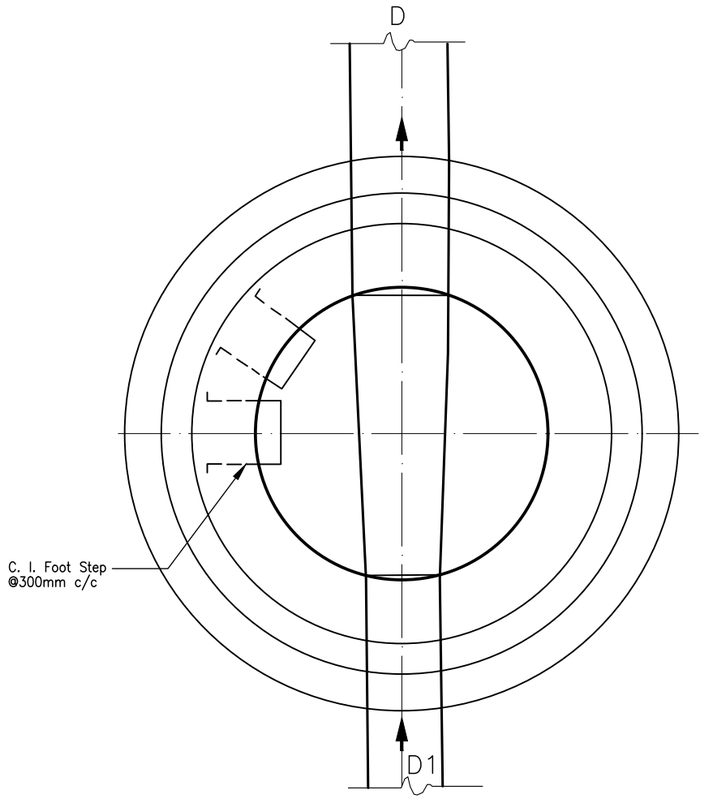
Notes:
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 20	Drawing Title Sewer System Standard Details Manhole Type A: Depth Up to 3m Sec C-C



SECTION A–A

PLAN VIEW
TYPE–B1



PLAN VIEW
TYPE–B4

Notes:
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT
Bangladesh Economic Zones Authority
Prime Minister's Office, Dhaka, Bangladesh.

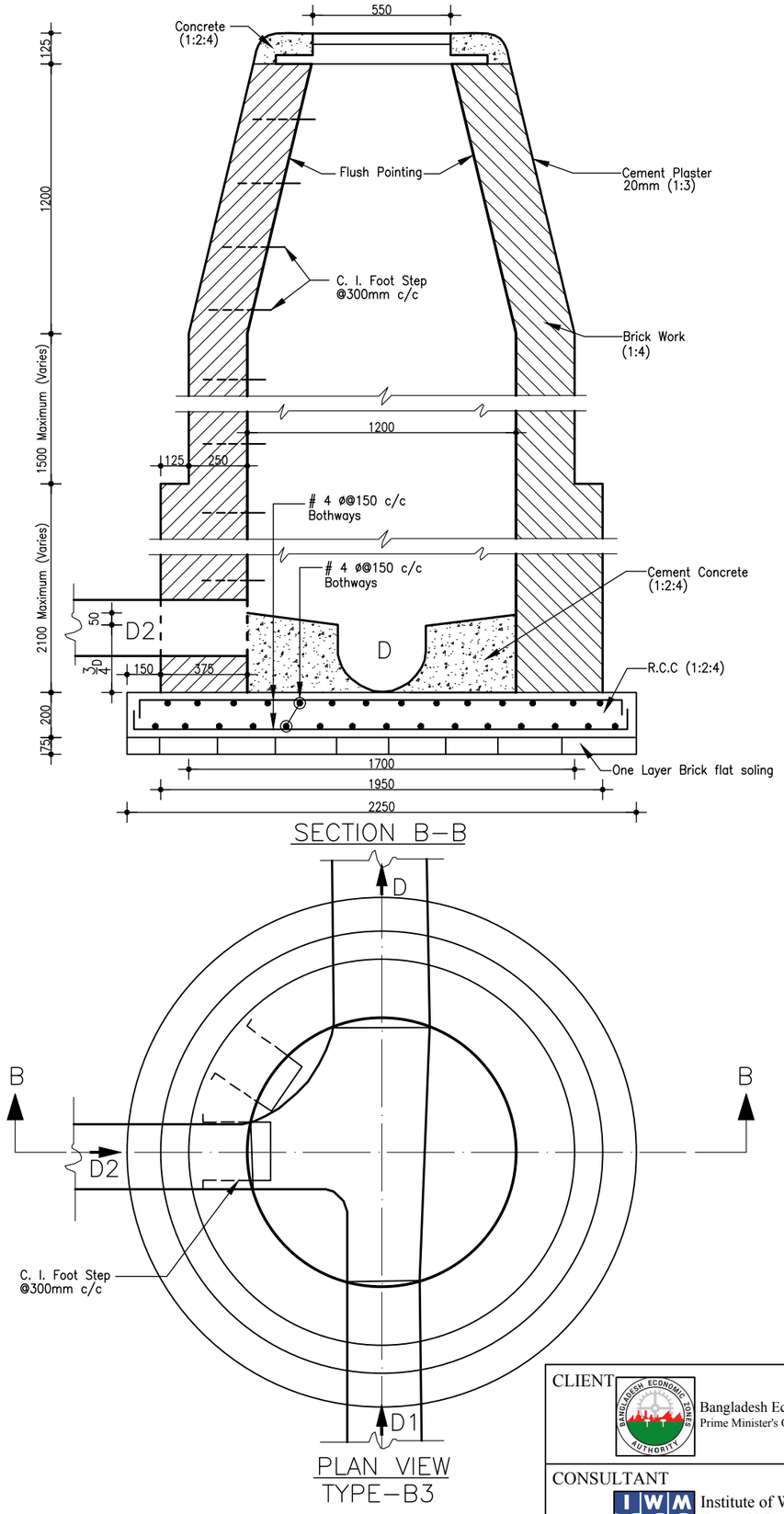
CONSULTANT
Institute of Water Modelling
House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.

Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

Original Drawing Size A3 = 420x297
Not in Scale
Drawing No: 21

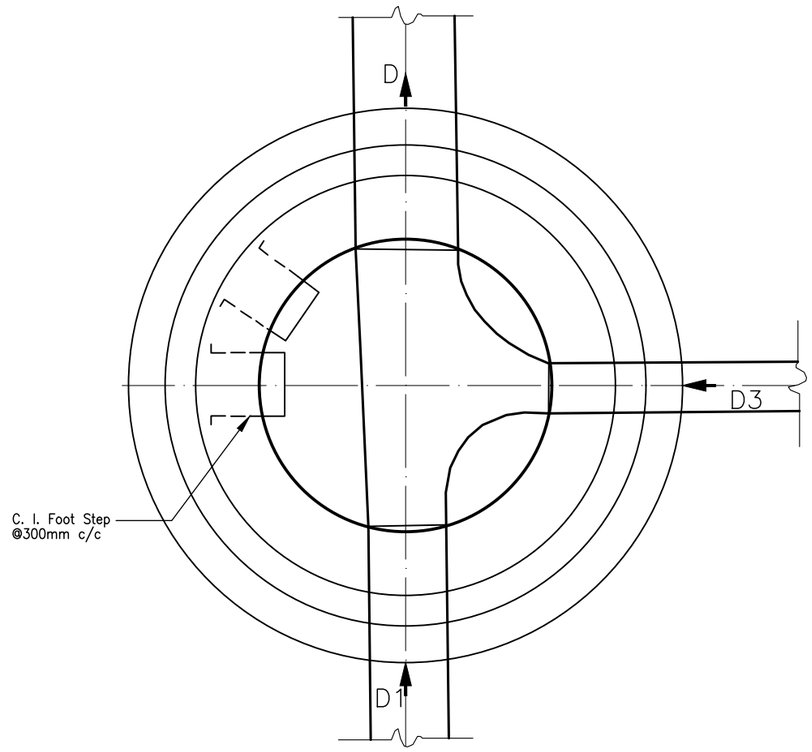
Feasibility Study of Netrokona Economic Zone

Drawing Title
Sewer System Standard Details
Manhole Type B: Depth 3m to 5m Sec A-A



SECTION B–B

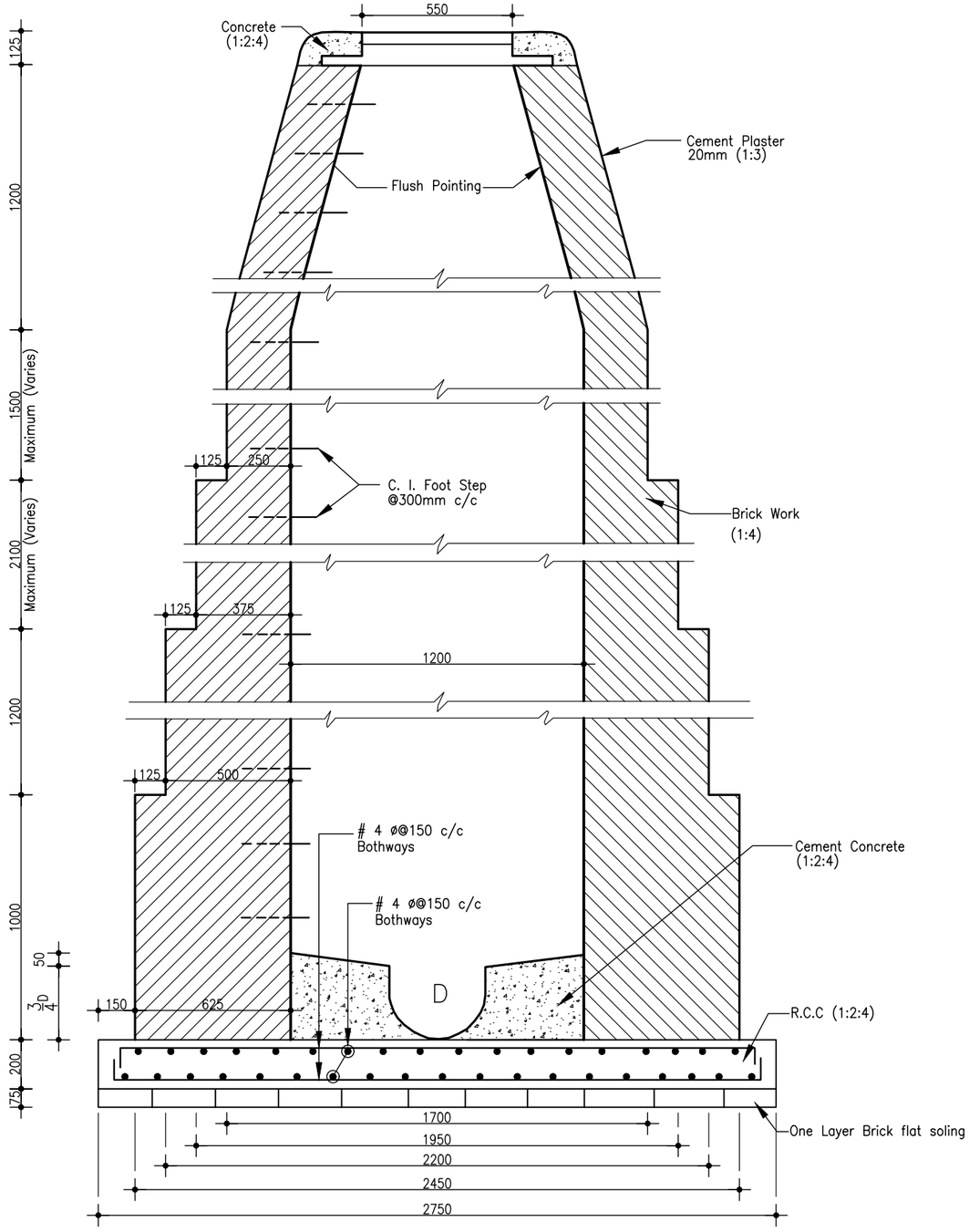
PLAN VIEW
TYPE–B3



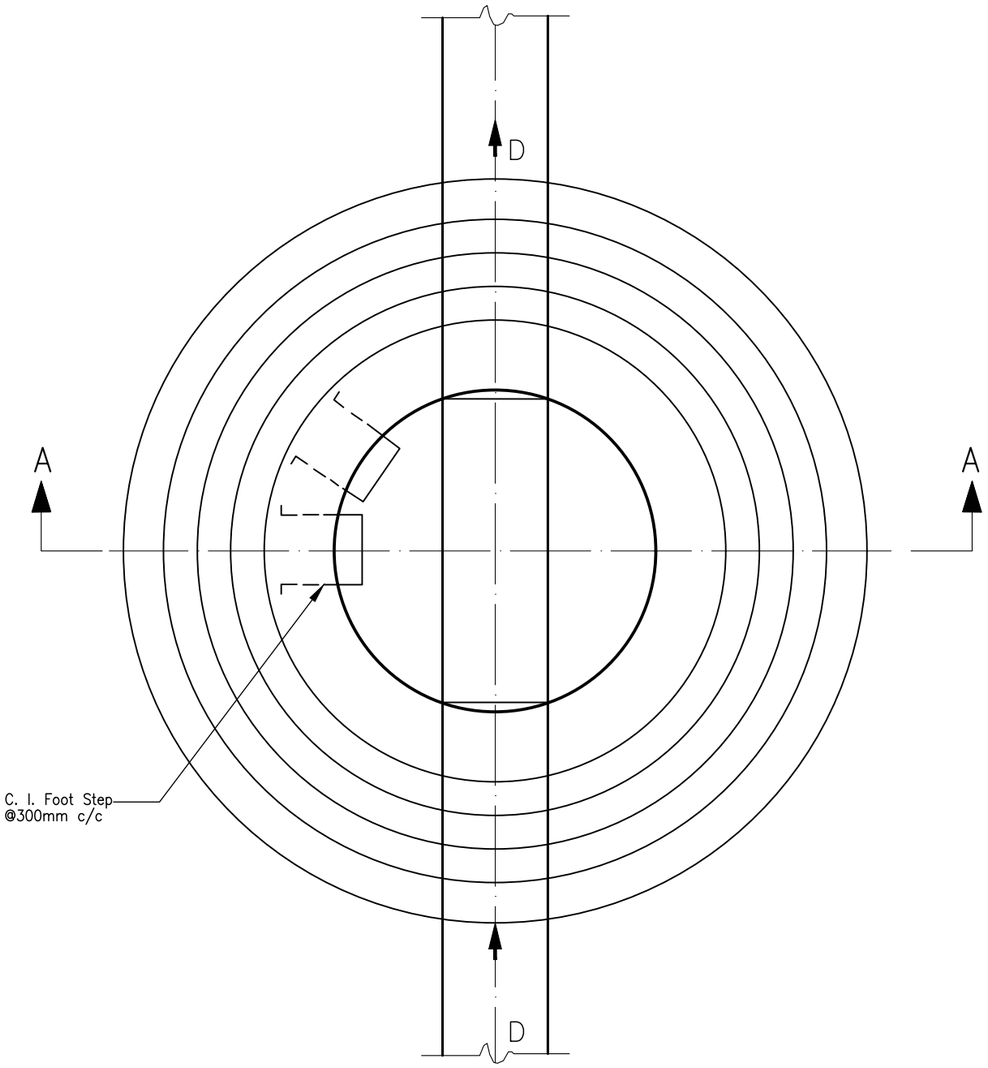
PLAN VIEW
TYPE–B6

Notes:
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 22	Drawing Title Sewer System Standard Details Manhole Type B: Depth 3m to 5m Sec B-B



SECTION A–A

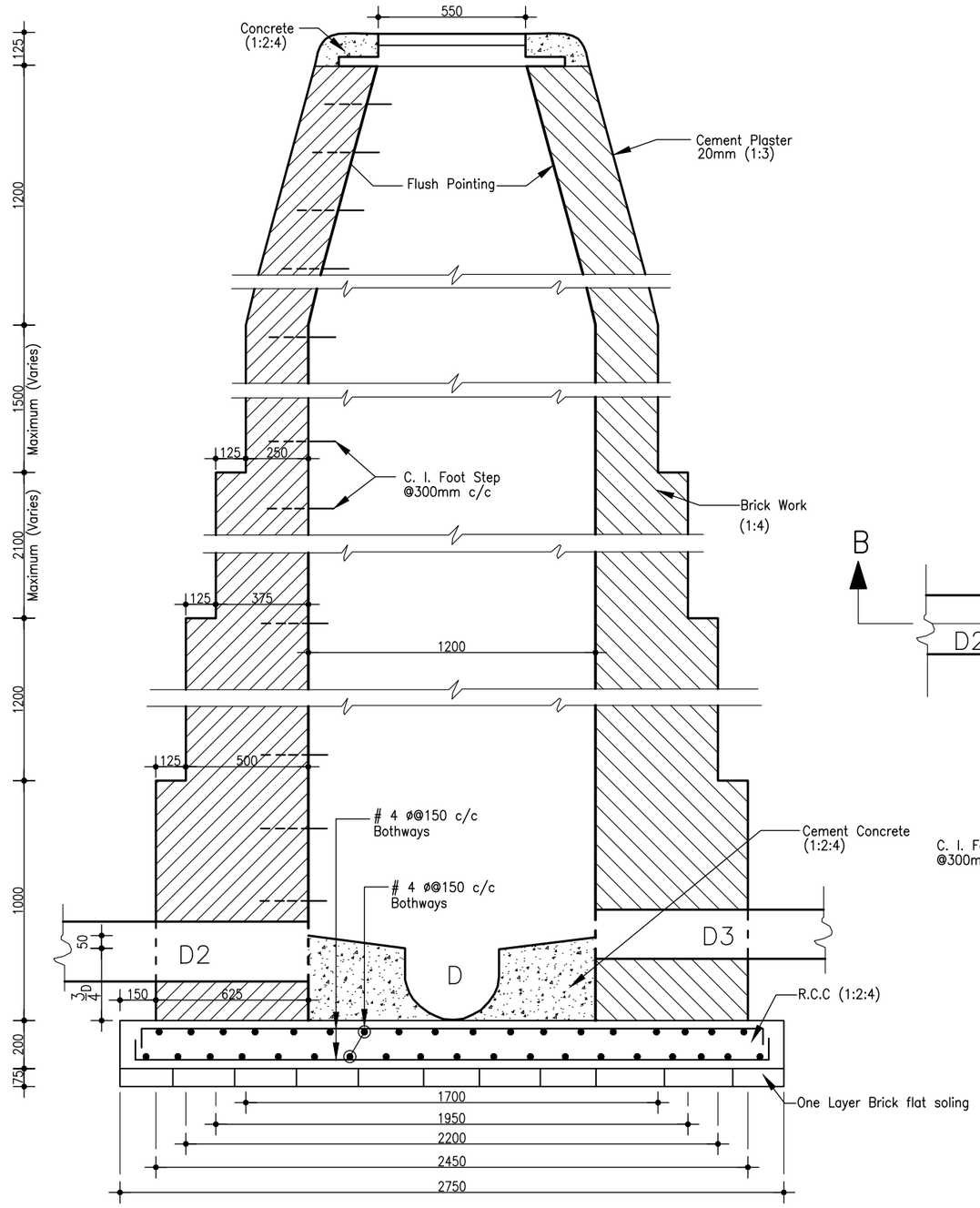


PLAN VIEW
TYPE–C1

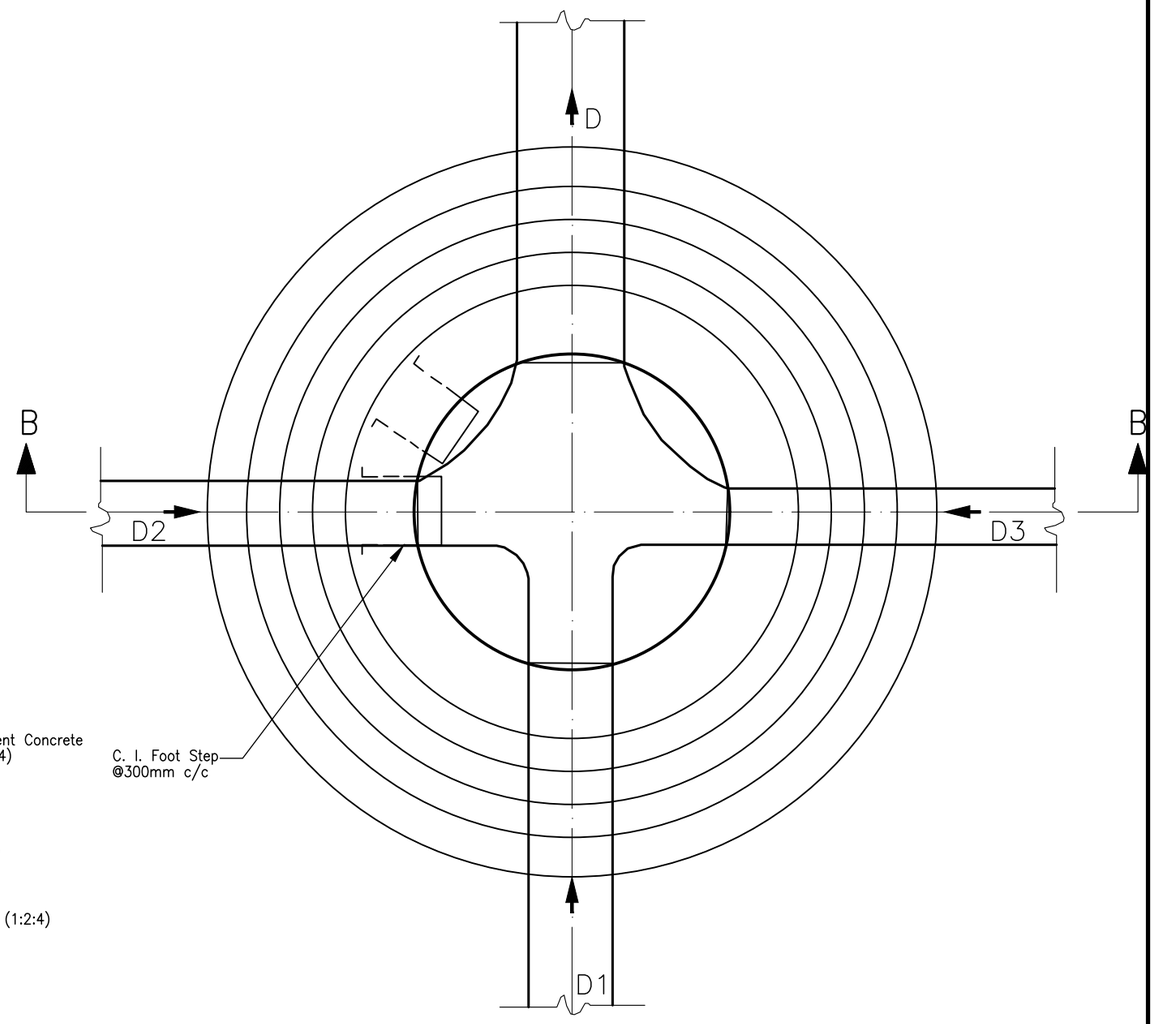
Notes:

1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 23	Drawing Title Sewer System Standard Details Manhole Type C: Depth Above 5m Sec A-A



SECTION B–B

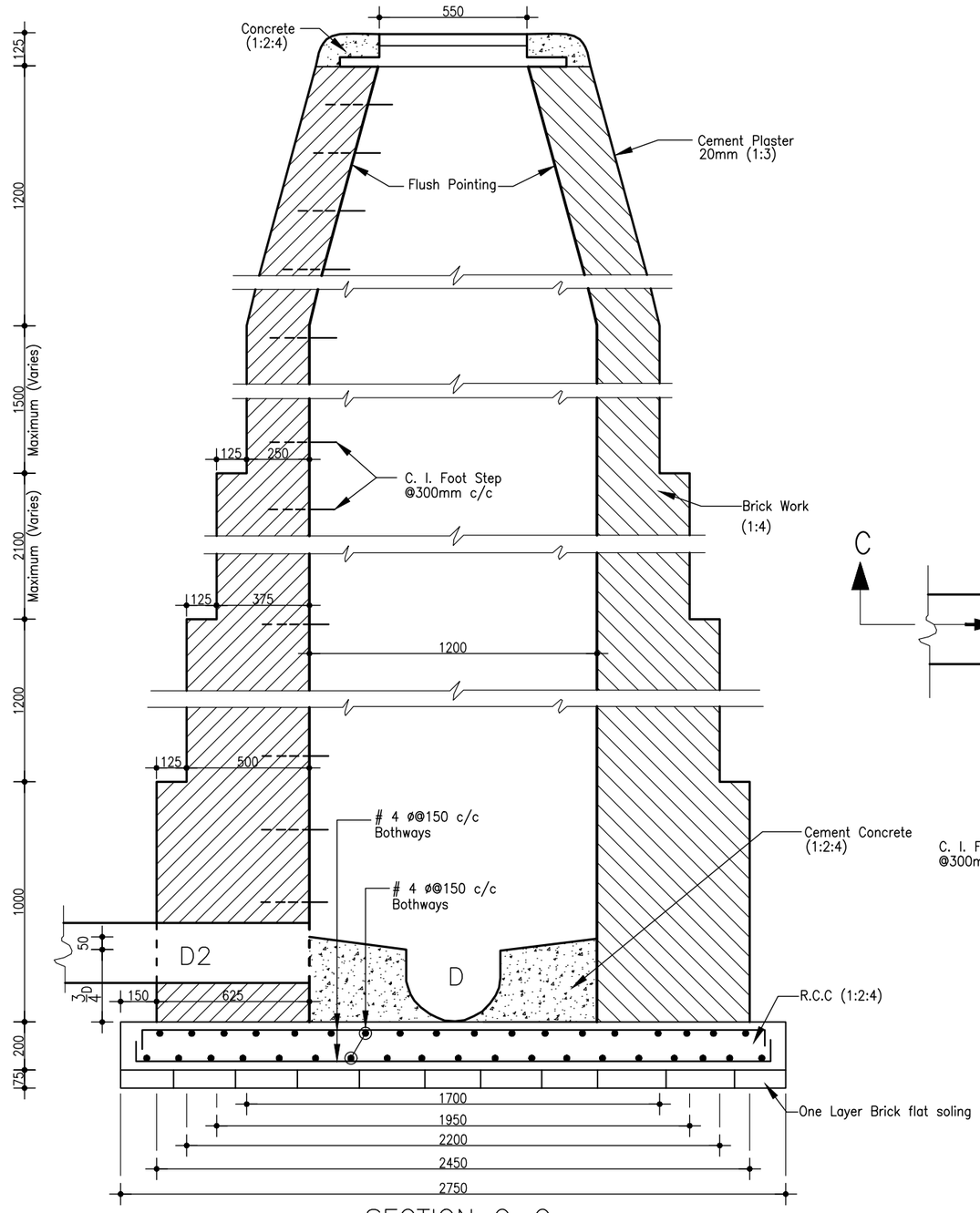


PLAN VIEW
TYPE–C2

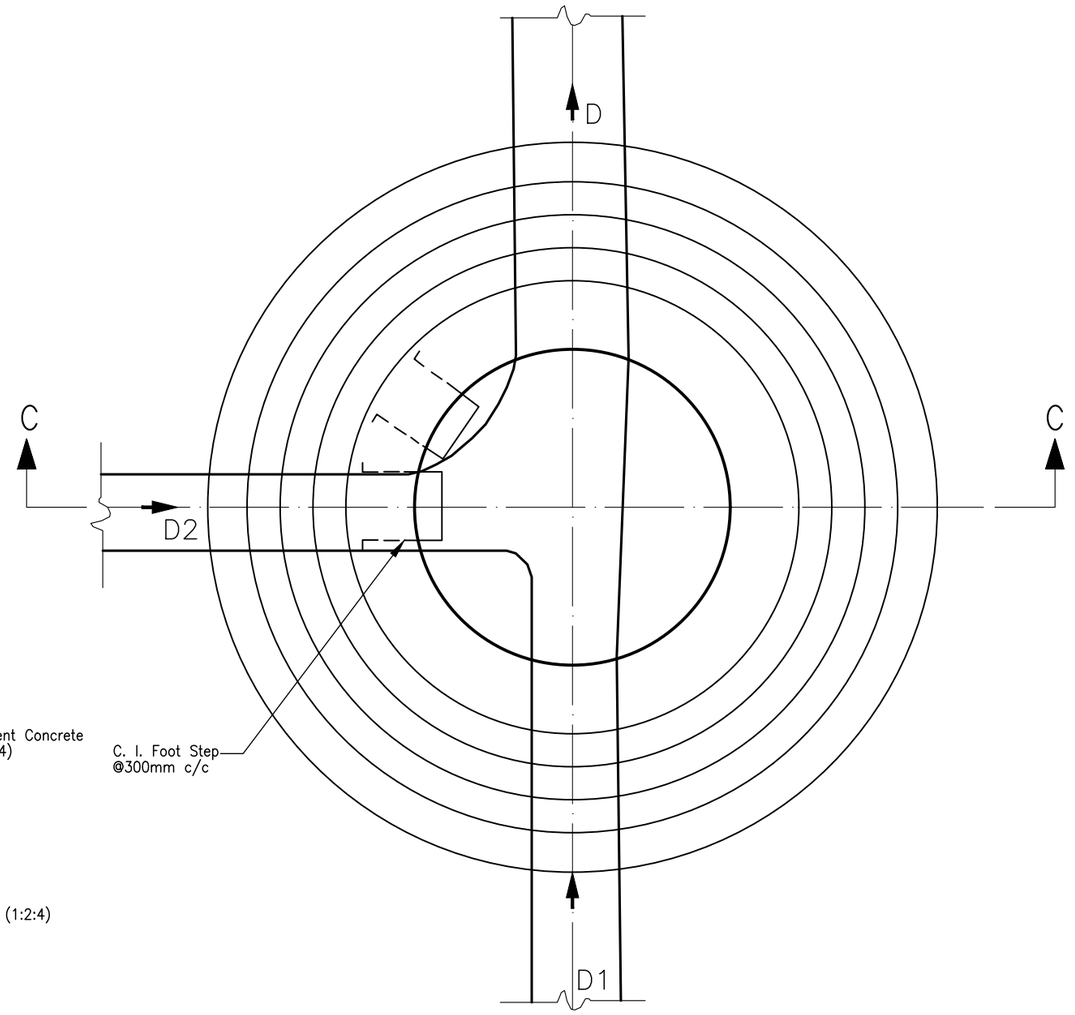
Notes:

1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 24	Drawing Title Sewer System Standard Details Manhole Type C: Depth Above 5m Sec B-B



SECTION C–C

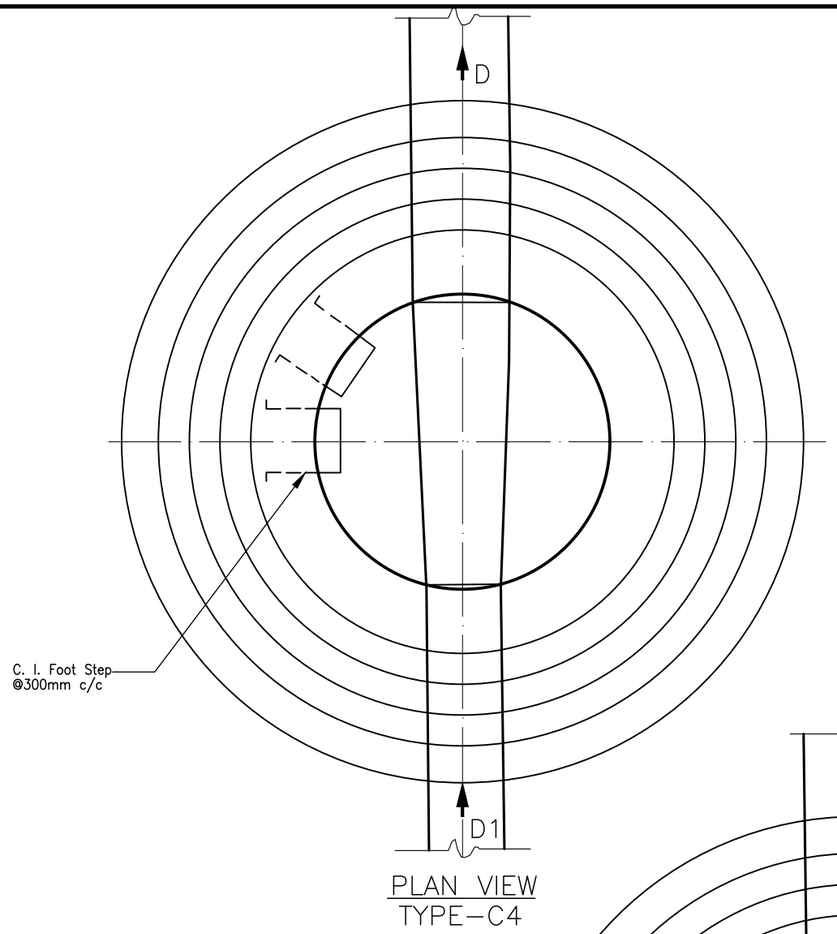


PLAN VIEW
TYPE–C3

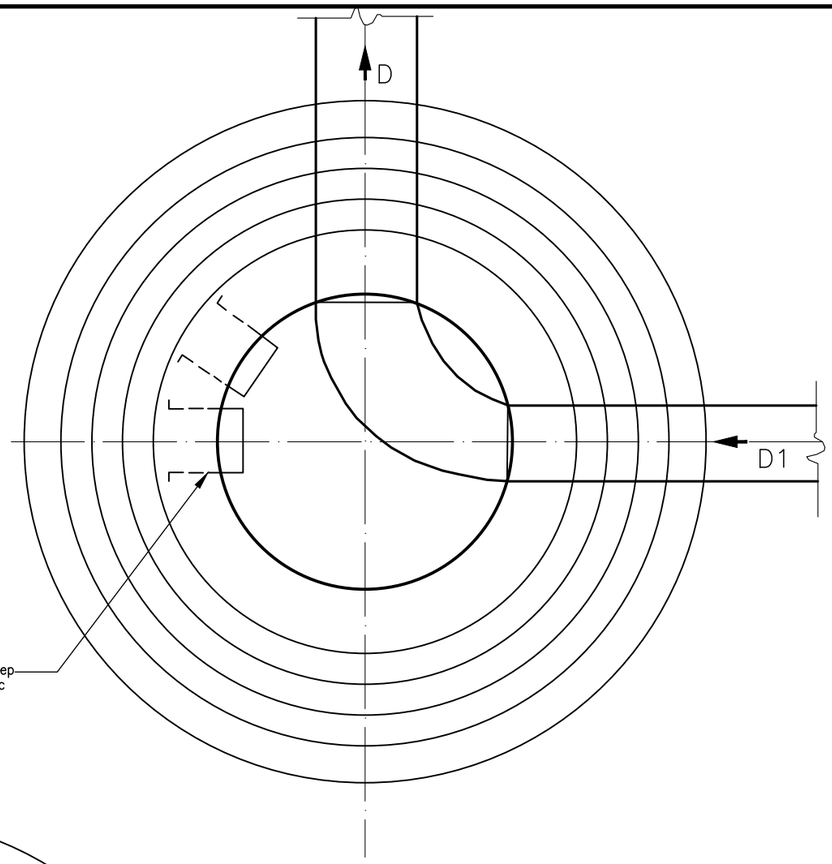
Notes:

1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

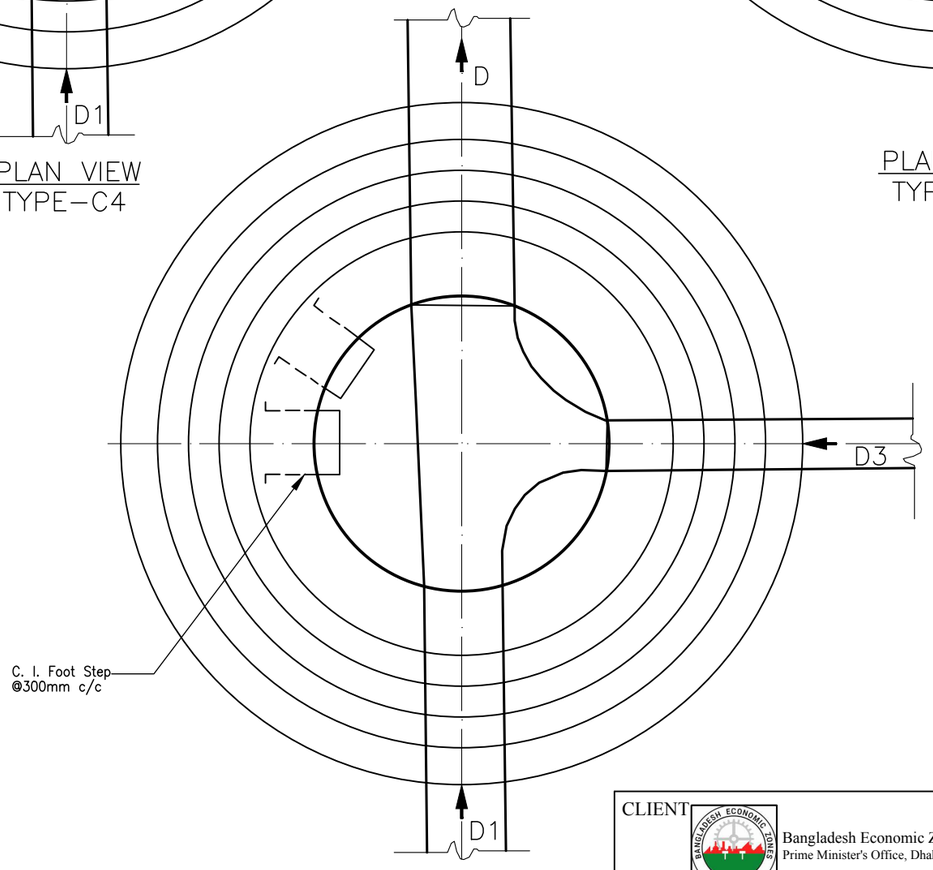
CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale Drawing No: 25	Drawing Title Sewer System Standard Details Manhole Type C: Depth Above 5m Sec C-C



PLAN VIEW
TYPE–C4



PLAN VIEW
TYPE–C5



PLAN VIEW
TYPE–C6

Notes:
1. All dimensions are in millimetres and all levels in metres PWD unless shown otherwise.
2. All works to be performed as per specifications.
3. Existing utilities to be surveyed and confirmed by the Contractor prior to any excavation works.
4. Trench support as necessary to ensure safety of works and adjacent buildings.

CLIENT
Bangladesh Economic Zones Authority
Prime Minister's Office, Dhaka, Bangladesh.

CONSULTANT
Institute of Water Modelling
House - 496, Road - 32, Mohakhali DOHS,
Dhaka-1206, Bangladesh.

Notes:
All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.

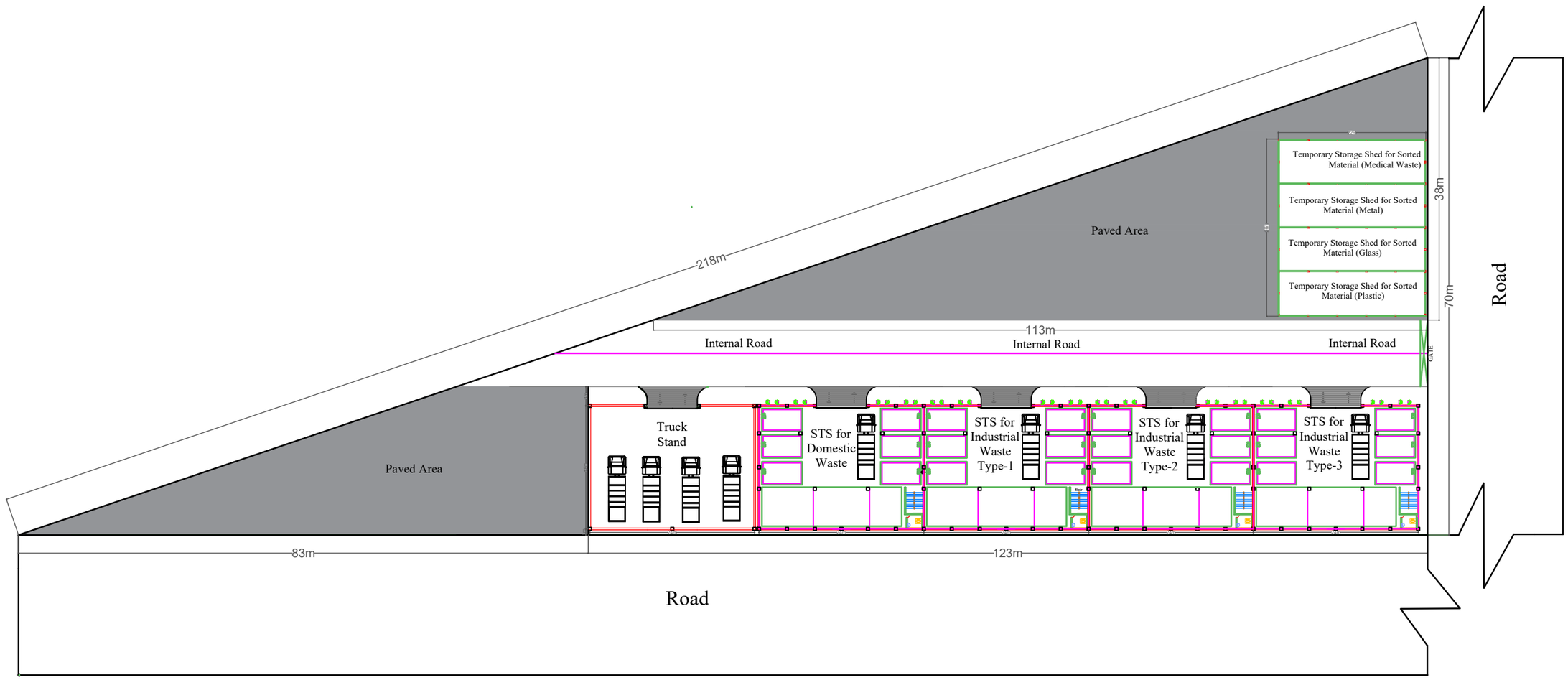
Original Drawing Size
A3 = 420x297

Not in Scale

Drawing No: 26

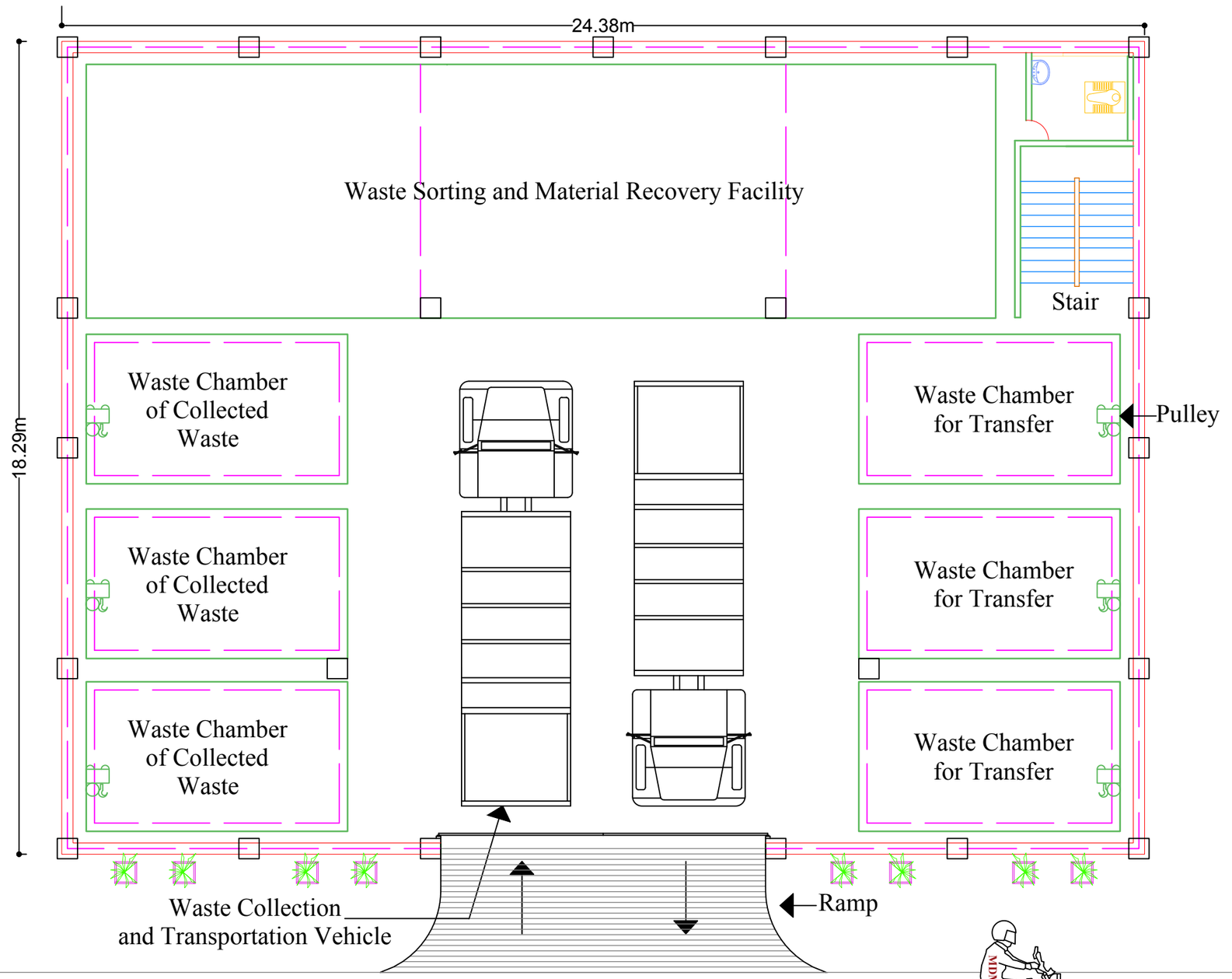
Feasibility Study of Netrokona Economic Zone

Drawing Title
Sewer System Standard Details
Manhole Type C: Plan View Depth Above 5m



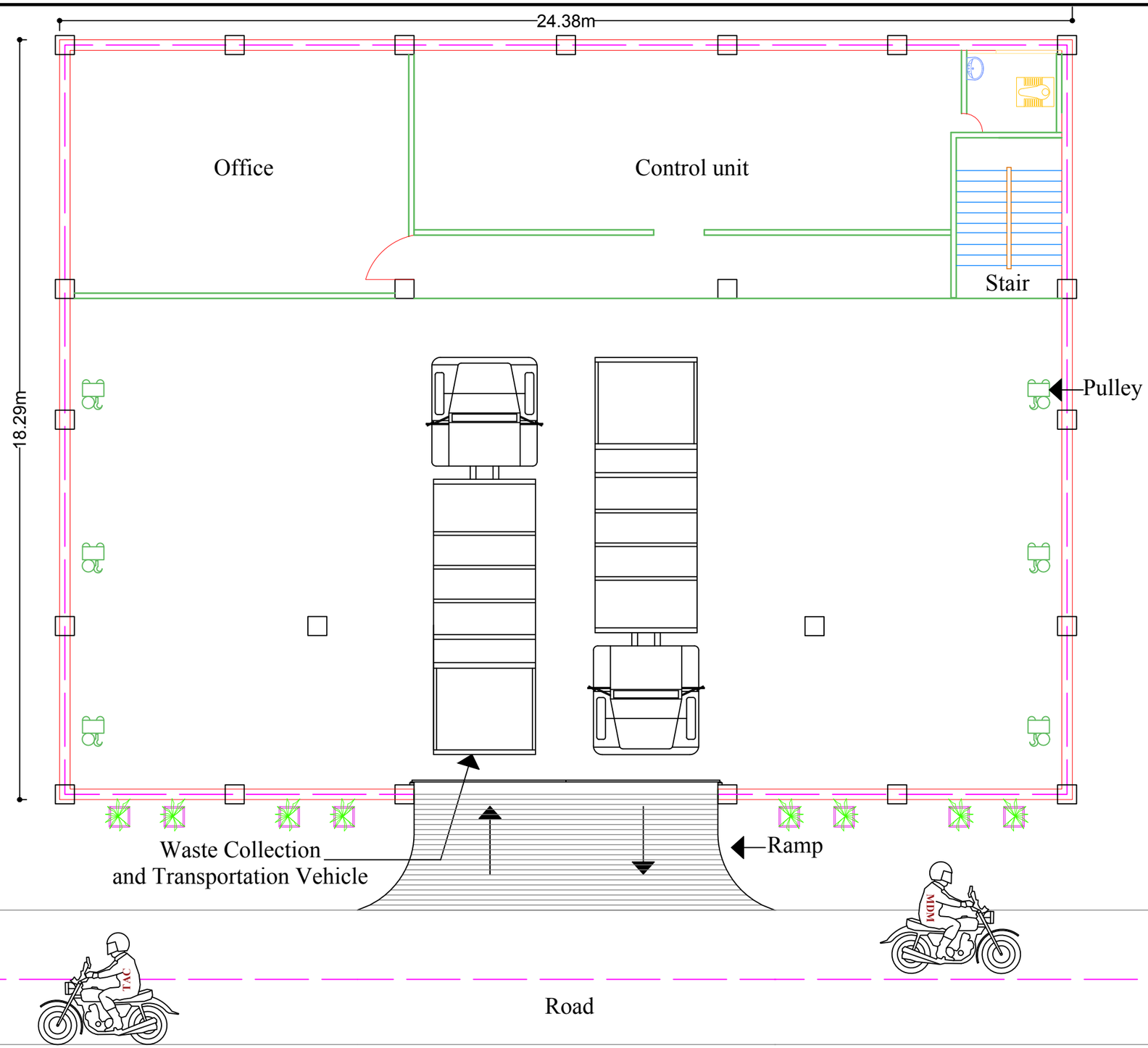
Layout Plan of Integrated Waste Management Facilities (IWMF)

CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 / Not in Scale; Drawing No: 27	Drawing Title: **Layout Plan of Integrated Waste Management Facilities (IWMF)**



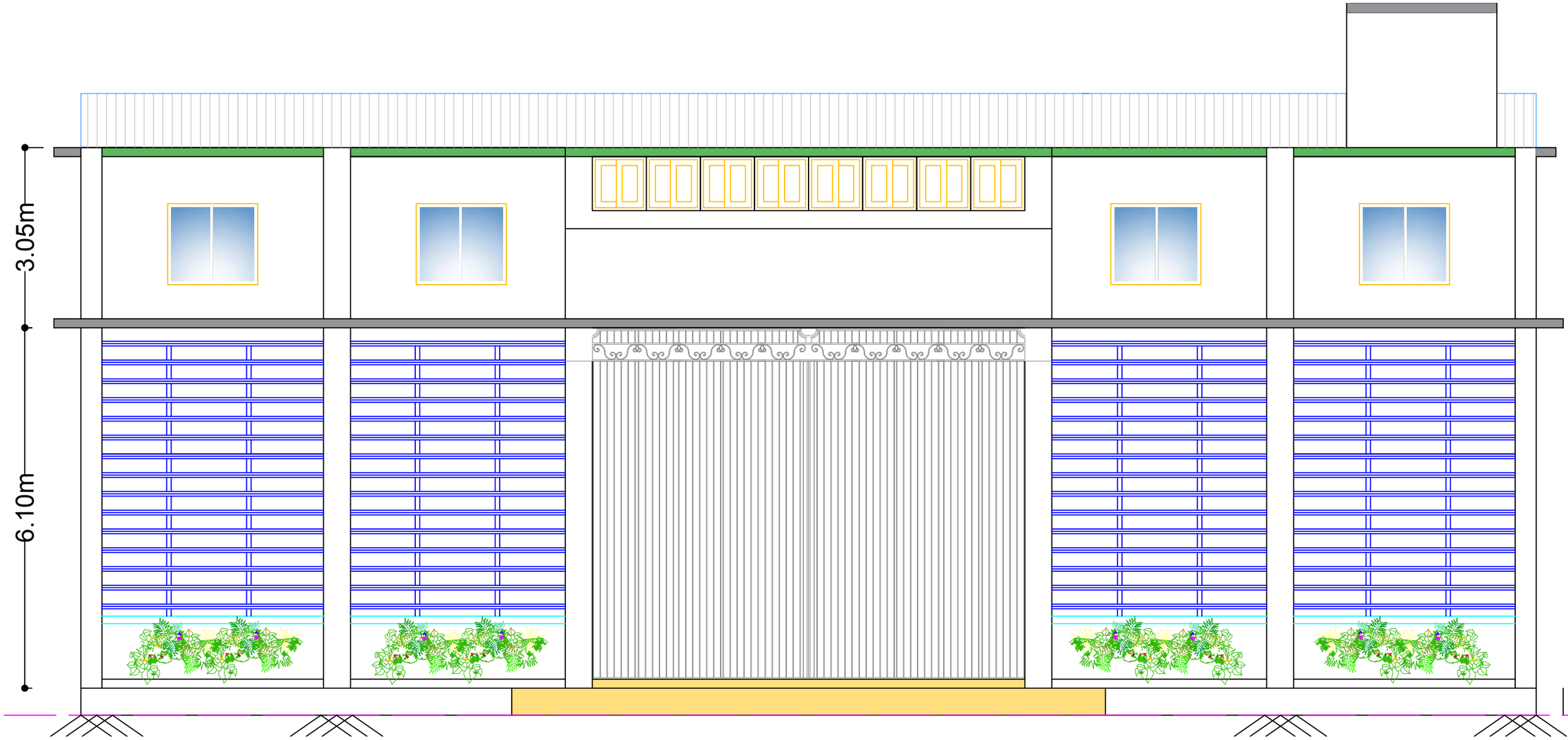
Ground Floor Plan of Typical Secondary Transfer Station (STS)

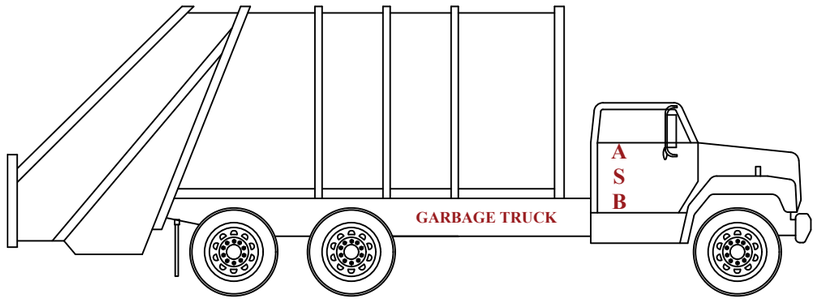
CLIENT: Bangladesh Economic Zones Authority, Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT: Institute of Water Modelling, House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 28	Drawing Title: Ground Floor Plan of Typical Secondary Transfer Station (STS) of Solid Waste



1st Floor Plan of Typical Secondary Transfer Station (STS)

CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 29	Drawing Title 1st Floor Plan of Typical Secondary Transfer Station (STS) of Solid Waste





CLIENT Bangladesh Economic Zones Authority Prime Minister's Office, Dhaka, Bangladesh.	Notes: All dimensions are in milimetres & all levels are in mPWD unless otherwise mentioned in drawing.	Feasibility Study of Netrokona Economic Zone
CONSULTANT Institute of Water Modelling House - 496, Road - 32, Mohakhali DOHS, Dhaka-1206, Bangladesh.	Original Drawing Size A3 = 420x297 | Not in Scale Drawing No: 30	Drawing Title Elevation of Secondary Transfer Station (STS) of Solid Waste