Preparation of a

Strategic Master Plan

for

Mongla Port

Inception Report

Client:
Mongla Port Authority

Author:
INROS LACKNER SE
in association with
SPMC

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Abbreviations

Abbreviation	Description
a	Annum (Year)
BDT	Bangladesh Taka
BWDB	Bangladesh Water Development Board
C&F	Clearing & Forwarding
CD	Chart Datum
d	Day
DoE	Director of Environment
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
h	Hour
IFC	International Finance Corporation
IL	INROS LACKNER SE
IR	Inception Report
IT	Information technology
IWM	Institute of Water Modelling
LiDAR	Light Detection and Ranging
m/s	Meter per second (speed)
sqm	Square meter
cbm	Cubic meter
MPA	Mongla Port Authority
MSL	Mean Sea Level
PD	Project Director
SIA	Social Impact Assessment
SPMC	Strategic Planning and Management Consultants Ltd
ton	Tonne or ton (1,000 kg)
ToR	Terms of Reference
USD	United States Dollar ($)

Utilised Documents

See Appendix B.

1 Introduction

1.1 General

Mongla Port Authority (MPA) has assigned INROS LACKNER SE (IL), of Bremen/Germany in association with Strategic Planning and Management Consultants Ltd (SPMC) of Dhaka/Bangladesh (together the Consultant) with consultancy services for the “Preparation of a Strategic Master Plan for Mongla Port” (the Project).

The consulting contract became effective on 24th July 2019. The Consultant's work has officially commenced on 23rd August 2019.

The main objective of the Project is to prepare a master plan which will be used as a basis for the future development of Mongla Port itself and the Khulna/Mongla area.

The scope of work is understood to cover the activities proposed in the Consultant’s technical and financial proposal to prepare a strategic master plan based on guidance from the ToR, though not negating the practice of due diligence on the part of the Consultant and in line with international quality standards for port master plans.

1.2 Background Information

It is of outmost importance that the later recommendations of the Master Plan for Mongla Port will be in line with the national development planning horizons. The Masterplan must consider interlinks to the achievement of Strategic Development Goals 2021 and 2041 (National Goals 2021 and 2041) and to the Strategic Vision Documentation 2100 for the Bangladesh Delta (Delta Plan 2100) regarding the port’s contributions to national economic growth in this respect.

Up to now, a comprehensive master plan for Mongla Port has never been prepared. The only comparable document is the “Master Plan Layout for Chalna Port Town” which probably stems from the 1960s or 1970s and therefore is outdated. However, a number of feasibility studies were prepared in the past which cover different aspects of Mongla Port. These will be considered when preparing the Strategic Master Plan.

1.3 Project Location

Mongla Port, for the time being the second biggest sea gateway of Bangladesh (beside dominating Chittagong Port), is situated in the south-western part of the country, at the confluence of Pussur River and Mongla Nulla, approximately 71 nautical miles upstream from the Bay of Bengal, see Figure 1-1. It is located at Lat. 21^0 9’N Long. 89^0 34.4’ E, see Figure 1-1, approx. 35 km to the South of Khulna, Bangladesh’s third largest city.

The port is well protected by the world's largest mangrove forest known as the Sundarbans, part of which has been declared as ‘World Heritage’ by the UNESCO in 1997.

Figure 1-1: Aerial View of Bangladesh with Location of Mongla Port (in red circle) [Google Earth 2019]

1.4 Role of the Inception Report

The objective of the Inception Report (IR) is

- to describe and to give an overview of the Inception Phase of the Project;
- to present the overall structure of the Project;
- to present an overview of proposed changes in the reporting scheme, methodology or upcoming project steps (if required);
- to provide an overview of gathered data and studies collected during the Consultant's fact-finding mission and analysed so far;
- to emphasize any gaps in the existing information;
- to present a first assessment of the initial findings;
- to present an updated project time schedule (if necessary).

2 Timeframe of the Project

2.1 General

During contract negotiations the following time frame was agreed. It is planned to execute the preparation of the Strategic Master Plan in 12 months (July 2019 to July 2020). The original time frame as per ToR was 18 months.

It is understood that completion of the Strategic Master Plan assignment according to the accelerated time frame may aim at to complete the assignment and to furbish the administrative closure within the current fiscal year 2019/2020.

2.2 Schedule of Deliverables

Based on the ToR and the submitted Technical Proposal, the schedule of deliverables relative to the commencement date of the assignment the schedule of deliverables is outlined below:

Contract Commencement Date	24th July 2019
Commencement of Services	23rd August 2019
Kick of Meeting	18th September 2019
Inception Report	10th October 2019
Project Workshop I	20th October 2019
Interim Report	18th December 2019
Draft Final Report	1st April 2020
Project Workshop II	10th April 2020
Team Visit to International Ports	April 2020
MPA Comments on Draft Final Report	14th May 2020
Final Report	28th May 2020
Port Master Plan 3 D Models	June 2020 after approval of Final Report
Completion of Services	23rd July 2020

The above dates shall be considered as tentative and may be adapted according to the actual progress of the Project or the Client's preferences.

2.3 Project Time Schedule

Based on a detailed analysis of the ToR, the submitted Technical Proposal, the project commencement date and the actual project requirements, an indicative time schedule for the project work and planned interventions has been developed (see **Appendix A**).

So far no changes to the schedule of deliverables as agreed in the contract negotiations and confirmed during the Kick-of Meeting could be observed apart from a minor adaption of the Workshop I date (from 17th October to 20th October 2019) for operational reasons on discretion of the Client. It is underlined that the schedule is indicative only and will be updated as per actual progress in close cooperation with the Client.

3 Project Organisation

3.1 Consultant's Organisation

The Consultant has set up a project organisation and organised the project work according to the ToR and the submitted Technical and Financial Proposals.

The Project Team Organisation is illustrated in Figure 3-1.

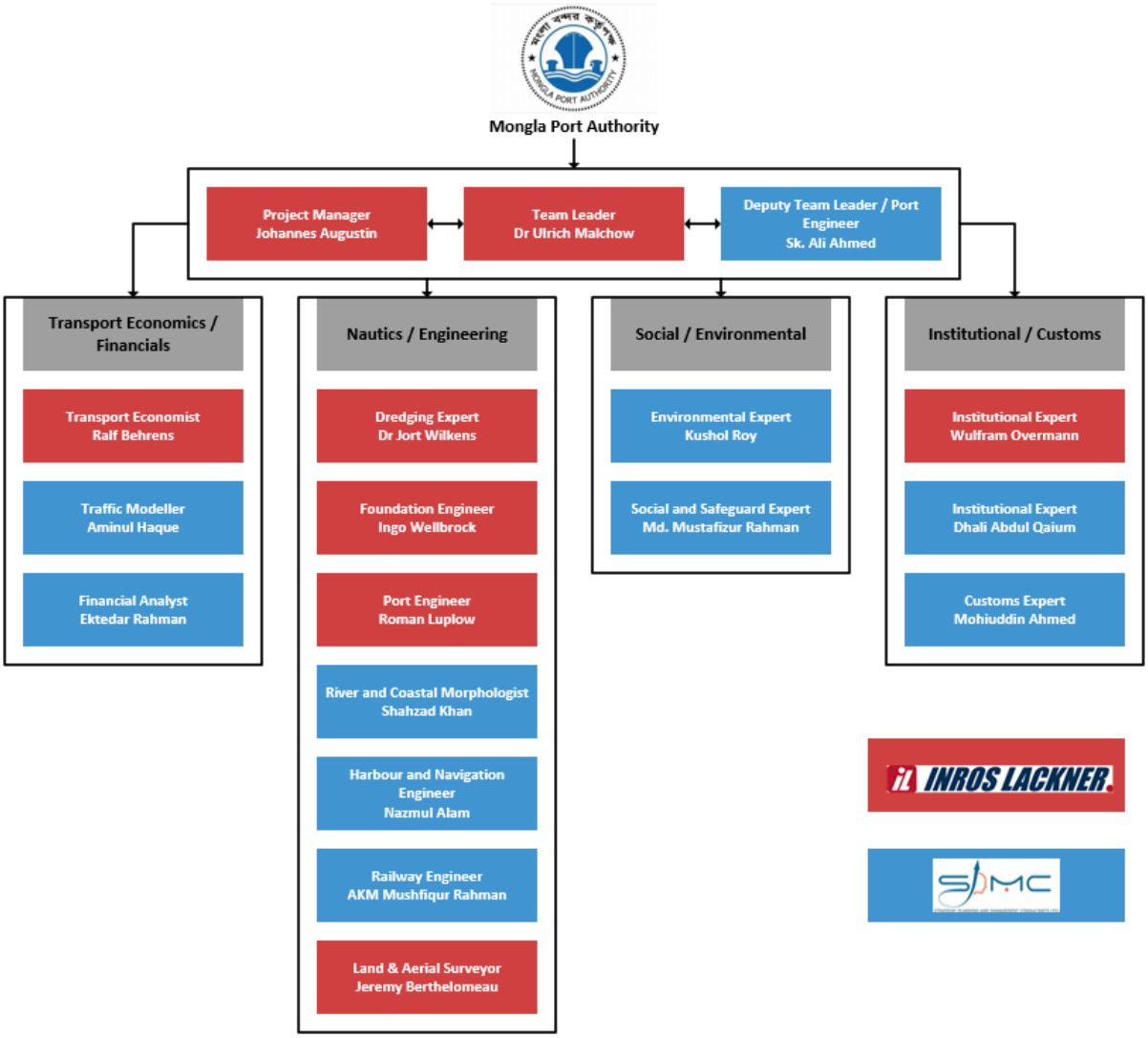


Figure 3-1: Consultant's Project Team Organisation

Three Key Experts had to be replaced by the Consultant (see Table 3-1Figure 3-1) as due to the long tendering period they are no longer available for the Project. Respective consent has been asked for by a letter to PD on 5th October 2019.

Table 3-1: Replacement of Key Experts

No.	Designation	Name of Expert as per Proposal	Name of Replacement
1	River and Coastal Morphologist	Mr Upol Mahmud	Mr Shahzad Khan
2	Traffic Modeler and Survey Engineer	Mr Anjan Kanti Sirker	Mr Aminul Haque
3	Environmental Expert	Mr Mizanur Rahman	Mr Kushol Roy

3.2 Client's Counterparts

The main counterpart and nodal point for the Consultant nominated by Rear Admiral M. Mozammel Haque, Chairman of Mongla Port Authority, is Executive Engineer Rabeya Rouf. As Project Director (PD) she will act as central focus and nodal point for all issues and liaison as well as for coordination of activities, granting full access and support of gathering of any information deemed required or relevant otherwise. She will coordinate and establish liaison with all offices and departments of Mongla Port Authority (MPA) and support interaction with port users and other stakeholders to the maximum extend as far as in the competence of Mongla Port Authority.

The Chairman furthermore offered his full support for the preparation of the Strategic Master Plan.

An overview of the structure of MPA is shown in Figure 3-2.

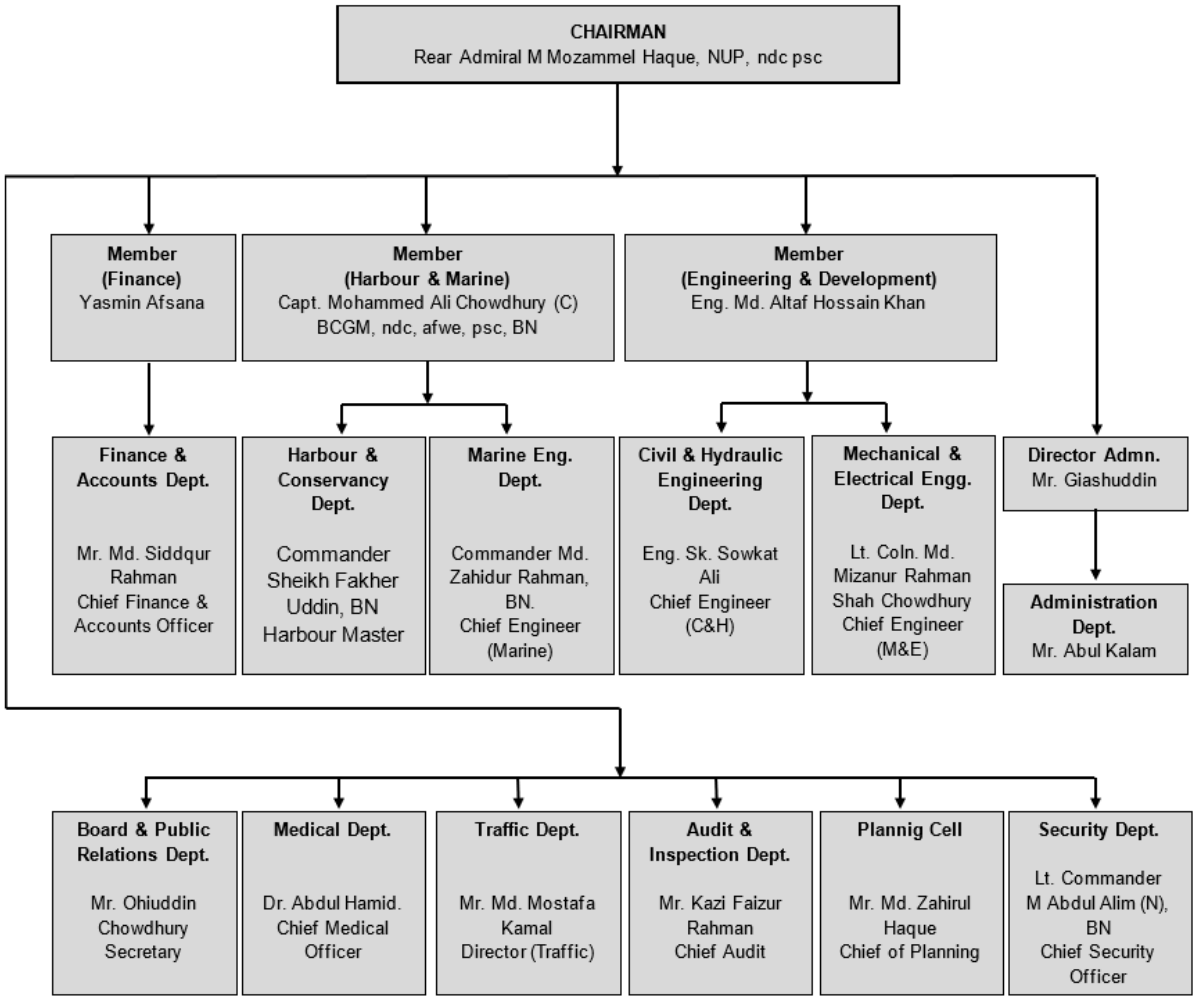


Figure 3-2: Organigram of Mongla Port Authority

The following counterparts at MPA have been met during the inception phase, see Table 3-2.

Table 3-2: Client's Counterparts during Inception Phase

No.	Name	Function	Department
1	Rear Admiral M Mozammel Haque, NUP, ndc psc	Chairman	Mongla Port Authority
2	Capt. Mohammed Ali Chowdhury (C) BCGM, ndc, afwe, psc, BN	Board Member	Harbour & Marine / Operation
3	Engr. Md Altaf Hossain Khan	Board Member	Engineering and Development
4	Yasmin Afsana	Board Member	Finance
5	Commander Sheikh Fakher Uddin, BN	Harbour Master	Harbour and Conservancy
6	Lt. Coln. Md. Mizanur Rahman Shah Chowdhury	Chief Engineer	Mechanical and Electrical Engineering
7	Commamder Md. Zahidur Rahman, BN.	Chief Engineer	Marine Engineering
8	Mr Giashuddin	Director	Administration
9	Mr Kazi Faizur Rahman	Chief Audit	Audit and Inspection
10	Mr Ohiuddin Chowdhury	Secretary	Board & Public Relation
11	Mr Md. Siddqur Rahman	Chief Finance & Accounts Officer	Finance and Accounts
12	Mr Md. Zahirul Haque	Chief of Planning	Planning
13	Engr. Sk Sowkat Ali	Chief Engineer	Civil and Hydraulic Engineering
14	Dr Abdul Hamid	Chief Medical Officer	Medical
15	Md Mostafa Kamal	Director	Traffic
16	Capt. Md. Shahadat Hossain	Deputy Harbour Master	Harbour and Conservancy
17	Engr. Rabeya Rouf	Project Director & Executive Engineer	Civil and Hydraulic Engineering
18	Mostofa Shamsuzzaman	Executive Engineer	Civil and Hydraulic Engineering
19	Engr. Mehfuzur Rahman	Executive Engineer	Civil and Hydraulic Engineering
20	Engr. Motiur Rahman	Executive Engineer	Civil and Hydraulic Engineering

The Consultant is grateful for the openness and availability of the Chairman, senior managers, engineers and officers of Mongla Port Authority and for the great support already received.

3.3 Major Stakeholders

Stakeholders are parties with an interest or representing possible interests or concerns in the long-term development of Mongla port. The following main stakeholders were identified:

1. Bangladesh Shipping Agent's Association, Khulna.
2. Mongla Port Berth and Ship Operators Association.
3. C&F Agent Association.
4. Bangladesh Jute Mills Corporation (BJMC).
5. Bangladesh Jute Exporters Association.
6. Bangladesh Jute Goods Exporters Association.
7. Bangladesh Garment Manufacturers & Exporters Association (BGMEA).
8. Bangladesh Knitwear Manufacturers and Exporters association (BKMEA).
9. Bangladesh Reconditioned Vehicles Importers & Dealers Association (BARVIDA).
10. Bangladesh Frozen Foods Exporters Association (BFFEA).
11. Bangladesh Timber Importers & Exporters Association.
12. Rampal Tharmal Power Plant.
13. Khulna-Mongla Port Rail Line Project.
14. Khulna Chamber of Commerce and Industry.
15. Local Authorities of Mongla like Mongla upozilla (county), Mongla Pourashova (municipality) etc.

The following organisations should be considered as stakeholders even if they are not directly involved/affected with/by the future Mongla Port development:

a. BIWT (Bangladesh Inland Waterway Transport)
b. Bangladesh Navy
c. Payra Port Authority
d. IWM (Institute for Water Modelling)
e. KUET (Khulna University of Engineering & Technology)
f. Ministry of Commerce
g. Ministry of Transport
h. Ministry of Railway
i. Chittagong Port Authority

It was planned to meet as many as possible of the above stakeholders to obtain their views on the further development of Mongla Port prior to preparing the Strategic Master Plan. Many of the stakeholders could be met already and their ideas could be obtained during the Consultant's fact-finding missions in September and early October 2019. The stakeholders will be invited by MPA to join the presentation of the Inception Report on 20th October 2019.

3.4 Lines of Communication

It has been agreed and it has already worked out very effective and useful that the main line of communication between MPA and the Consultant is between the Project Director of MPA

and the Team Leader and the Deputy Team Leader of the Consultant. This may be backed up by the Consultant's Project Manager whenever deemed necessary.

As the Chairman of MPA has offered his full personal support the may also contact him directly. On the other hand, the Consultant may contact MPA's PD directly for urgent matters.

3.5 Kick-off Meeting and Workshops

The project kick-off meeting was held on the 18th September 2019 at the conference hall of the main building of MPA. The meeting was headed by Rear Admiral M. Mozammel Haque, Chairman Mongla Port Authority and attended by the senior management of MPA. The list of participants and the minutes of the project kick-off meeting are provided in **Appendix D** to this report.

The Chairman expressed his gratitude about commencement of works on the Strategic Master Plan for Mongla Port and ensured the full management attention and unlimited support to the project by the port management.

The Team Leader of the Consultant presented the understanding of the Terms of Reference, the approach, methodology and scope of work as well as the work plan and the proposed time schedule for the deliverables (see **Appendix A**).

There was a common understanding that the success of the project depends very much on the quick availability, quality and accuracy of the input data which mainly are expected to be delivered by MPA. Hence it was agreed that any request for information will be followed with high priority by MPA and all data required and available at MPA will be provided.

Furthermore, the MPA Management including the Chairman himself will support the consultant in getting access to required information which is only available from other sources apart from MPA.

The Terms of Reference (see **Appendix C**) of the project the Master Plan recommendations need to be harmonised with the goals and time lines of the national development planning horizons and with the envisaged achievements of the Strategic Development Goals / National Goals 2021 and 2041 as well as with the strategic vision for the Bangladesh Delta (Delta Plan 2100) regarding the port's contributions to the national economic growth.

The preparations for the first national workshop on the Masterplan for Mongla Port to be held on 20th October 2019 in Khulna have already started. The workshop agenda was elaborated and is endorsed by the Chairman of Mongla Port Authority.

The intention of the workshop is to get as much as possible input from the various port stakeholders to the Masterplan to avoid any planning apart from the practical and economical requirements. Hence the success of the event depends very much on the right selection of the guests to be invited by MPA. In order to maintain a 'working atmosphere' it is proposed to limit the number of participants to 50. Instead of inviting representatives of individual companies only representatives of the respective associations should be invited.

A 2nd workshop is scheduled for 10th April 2020 to be held in Dhaka to present the outcome of the strategic port development planning and the Strategic Master Plan for Mongla Port to all stakeholders, the broad business community and the public on a national level.

4 Current Status of Tasks

4.1 General

The Tasks as per date of submission of the Inception Report have been completed as depicted in Table 4-1.

Table 4-1: Status of Planned and Actual Completion of Tasks

Actual Progress of the Project	Scheduled %	Completed %
Task 0 – General	20	20
Task 1 – Traffic Forecast (100%, of which)	16	21
Task 1.1 – Traffic, Trade and key project development data collection (40%)	20	25
Coal transportation and handling for Rampal Power Plant	75	100
Mongla Port Industry	50	50
Impacts of completion of Padma Bridge	10	10
Construction of Khanjihan Ali Airport at Rampal	0	0
Mongla Khulna Rail connectivity	10	10
Congestion in Chittagong Port	25	25
Overall Industrial development in South West and North West Bangladesh	10	10
Handling of Inland and transit cargo for India, Nepal and Bhutan	10	10
Full operation of BEZA & BEPZA	10	10
Task 1.2 – Prepare a traffic forecast based on different scenarios for Bangladesh and the region as a whole (40%)	15	15
• Collection of Socio-Economic Data	50	50
• Trade and Transport and Infrastructure Development Data	25	25
• Forecast Scenarios	0	0
• Trade and Cargo Flow Scenario Forecasts	0	0
• Throughput forecasts by commodity types	0	0
Task 1.3 – Cargo traffic plan port – hinterland traffic and vessel movement forecasts (20%)	10	16
• Road Traffic	10	25

• Railways and Intermodal	10	0
• Inland Water Transport	10	15
• Ocean Going or “Mother Vessels”	10	15
• Feeder Vessels or lightering vessels	10	15
Task 2 – Hydrographic and Hydrological and Environmental Study for Port Area		
Task 2.1 – Hydrographic, Hydrological and Environmental Study	10	10
Task 2.2 – Evaluation of Condition of Support Vessels	20	20
Task 2.3 – Definition of Scope of Detailed Hydrological and Geo-Morphological Study	0	0
Task 2.4 – Determination of Design Vessel for Mongla Port	0	0
Task 3 – Assessment of Infrastructure in the Port and Intermodal Connectivity		
Task 3.1 – Study Existing Legal Documents, Proposed Modifications incl. Port Tariffs etc.	5	5
Task 3.2 – Study all Modes of Hinterland Transport Connectivity and Suggest Physical and Operational Efficiency Improvements	10	10
Task 3.3 – Review condition of existing land use plan, building, roads, jetties and other maritime and land side infrastructures and suggest repair, modification demolition or new as appropriate	10	10
Task 3.4 – Undertake a Preliminary Environmental Assessment, Social Assessment and Assessment of the Potential Need for Land Acquisition and Resettlement	0	0
Task 4 – Overall Port Development Framework and Strategic Master Plan		
Task 4.1 – Strategic Master Plan for Mongla Port	0	0
Task 4.2 – Relevant Rules and Regulations	0	5
Task 4.3 – Organisational Set-up of MPA	0	0
Task 4.4 – Recommend projects to be implemented with possible external financing form development partners or potential financing by private sector	0	0
Task 4.5 – Alternative Financing Schemes	0	0

4.2 Task 0 – General

4.2.1 Task 0.1 – Project Preparation / Mobilisation

After contract signing, preparations for the Project were started immediately. Initial information was shared with the responsible Key Experts who made themselves familiar with the tasks of the assignment. Mobilisation of staff and resources was completed in September 2019.

The following Key Experts and Support Staff have already visited Mongla Port to get an overview and to obtain required data and information:

- Dr Ulrich Malchow, Team Leader
- Capt. Nazmul Alam, Harbour and Navigation Engineer
- Mr Ali Ahmed, Deputy Team Leader
- Mr Ralf Behrens, Port and Transport Economist
- Mr Johannes Augustin, Project Manager
- Mr Roman Luplow, Port Engineer
- Mr Overmann, Institutional Expert
- Mr Dhali Abdul Qaium, Institutional Expert

A project office was set up in Khulna from where the work on the Master Plan is being coordinated and supported and the Key Experts can be based temporarily.

4.2.2 Task 0.2 – Kick-off Meeting

The Kick-off Meeting was held on 18th September 2019 (see Section 3.5). The meeting minutes are attached to this report (**Appendix D**).

4.2.3 Task 0.3 – Collection of Relevant Data

Over the course of the inception phase, a total of 163 sources, thus text and tabular documents, document collections (/"Folder"), maps, pictures and georeferenced data, have been collected. They are compiled in **Appendix B**. Amongst these are studies and publications of others, first hand data (e.g. own inquiries / questions posed to the Mongla Port Authority), Mongla Port's organisational data and presentations of others, most of which are of rather recent date and can thus be considered as being mostly up-to-date.

Following a first glance at the collected sources, it can be concluded that over 55% of these give the impression of being highly important/usable for the succeeding phases of the study.

Yet, by far, most of this data pertains to general statistics/information on economics, finance and inflation, followed by information on Mongla Port itself, followed by information on general transport & logistics in Bangladesh.

The information provided by these sources thereby mostly provides input for task 1, the forecast of traffic for Mongla Port.

Nevertheless, to be able to achieve all the tasks as defined by the ToR, some, often crucial information is still missing.

What is for example still required, is information on general, nationwide standards and regulations, on the administration of Mongla Port, its environmental and navigational conditions, equipment, infrastructure, financial outlines, staffing, organisation, on competing ports and specific data on economic aspects.

More detailed information on sources already at hand and the ones still missing is provided in the table, the data inventory below, especially under the column ”Title / Content”. Please note that some of the information marked as “Missing” may possibly refer to a range of documents needed to be provided for successful completion. Also, please note that the ideal formats in which missing sources are to be provided best is also defined.

An overview of the collected data is presented in **Appendix B**.

4.2.4 Task 0.4 – Reporting

The first monthly progress report was submitted on 7th October 2019 summarising the Consultant’s activities in September 2019. It is planned to submit monthly progress reports the latest 7 days after end of the month.

The Inception Report is scheduled to be submitted on 10th October 2019.

4.2.5 Task 0.5 – Workshops

The first workshop is scheduled for 20th October 2019 in Khulna. In this workshop initial findings and ideas of the Consultant will be presented and discussed with the Client and stakeholders of Mongla Port (it is referred to Section 3.5).

The second workshop after submission of the Draft Final Report is scheduled for 10th April 2019 in Dhaka.

4.3 Task 1 – Traffic Forecast

Task 1 consist of three major sub-tasks and related activities as follows:

1. Traffic, trade and key development factor data collection and analysis. The analysis comprises evaluation of socio-economic and trade data, industrial production, consumption and demand drivers as well as determinants for local and regional development trends. The latter aspect is of key importance since Mongla Port serves to a significant extent as a gateway for port related industries.

   There is huge potential for further industrial development in the vicinity of the port, depending or potentially benefitting from infrastructure improvements in hinterland accessibility and connectivity of Mongla Port and the adjacent industrial area. The analysis shall consider classical forecasts, application needs (demand driven approach) and – due to impacts of lead times, costs and market accesses on recent trends and logistics patterns – identify and quantify potentials of these impacts on the future developments.

2. The scenario forecasts will hence anticipate the socio-economic demand drivers or classically will compare or adjust the results by scenario assumptions related to changes in supply and market accessibility. Individual considerations of lead industries and markets and their assumed reaction on the transport/logistic performance changes need to be assessed and to be integrated into the forecast scenarios.

   Stakeholder consultations with industrial executives are therefore, essentials and have been carried out or started during the project inception phase. Initial findings on lead industries like cement, liquid petroleum gas (LPG), mineral oil processing and fertilizer as well as grain and foodstuff gained by interviews and desk research are depicted in **Appendix E**. The assessments need to be accomplished by interviews with local and regional players related to manufacturing and to im- and export of semi processed and finished goods. The workshop scheduled for 20th October 2019 is therefore an essential platform for gathering additional information and to learn from discussions regarding the expected or prospective developments.

3. Preparation of traffic forecasts based on different development scenarios for the catchment area (Mongla – Khulna – Jashore / West Bangladesh, the overall country of Bangladesh and the region as a whole) will take place by scenarios as per the technical proposal. The scenarios a) low, b) base case and c) high need are to be developed for the demand drivers while considering changes in supply and logistic conditions. The forecast scenarios have to consider development in port performance and hinterland accessibility (transport times, cost and quality, i.e. liability and punctuality) as well as logistic development impacts related to trade, production and the attractiveness or competitiveness of Mongla Port versus other ports like e.g. Chittagong, Payra and also Kolkata / Haldia.

   Regional or local drivers, national socio-economic and national infrastructure and economic developments (improvements or limitations) related to transit trade of other countries, namely Bhutan, Nepal and regions in India, in particular along the protocol river catchment areas or West Bengal, need to be considered as well.

Task 1.1 and 1.2 are to be seen as an integrated task while the forecast scenario assumptions have to be build-up in parallel to data gathering and analytics.

Task 1.3 on cargo throughput by type of commodity has to consider respective figures for design of logistic and port areas and for equipment devices. The assumptions on the spilt of cargo throughput and related flows of goods by modes of land transport (and intermodal transport) as well as by vessel type and size classes (relevant for planning of required nautical access and berth and equipment configurations) need to apply international experiences and reference parameters in combination with natural tidal and draft restrictions. Hence the analysed port traffic data depicted in **Appendix F** will prevail as a guideline under low case or pessimistic scenario conditions while the base case and the optimistic forecast scenario requires the need to adopt experiences from international mid- or high developed multimodal logistic and port environments.

The reference ports to be visited for exchange of experiences should reflect this approach.

The extension of the requested forecast horizon to the year 2100 is in excess of the agreed ToR. Due to the complexity of the model building and the determination of necessary assumptions such forecasting is rather challenging.

The extension of the forecast projections of the Strategic Masterplan for Mongla Port to the year 2100 is justified by the rationale to achieve harmonization to the timelines of the national development planning.

In view of the required consideration of the Bangladesh Delta Development Visions 2100 time frame the following steps are proposed:

- The offered and agreed time horizon for forecast and planning projections (2020-2040 / outlook to 2050) will be extended to 2100 in order to synchronize the Port Master Plan development recommendations with the national planning as follows.
- Three forecast scenarios a) optimistic, b) base case and c) modest growth will be developed according to socio economic and welfare development parameters. The design of the development scenarios will take place prior to the completion of the analytical work in order to discuss assumptions and approaches to the extended time lines considering also the impacts of further port competition, e.g. by entering of Payra as an additional player, and by infrastructure developments.
- For each scenario, cargo throughput, vessel movements and port hinterland traffic projections for all parts of Mongla Port (i.e. MPA operated piers and jetties, mooring points/ship lightering places, Roosevelt Jetty in Khulna and the industrial private jetties) will be elaborated in accordance with national goal planning of the People's Republic of Bangladesh. This approach will contain the term from 2020/2021 to 2040/2041 and

will also be in harmony with the time frame set by the national development planning. Hence the Port of Mongla traffic projections by the Master Plan can be considered as mid-term scenario forecasts.

- Timely extended forecast projections will be prepared as an outlook until the year 2050 in order to provide a set of forecast data for a term of 30 years. This will allow port development planning in phases.
- Uncertainties are imminent when providing forecasts for terms longer than 20-30 years due to high variations of society and national economic lead variables. Such long-term forecast will be provided as a high-level forecast, based on trend projections on an aggregated level of lead variables and respective development scenario assumptions until 2100. The extended broad scenario projections will serve to outline potential developments for consideration of the time frame of the Bangladesh Delta Vision 2100 (Delta Plan 2100). These projections will serve as a guideline for long term development prospects only.

The extension of the requested forecast horizon to the year 2100 is exceeding the scope of works agreed by the contract. The consultant will undertake all reasonable effort to comply with the requested extra services within the agreed time frame and budget. However, pre-requisites for successful fulfilment of the voluntary agreed obligations are to evaluate

- all information on national Bangladesh transport master planning and on road, rail and inland water transport network improvement planning
- all regional and national socio-economic data and mid-and long-term development projections and forecasts
- the complete and approved set of documents on the national development strategy and development planning 2020/2021-2040/2041
- the complete approved set of documents and data of the Bangladesh Delta Vision Development plan
- most recent and available information on changes or improvements of transport infrastructure and trade terms and conditions between Bangladesh and the transit trade countries Bhutan, India (east India and West Bengals at least) and Nepal.
- most recent port development plans for competing ports in the Gulf of Bengal Range, i.e. Payra, Kolkata / Haldia and any known further projects. The development plans for Chittagong are already under evaluation,
- plans, traffic forecasts and investment time frames and- if available, budgets for inland water transport improvement projects, including inland water transport port developments
- plans, traffic forecasts and investment time frames and- if available, budgets for intermodal terminals and multimodal developments

In view of the above, the Consultant kindly asks the Client to continue the great support and to furbish access to the requested documents and information in the course of the month of October 2019. Furthermore, the Client may be advised to facilitate an additional mission of the transport and port economist team to Mongla, Bangladesh or West Bengal in order to validate and to re-confirm findings for scenario assumption cascade building.

In view of the above findings and conclusions and in order to complete the forecasts in time and in good quality continued support of the Client is required. Furthermore, some time frame modifications or the allocation of additional resources to keep in the original time frame may

be considered. The Client's support is required in particular for the access to following studies, plans and information:

- Payra port development plan study and forecast projections
- National and cross border railway and intermodal or multimodal terminal infrastructure improvement plan data and project implementation schedules, including river crossings
- National and cross border highway improvement plan data and project implementation schedules, including river crossing improvements
- National river improvement and inland water transport and inland port improvement programs and project implementation schedules
- Access to the final report of the endorsed Bangladesh Delta Vision 2100 studies (the information accessible on the Delta Vision 2100 is either on presentation level and hence not sufficiently detailed, or not eligible / on draft level)

Furthermore, access to the national economic strategy documents until 2040/2041 would be highly appreciated in order to make sure that there are no deviations in analytical works caused by insufficiently detailed consideration of information probably not accessible to the Consultant.

4.4 Task 2 – Hydrographic, Hydrological and Environmental Study of Port Area

4.4.1 Task 2.1 – Hydrographic, Hydrological and Environmental Study

For this task, hydrography survey charts published by MPA Hydrography Department for the last 10 years are to be analysed. The results from hydrodynamic and morphological model of Pussur River (done by Institute of Water Modelling in a separate study) will be analysed together with the latest survey chart. The following information is required:

- Hydrography survey charts published by MPA Hydrography Department for the last 10 years (preferably with raw data).
- Results from hydrodynamic and morphological model of Pussur River (done by Institute of Water Modelling in a separate study) together with the latest survey chart.

To date the following data has been received, see Table 4-2.

Table 4-2: Available Data for Hydrological Port and River Study

No	Item	Source	Remark
1	Navigation Depth Chart Datum	MPA	
2	Final Report- Port and Logistics Efficiency Improvement TA-7389 BAN 20111	Drewry/IWM	updated since the 2004 report
3	Feasibility study for the improvement of Mongla Port ,2004	IWM	
4	Historical Cross Section Data of Poshur 1998-2019	BWDB	
5	Water Level Data 1998-2018 at Mongla Port	BWDB	

So far some of the information is still outstanding. The output of this task will be required for Task 2.3 (see below).

4.4.2 Task 2.2 – Evaluation of Condition of Support Vessels

The Consultant's Port Engineer (Electro-Mechanical) visited Mongla Port between 22nd September and 2nd October 2019 to obtain an overview and to inspect the Port's support vessels.

Currently, the fleet of MPA consists of 35 ships and boats of different functions and can be structured as shown in Table 4-3

Table 4-3: MPA Fleet and Vessel Category

Category	Ship/Boat type	No. in service	Year of purchase	Remarks
A	Tug Boat	6	1942..2019	Different sizes and pull power, one tug with special FiFi capacity
B	Pilot Boat	4	1967..2012	One boat for sales (tender finished already), other boats operable in different conditions
C	Dispatch Boat	3	1968/2012	
D	Mooring Boat	4	1967/2004	
E	Work Boat	1	1979	
F	Buoy Laying Vessel	1	1984	Currently out of order due to many systems damaged, ready for overhaul
G	Water Crafts	2	1980/2004	One in good condition (the older one), one (the younger one) major damaged and near to scrap condition
H	Inspection Launch	1	1986	For sale, auction closed
I	Survey Vessel	1	1994	
J	Dredger Unit	7	2012/2016	Not inspected, under condition of leasing to 3rd party operator "as is/where is", no own service or operation by MPA
K	Spilled Oil Clean Up Vessel	1	2018	Nearly brand new and in operable condition, some minor damages
L	Speed Boat	4	2016..2019	Fast boats from GRP with cabin and shafts or Outboard Engine,

Category	Ship/Boat type	No. in service	Year of purchase	Remarks
				three (3) boats for inner port area use only (grey boats), one (1) boat with signalling system for outside use also (white boat), grey boats slightly modified from original status
		35	∅ 1993	

Additional to the mentioned fleet, two (2) Water Barges (pontoon type) without engine are in fleet service. Both barges are used as mooring pontoons only and not for active water supply anymore. One barge is moored at Jetty No. 4 area (South end of Jetty No.5) and one at the southern end mooring point of MPA (end of Port road).

The average fleet age is **26 years** from purchase, where the oldest ship was made in 1942 (tug boat) and the youngest in 2019 (speed boat). With a normal service life period of 20-25 years the work ships typical lifetime has expired mostly.

At least 17 ships (43%) are significant older than 25 years, and only 15 ships (49%) are less than 10 years. The rest of 3 ships (8%) in an intermediate age closer to the end of service life (15 to 25 years old).

The estimated service amount of existing ships in service is significantly increased in comparison to a normal service life period. Machines and engines on ships are mostly old or from a former generation regarding the current safety and environmental rules.

All ships have major or minor defects what cannot be rectified in the port at the moment due to non-availability of maintenance and repair facilities.

Following ships were or will be decommissioned/abandoned and sold from fleet (estimated date of auction at list):

- ML Annesha (2021/22),
- ML Mukta (2020/21),
- MV Ruhi (2021/22),
- MT Meghdut (2021/22).

Two boats are decommissioned for sales and moored at Jetty No.4 area before handover to new owners – the “Chalna Pilot-1” and the “ML Jhnuk”.

Figure 4-1: Abandoned Boats (ML Jhnuk (left) and Chalna Pilot 1 (right)

Six boats/ships are planned to commission as an exchange or adding to the fleet within the next 10 years. The MPA also plans to acquire new ships and boats for different services as shown in Table 4-4.

Table 4-4: Boats / Ships planned to be purchased

Ship/Boat, planned purpose	Status of purchase*	Planned year of purchase
3x mooring pontoon	construction	2020
2x tug boat	specification	>2021
1x pilot boat	specification	>2021
1x SAR ship	Pre-planning	>2021
1x survey ship	Pre-planning	>2021
1x oil spill and sewage ship	Pre-planning	>2021

**) pre-planning, specification, tender, bid, contract, construction, commissioning*

Currently, the fleet of MPA offers the following services:

- Tug services for ships in direct port area (jetty mooring service),
- Assistance tug services in farewater for navigation in tidal current,
- Assistance and emergency tug services in river canal between Hiron Point and Mongla Port/Khulna Port,
- Dredging services,

Typical port authority services not declared in Mongla or Khulna Port at the moment are:

- Customs assistance (boarding/de-boarding),
- Medical First Aid, Search & Rescue,
- Fire Fighting (only one integrated tug-FiFi ship with limited Rescue capabilities),
- Diver service,
- Police Services.

The visual and on-hands inspection and fleet management audit was done between 23rd September 2019 and 2nd October 2019 at site in Mongla Port. Results will be compiled in the Interim Report. The following ships were inspected:

- "MT Sarathi-2",
- "ML Balaka",
- "MT Shibsha",
- "BLV Malancha",
- "ML Jhnuk",
- "Chalna Pilot-1",
- "ML Anushandani".

During preparation of the Strategic Master Plan for Mongla Port, the Consultant will propose a fleet investment programme which will be required for the future operation of the Port.

4.4.3 Task 2.3 – Definition of Scope of Detailed Hydrological and Geo-Morphological Study & Studies to Prepare for Intervention for River Training Work or other Sustainability of Investments in Mongla Port

4.4.3.1 General

The Consultant will define together with MPA the studies advised to be undertaken / Updated by third parties under separate contracts.

Past studies relating to the improvement of navigability of Mongla Port will be assessed.

For the prevailing morphological behaviour and impact due to the changes of Pussur River its mathematical model may be updated with secondary recent bathymetry data.

For an improved access of Mongla Port a combination of several engineering interventions, e.g. dredging, constricting of a channel at different places, entraining the flooding and ebbing channels in a single channel by guide bunds and tidal basins at suitable locations, will be assessed. A technically feasible, environmentally friendly, economically viable and socially acceptable solution may be suggested.

4.4.3.2 Methodology

1. The navigation charts (see Table 4-5) will be compared with latest available with available historical navigation charts. An understanding of the overall historical bathymetry change can be analysed once the data have been compared. Since the 2011 IWM report data are available for the years 2013 and 2017.

Table 4-5: Available Navigation Charts

Bathymetry Chart Coverage			Bathymetry Charts received from MPA							
			Chart Numbers under different years							
Chart Number	Latitude limit	River reach covered	2005	2006	2007	2008	2009	2010	2013	2017
Chart-1	21° 22'to 21° 50'	Approaches to Pussur River	1	1	1	1	1			
Chart-2	21° 46'to 21° 56'	Hiron Point to Tinkona dwip	2	2						
Chart-3	21° 55'to 22° 04'	Tinkona dwip to Kagaboga khal	3	3		3				
Chart-4	22° 03' to 22° 08'	Kagaboga Khal to Sundarikota Khal	4	4						
Chart-5	22° 07'to 22° 12'	Sundarikota Khal to Cheilabogi khal	5	5	5					
Chart-6	22° 12'to 22° 17'	Mazar point to D'douza point	6	6	6					
Chart-7	22° 17'to 22° 22'	Harbaria to Joymonirmongal	7	7	7	7		7		
Chart-8	22° 22' to 22° 27'	Base creek to Mongla	8	8	8	8		8		
Chart-9	22° 27' to 22° 32'	Mongla to Digraj	9	9	9	9				
Chart-10		Digraj to Chalna								10

2. A comparison of the quantities and the locations of all historic dredging information (see Table 4-6) will be carried out.

Table 4-6: Dredging Quantities

Year	Location	Quantity (m^J)
19779-81	Jetty Front	325,000
1983	Jetty Front	345,000
1984	Confluence	127,000
1985	Jetty Front	62,000
1986	Jetty Front	52,000
1987	Jetty Front	109,000
1988-89	Sabur-Beacon+ Jetty Front Confluence	210,000
1990	Jetty Front	313,000
1991-92	Sabur Beacon, Jetty Front Confluence, Southern Anchorage	3,591,000
1994-95	Southern Anchorage	98,000
1994-95	Jetty Front	232,000
1995-96	Sabur Turning Basin & Confluence	128,000

1996-97	Jetty Front	197,000
1999-00	Jetty Front 5, 6 and 7	180,000
2000-01	Jetty Front 5,8 and 9	204,000
2000-04	Southern Anchorage, Sabur Beacon, Jetty Front, Jetty Approach, Confluence	2,790,000
2003-04	Jetty Front 8 and 9	69,000
2005- till date		
Total		9,032,000

3. The cross section at the draft constraint locations will be analysed based on the newer cross section data from BWDB, see Figure 4-2. The relative shift of the THALWEG will be assessed.

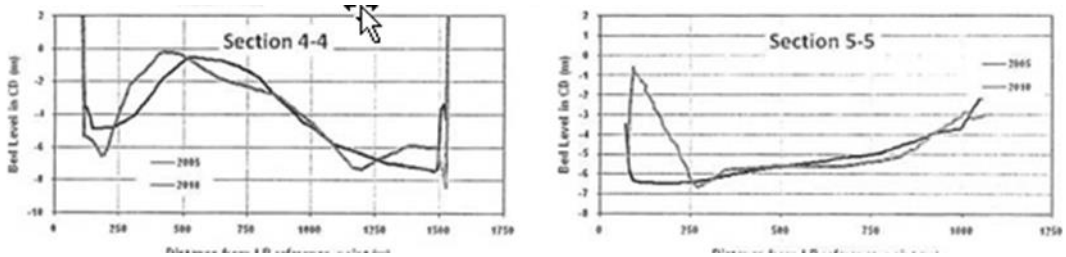


Figure 4-2: Example of Cross Section Data [BWDB]

4. The water line will also be plotted to better understand the high and low tide characteristics of Pussur River.
5. Any available sediment concentration data will be compared with the historical sediment concentration data.
6. Historical aerial imagery will be analysed for any bank shifting.
7. The recommendations of IWM in their 2004 and 2011 reports will be assessed and reviewed based on technical and environmental feasibility.
8. The development and findings of the Mike 21 model in the 2011 IWM report will be analysed and the findings will be assessed. In the light of this information recommendations will be given on the methodology and parameters for any future dredging study assessment and model development.

4.4.3.3 Required Data

The following data still has to be acquired for successful completion of the tasks described in the methodology:

1. Updated bathymetric survey data if available digitally in xyz format
2. Sediment concentration information
3. Any structural design changes of the jetties at Mongla Port
4. Historical dredging information since 2004
5. Future dredging plans
6. Water level data at Hiron Point by MPA

7. Water level and bathymetric data
8. Mike 21 model run files

4.4.4 Task 2.4 – Determination of Design Vessel for Mongla Port

The Consultant proposes to provide a set of design vessels to reflect various logistics and supply chain requirements related to the volumes and types of cargo to be handled or carried as per expected traffic demand and logistics requirements to be served.

The determination of a set of design vessels for Mongla port will depend on the development of traffic demand over time as per scenario expectation and by cargo handling types (see forecasts) on the one hand and on the other hand on the expected level of effort or natural limits to modify nautical accesses by e.g. river engineering or dredging.

4.5 Task 3 – Assessment of Infrastructure in the Port and Intermodal Connectivity

4.5.1 Task 3.1 – Study Existing Legal Documents, Proposed Modifications incl. Port Tariffs etc.

The research for and collection of legal documents has started. Significant information is available in Bengali language only and is in process of translation into English. Initial analysis has started.

4.5.2 Task 3.2 – Study all Modes of Hinterland Transport Connectivity and Suggest Physical and Operational Efficiency Improvements

4.5.2.1 Road

Currently, the only hinterland connection by road is via Khulna. This road is only one lane per direction and is used by all kind of traffic (trucks, busses, cars, tuktuks and rickshaws). Initial observations show that the capacity of this road is reached and additional port traffic (cargo trucks) may lead to traffic jams. Currently, it is not clear whether an extension of this road is planned. This will be investigated during later stages of this Project.

4.5.2.2 Railway

A railway connection to Mongla Port (the so-called Mongla-Khulna Railway) is currently under construction. Inside the port area, the tracks are already prepared, see Figure 4-3.

Figure 4-3: Aerial View of Railway Tracks under Preparation [Google Earth 2019]

It is understood that the railway tracks will be split with one track going towards the ferry at the very South of the Mongla peninsula while the other track will enter the existing terminal which is under operation of MPA.

However, layout plans shared by MPA sometimes show different layout of the railway tracks. This will be investigated further during later stages of the Project.

4.5.3 Task 3.3 – Review condition of existing land use plan, building, roads, jetties and other maritime and land side infrastructures and suggest repair, modification demolition or new as appropriate

4.5.3.1 Port Layout

The land under management and ownership of MPA is not restricted to the peninsula between Pussur and Mongla Nulla river. Moreover, the Roosevelt Jetty in Khulna, see Figure 4-4, the area of Old Mongla to the South of Mongla Nulla, see Figure 4-5 and a pilot station at Hiron Point near the Bay of Bengal, see Figure 4-6, are also below MPA's management. Besides, MPA is responsible for the navigation channel from the Bay of Bengal to Mongla Port including two anchorages.

Figure 4-4: Roosevelt Jetty in Khulna [Google Earth 2019]

Figure 4-5: Old Mongla [Google Earth 2019]

Figure 4-6: Hiron Point at the Bay of Bengal [Google Earth 2019]

Several different layout plans for Mongla Port were shown / handed over to the Consultant, see Figure 4-7.

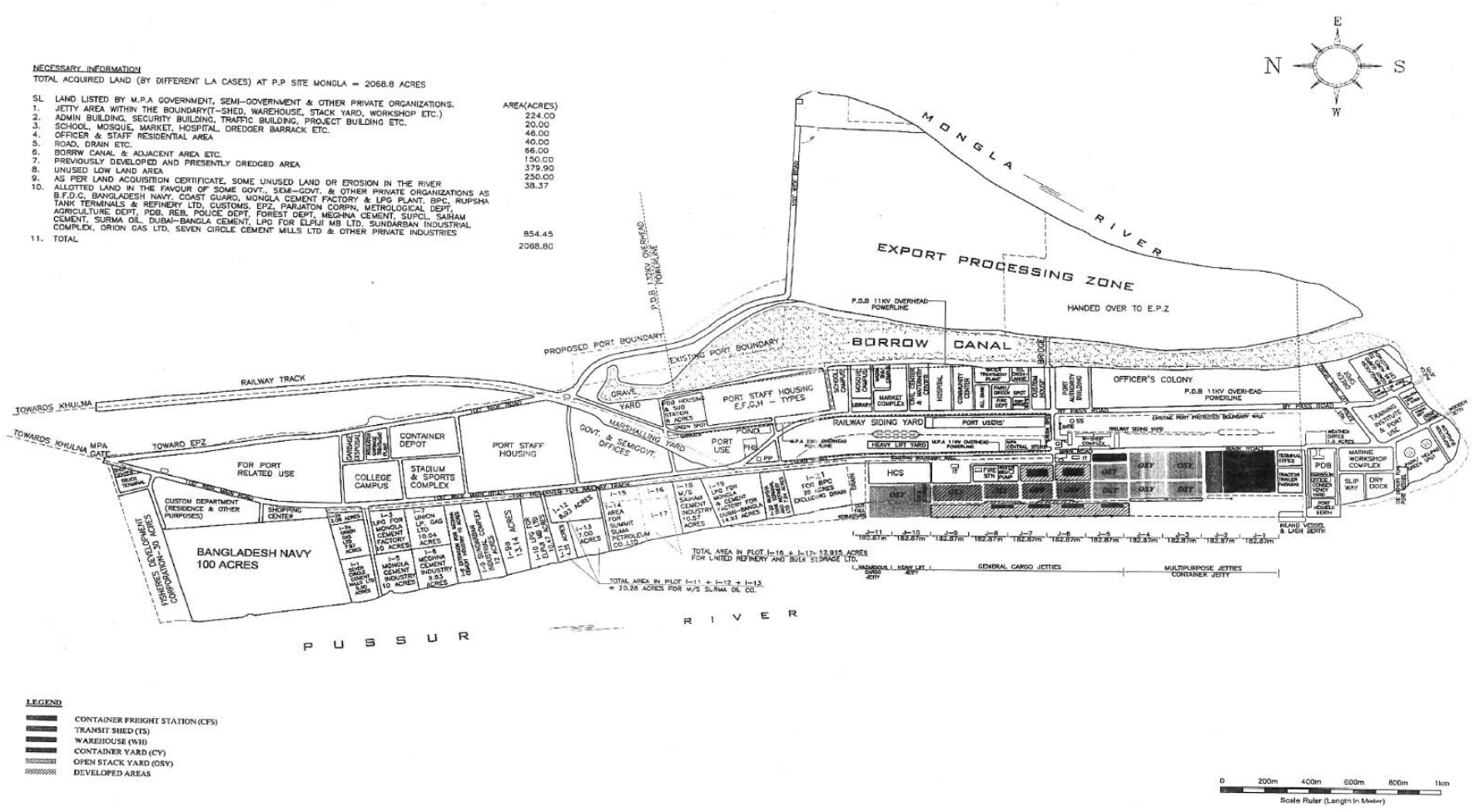


Figure 4-7: Layout Plan of Mongla Port [Mongla Port Authority]

However, none of them showed the actual situation but rather proposed future layouts from the past. Besides, only one CAD file with georeferenced data was shared.

Based on the available information, the Consultant developed a rough layout plan indicating the current land usage, see Figure 4-8, which will be further substantiated and detailed during this Project. The Consultant needs further assistance from MPA to get all required data regarding the current land use plan. With the information available as of now, only a very inaccurate layout plan can be prepared.

Figure 4-8: Actual Layout Plan of Mongla Port [Google Earth 2019 / Consultant]

It was observed that a large part of the port land is currently leased to private operators on a long-term basis. Therefore, the development options for Mongla Port have to be restricted to land under full control of MPA.

4.5.3.2 Existing Infrastructure

Mongla

As not all the port's land at Mongla is operated by MPA, also the existing port infrastructure is mostly owned by private companies (e.g. cement factories and LNG handlers) or other authorities (e.g. the Bangladesh Navy). MPA operates 5 jetties (No. 5 to 9) each with a length of approx. 182.87 m.

These jetties were built in the 1970s as open piled quay walls with tubular steel piles and a concrete deck. As-built drawings were only made available on paper.

The jetties were investigated in 2015 and 2016 by the Consultancy Research and Testing Services (CRTS) of the Khulna University of Engineering and Technology. The following conclusion regarding the condition of the quay structures were reached:

"Considering the age of the structure, induced corrosion and distress/cracks in several locations of the structure, it is recommended that the load management plan mentioned above must be followed strictly and the proposed rehabilitation works should be completed."

The Consultant inspected the jetties, also from underneath, and found that in general the physical condition remains unchanged, see Figure 4-9.

Figure 4-9: Underside of Quay Structure [Consultant]

While the pile caps and transversal beams are mostly in a rather good conditions, the crane rail beams at the front of the quay structure seem to be more damaged, see Figure 4-10.

From the observations it has to be concluded that none of the rehabilitation works proposed by CRTS were undertaken in the meantime.

Figure 4-10: Damage of Beam [Consultant]

Khulna

Roosevelt Jetty in Khulna comprises a concrete platform with 5 pontoons. The concrete platform was recently rehabilitated, but the pontoons are mostly in a critical condition. Some of the dolphins on which they are moored are no longer stable, see Figure 4-11. Only limited warehouse capacity is available so that most good are stored outside under tarpaulins. Besides, unloading of vessels is done manually.

Figure 4-11: Collapsing Dolphin at Roosevelt Jetty [Consultant]

It has to be concluded that, in order to keep Roosevelt Jetty operational, considerable investments into the marine and land infrastructure are required.

The condition of the quay structures and other infrastructure both in Mongla and Khulna will be further analysed during later stages of the Project. This will also include utilities such as electricity, fresh water and sewage systems.

4.5.4 Task 3.4 – Undertake a Preliminary Environmental Assessment, Social Assessment and Assessment of the Potential Need for Land Acquisition and Resettlement

4.5.4.1 General

According to the ToR the Master Plan for Mongla Port study needs to undertake a preliminary environmental assessment, social assessment, and assessment of the potential need for land acquisition and resettlement. In this context, the study will follow the IFC's policies and procedures in preparation of an Initial Environmental Assessment Study along with Bangladesh legal and policy framework for environment, land acquisition and resettlement issues. This chapter provides an overview of how the assessment of environmental impact, assessment of social impact; and assessment of land acquisition and resettlement may take place during the study.

4.5.4.2 Approach and Methodology

Approach

This section details the methods to be applied in the collection and analysis of the primary and secondary data used in this report. It discusses the methods of impact assessment that will be applied in the Environmental Assessment as well as the methods of development of mitigation and management measures.

Data collection, both primary and secondary, will be concentrated around the immediate Project area. However, to be consistent with the DoE requirements, information gathering will also be undertaken within the wider study area that approximated a 5km radius from the Project site (defined as the 'Project area'). This wider area of study will be determined on a case by case basis, in some cases a greater area will be considered and assessed, and in other cases a smaller area will be assessed. These distinctions will be made using expert judgment and based on a scientific foundation to determine the potential area of influence for certain Project aspects.

Environmental Data Collection and Analysis

This section describes the methods and techniques that will be used to investigate and describe the potential environmental risks of the Project. In order to establish the baseline biophysical conditions within the Project area, relevant secondary data will be identified and reviewed, a comprehensive field visit program will be established, and several specialist studies will be carried out. This include the gathering of secondary data from various sources including from discussions with groups, discussion with individuals, Government sources, Mongla Port Authorities and from locally active NGOs.

The assessment of potential environmental impacts requires detailed information on all aspects of the habitats, biodiversity and physical aspects of the Project area. It also requires development of an understanding of how the existing environmental processes work together to form a complex ecosystem. This information can be used to identify potential changes to the environment that may occur because of the Project, and to propose measures to prevent, mitigate or manage potential environmental impacts.

The potential for environmental impacts will be considered for envisaged activities during all stages of the proposed Project. This includes site establishment, drilling operations and site decommissioning and demobilization stages.

Secondary Environmental Data

Secondary data collection intends to provide a full review of the relevant physical, ecological and legal information centred on the Project area and Project aspects. Titles of some of the main literature will be reviewed and applied during the course of the Environmental Assessment are listed below. These references are not yet fully completed at this inception stage and will be expanded in the later stages.

Acts and Regulations of Bangladesh

- The Environment Conservation Act, 1995 (and Amendments);
- The Environmental Conservation Rules (ECR), 1997;
- The Environmental Court Act, 2000 (and Amendments);
- Petroleum Act (1974);
- East Bengal Protection and Conservation of Fish Act (1950);
- The Bangladesh Wildlife (Preservation) Order, 1973 (Amended in 1994);

- National Conservation Strategy (NCS), 1992;
- National Environmental Management Plan (NEMAP), 1995;
- Fifth, Five Years Plan (SDNP) 1997-2002;
- The Protection and conservation of Fish Rules (1985);
- Environment Policy, 1992;
- National Water Policy, 2001
- National Water Management Plan 2001 (Approved in 2004)
- National Energy Policy, 1995; and
- River Dredging Conditions of BIWTA, 2009.
- Coastal Zone Policy, 2005
- Coastal Development Strategy, 2006
- National Fisheries Policy, 1998
- The Mongla Port Authority Ordinance 1976 and The Mongla Port Authority (Amendment) Ordinance 1982 & 1987
- The Mongla Port Authority (Amendment) Act 1995
- Inland Shipping Ordinance 1976 and Inland Shipping (Amendment) Act 1990
- The EIA Guidelines for Industry (1997)

International Conventions, Treaties and Protocols

- The Convention on Biological Diversity, 1992;
- The Convention on the Conservation of Migratory Species of Wild Animals, 1979;
- Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar 1971 (Ramsar Convention);
- United Nations Framework for Convention on Climate Change, 1992; and
- United Nations Convention to Combat Desertification, 1994.

Project relevancy of the Environmental Acts, Laws and Rules

The summary of the Environmental Policy, Acts and Treaties as enunciated by the Government of Bangladesh is presented in the following Table 4-7. Updates of these Acts, rules and regulations and their connection to project will be further analysed in later stages of this project.

Table 4-7: International treaties, GoB Environmental Policy, Acts and Rules and their project relevancy

Environmental Policy, Regulations and Rules	Relevancy to the Master Plan
International Treaties --- On Protection of birds, Paris (1950), Convention on oil pollution damage (Brussels)(1969), Ramsar Convention (1971), World Cultural and Natural Heritage (Paris) (1973); CITES Convention (Washington) (1973); Bonn Convention (1979); Prevention and Control of Occupational hazards (Geneva) (1974); Occupational hazards due to air pollution, noise & vibration (Geneva) (1977); Occupational safety and health in working environment (Geneva); Occupational Health Services (Geneva) (1985); Vienna convention (1985); Civil liability on transport of dangerous goods (Geneva) (1989); Convention on oil pollution (London) (1990); London Protocol (1990); UN framework convention on climate change (Rio de Janeiro) (1992); Convention on Biological Diversity (Rio de Janeiro) (1992); International Convention on Climate Changes (Kyoto Protocol) (1997); Protocol on biological safety; (Cartagena protocol) (2000)	The EMP to be designed for the project will handle some of the environmental parameters covered in these treaties.
National environmental policy, 1992 and National Environmental Management Action Plan (NEMAP), 1995	The project requires environmental management within this policy framework
Environmental Conservation Act, 1995 and Environmental Conservation Rules, 1997	Ecologically critical areas and environmental quality standards are set here
Relevant environmental legislations-Environmental Court Act, 2005; The Vehicle Act, 1927; The Removal of Wrecks and Obstructions in inland Navigable Water Ways Rules 1973; Water Supply and Sanitation Act, 1996; The Forest Act, 1927 and subsequent amendments in 1982 and 1989; The Private Forests Ordinance Act, 1959; Bangladesh Wild Life (Preservation) Act, 1974; The Protection and Conservation of Fish Act 1950 subsequent amendments in 1982; The Antiquities Act 1968; The Acquisition and Requisition of Immovable Property Ordinance 2017; Bangladesh Labour Law, 2015	All of these environmental legislations have relevancy with the project implementation in relation to the preparation of Environmental Management plan for addressing types of environmental issues.
National strategy for waste management and waste dumping site selection and approval process	Construction related waste management for all civil works
Relevant Major National Policy—National Land Transport Policy; The National Water Policy (1999); National Land Use Policy (2001); National Forest Policy and Forest Sector Review (1994,2005); National Biodiversity Strategy and Action plan (2004); National Fisheries Policy (1998) and	Mitigation measures to be designed for adverse Impacts must ensure that they are not against these

Environmental Policy, Regulations and Rules	Relevancy to the Master Plan
Inland Capture Fisheries Strategy (2004); National Agricultural Policy, 1999; Draft Wetland Policy, 1998; Bangladesh Climate - Change Strategy and Action Plan (2008)	policies, but to promote them.
Occupational Health and Safety Laws and Rules—Bangladesh Labour Act 2006; Labour Relations under Labour Laws, 1996 (Revisions to scattered Acts and Ordinances to formulate a unified code); Public Health Emergency Provisions) Ordinance, 1994; The Employees State Insurance Act, 1948; Maternity Benefit Act, 1950	Construction workers need to have occupational health and safety facilities according to these laws and rules

Impact Assessment Methods

The Impact Assessment process identifies the potential environmental impacts that may result from the implementation of the Project. Both positive and negative potential impacts for the Project will identified through the application of standardized international best practice methods of environmental impact assessment. Some of the methods of environmental impact assessment utilized include:

- Ad-hoc methods;
- Application of expert judgment;
- Risk based approach including residual risk assessment;
- Systematic and sequential approaches; and
- Spatial analysis methods (including GIS).

Further to these methods, potential impacts will be assessed by drawing from the experiences and opinions of local people, important stakeholders such as Government agencies and through the review of environmental literature and data collected relevant to the Project area.

The principal method for assessing the potential impacts of the Project on the biophysical and social environments utilized for this assessment will be risk assessment. Details on the risk assessment process and how it can be utilized to identify impacts, the likelihood and consequence of the actions and implement appropriate mitigation measures to reduce any potential impacts to an acceptable level is detailed within the following sections.

Risk Assessment

Relevant environmental issues will be taken from consultation and further investigated within the impact assessment study utilizing a risk-based assessment methodology. Risk assessment is a process that supports the analysis of potential negative impacts that may result from implementation of a Project. It provides a means of categorizing how potential impacts are to occur, and of categorizing what the potential consequences might be if impacts were to occur. Risk assessment is the primary method of impact assessment that is applied in this EIA.

Risk assessment will be utilized in this study as the primary tool to support environmental and socio-economic impact assessments. It provides a means of categorizing the frequency and

magnitude of potential impacts and provides a basis for the application of different degrees of mitigation and management measures.

By successfully categorizing the likelihood and consequence of potential impacts, direction can be given to those potential impacts that should be subjected to the most rigorous attention. Such impacts are designated as potentially significant impacts. Alternatively, potential impacts that are shown to be infrequent and a low magnitude of consequence can be treated as less significant. Figure 4-12 presents a schematic of the risk assessment process adopted for the developed of this EIA.

All socio-economic and environmental impact assessment methods, including risk assessment, incorporate a degree of inherent uncertainty. This is largely due to the unavoidable variations and uncertainties characterized by natural, social and economic systems. However, the use of risk assessment allows analysis of risks (or potential impacts) to be classified on an empirical scale. Such a scale is useful because it limits the inherent subjective and interpretive nature of impact assessment. Further accuracy in risk assessment results are driven by the workshop approach to hazard categorization and through the application of experienced expert knowledge.

Risk Prioritization Matrix

The risk prioritization matrix provided in Table 4-8 has been developed specifically for use in this Impact Assessment Study. The matrix has been prepared to be generally consistent with FAO, Leopold Matrix, and RIAM standards of risk analysis and draws from the experiences of social and environmental professionals from within Bangladesh and internationally. The risk prioritization matrix is the primary tool by which the risk assessment has been undertaken. It forms the basis of the proposed study.

In order to provide confidence to the risk assessment methods, category descriptions have been developed to guide the determination of risk likelihood and risk consequence. The category descriptions provide a means of regulating and standardizing the categorization of risk likelihoods and risk consequences, which is typically a subjective undertaking. In this way, the risk prioritization matrix removes some of the subjective and interpretive nature that is endemic to risk assessment and impact assessment processes. Increased confidence can be placed in the assessment outcomes as a result.

Ultimately the risk prioritization matrix determines an empirical value to each risk. This value is related to the specific impact's potential significance. Potential significance of an impact is then able to be assigned an empirical value which allows the ranking of different potential impacts despite the wide range of social, economic and environmental aspects to which they relate.

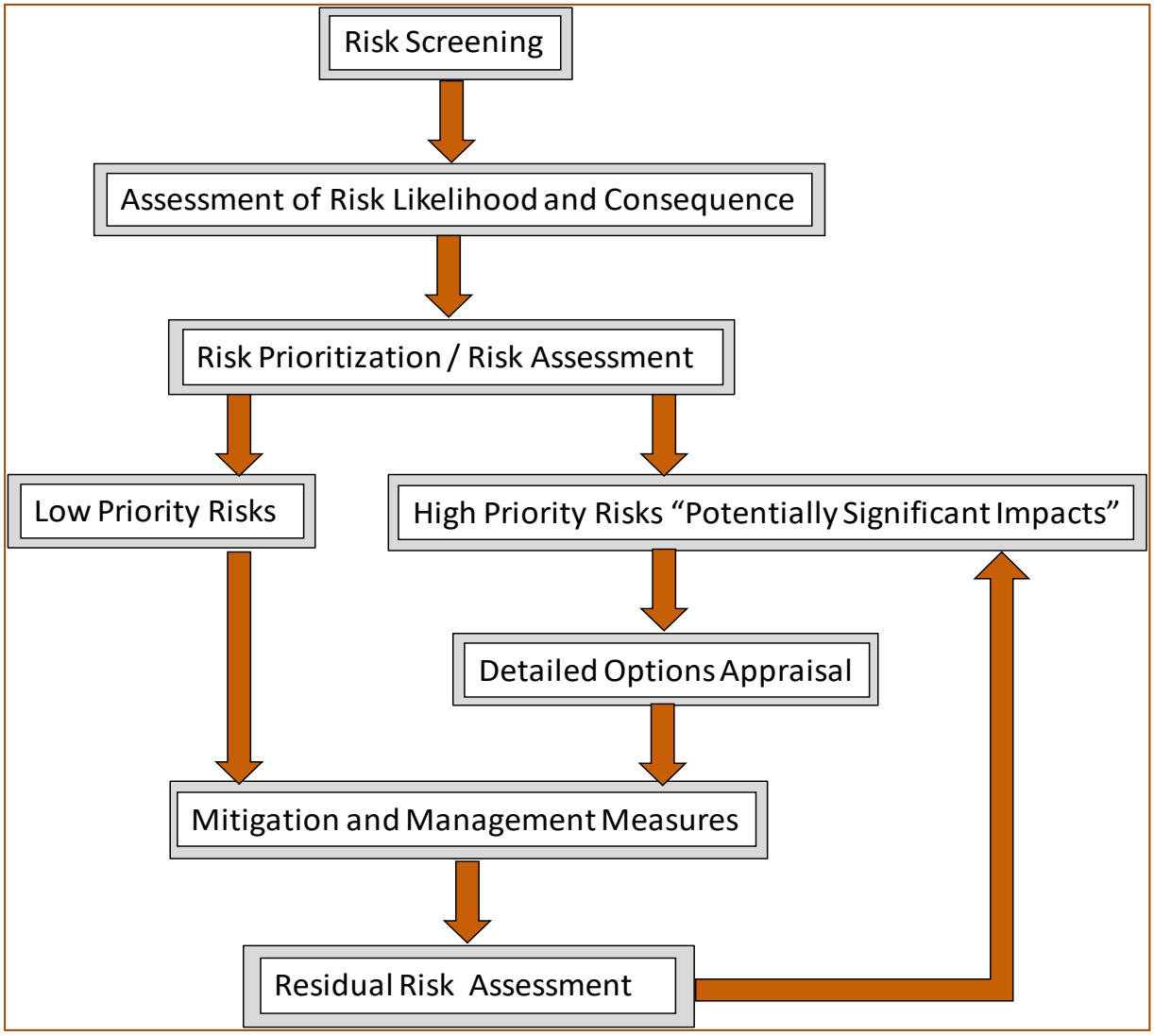


Figure 4-12: Risk assessment process that might be adopted for the proposed study

Table 4-8: Modified Leopold Matrix adopted for this Study

	CONSEQUENCE								
LIKELIHOODS	(Highest possible score can be 36, which is a combination of Catastrophic, and **Likely** and lowest possible score can be 1, which is combination of **Incidental** and **Rare.** The scores are converted into a scale of 10 for easier interpretation and a colour code is assigned to better visual representation. **Table** later explains the colour code. Scores are presented in parentheses while scores converted into 10 are presented after the parentheses)	**Socio-economic Consequence Descriptions** (Without application of mitigation and management measures)	**Social / Economic**	People largely unaffected	Temporary and localized effects on peoples' livelihoods	Widespread and temporary, or, localized and permanent effects on peoples' livelihoods	Widespread and temporary, or, localized and permanent effects on livelihood and/or displacement of people	Widespread and permanent effects on livelihood and/or displacement of people	Entire villages, communities or groups are displaced and livelihoods are affected
		Health Consequence Descriptions (Without application of mitigation and management measures)	**Health**	No impact	Illness or adverse effect with limited or no impacts on ability to function and medical treatment required is limited or not necessary.	Illness or adverse effects with mild to moderate functional impairment requiring medical treatment.	Serious illness or severe adverse health effect requiring a high level of medical treatment or management.	1-10 serious illness or chronic exposure resulting in fatality or significant life shortening effects.	*>10* serious illness or chronic exposure resulting in fatality or significant life shortening effects.
		Environmental Consequence Descriptions (Without application of mitigation and management measures)	**Environment**	Impacts such as localized or short-term effects on habitat, species or environmental media.	Localized, long term degradation of sensitive habitat or widespread, short-term impacts to habitat, species or environmental media	Impacts such as localized but irreversible habitat loss or widespread, long-term effects on habitat, species or environmental media	Widespread and persistent changes in habitat, species or environmental media	Persistent reduction in ecosystem function on a landscape scale or significant disruption of a sensitive species.	Loss of a significant portion of a valued species or loss of effective ecosystem function on a landscape scale.
			Ranking	Incidental	Minor	Moderate	Major	Severe	Catastrophic
	Likelihood Descriptions (Without application of mitigation and management measures)	**Ranking**	Index	1	2	3	4	5	6
	Rare or unheard of	Rare	1	**(1) =1**	**(2) =1**	**(3) =1**	**(4) =2**	**(5) =2**	**(6) = 2**
	Has occurred once or twice within industry	Remote	2	**(2) =1**	**(4) =2**	**(6) =2**	**(8) =3**	**(10) =3**	**(12) = 4**
	Reasonable to expect that the consequence will not occur during this project though has occurred several times in industry	Unlikely	3	**(3) =1**	**(6) =2**	**(9) =3**	**(12) =4**	**(15) =5**	**(18) =5**
	Exceptional conditions may allow consequences to occur within the project lifetime	Seldom	4	**(4) =2**	**(8) =3**	**(12) =4**	**(16) =5**	**(20) =6**	**(24) =7**
	Conditions may allow the consequence to occur during the project lifetime, or the event has occurred within similar projects	Occasional	5	**(5) =2**	**(10) =3**	**(15) =5**	**(20) =6**	**(25) =7**	**(30) =9**

	Consequence can reasonably be expected to occur in life the project	Likely	6	(6) =2	(12) =4	(18) =5	(24) =7	(30) =9	(36) =10

Table 4-9: Explanation of the Colour Code that is to be used for this Study

1: Low risk, mitigations may be applied	2: Low risk, mitigations may be applied	3: Low risk, mitigations may be applied	4: Low risk, mitigations may be applied	5: Risk is tolerable if reasonable mitigations are in place	6: Further risk reduction is required	7: Risks are unacceptably high and mitigations must be applied	8: Risks are unacceptably high and mitigations must be applied	9: Risks are unacceptably high and mitigations must be applied	10: Risks are unacceptably high and mitigations must be applied

Methods for Mitigation and Management

Mitigation measures are the means by which potential negative impacts associated with the Project may be avoided or reduced to appropriate levels through modifications to the design, construction methods or context of the Project. In real terms, 'reducing negative impacts to an appropriate level' means that the potential impacts are reduced to a point where they no longer pose a significant threat to the current or future status of the surrounding natural environment, biodiversity value, and social or economic environment of the region.

4.5.4.3 Procedure of Environmental Clearance

Categorization

Under the Environmental Conservation Rules (1997) a classification system was established for development projects and industries on the basis of the location, the size and the severity of potential pollution. There are four categories of projects: Green, Orange A, Orange B and Red with respectively No, Minor, Medium and Severe Environmental Impacts. For the Red category of projects, a full EIA is required. Engineering works: capital above ten (10) hundred thousand taka in serial no. 60 and construction of all regional, national and international highways, railway and port projects in serial no. 67 fall in the 'red category'. Depend on the size and length of the projects which would be proposed in the Master Plan, IEE or EIA need to be conducted. However, the master plan will conduct IEE for selected projects and would be documented in the master plan. The master plan will recommend for conducting a full-scale EIA for 'Red Category' projects. The EIA should include the prediction, evaluation and mitigation of environmental impacts caused, based on the characteristics of project, and an Environmental Management Plan (EMP) shall be prepared. The approval of the EIA and EMP is required before submitting an application for an Environmental Clearance Certificate (ECC). The procedure for 'red category' projects is shown in Figure 4-13: Procedure of obtaining an ECC from DoE.

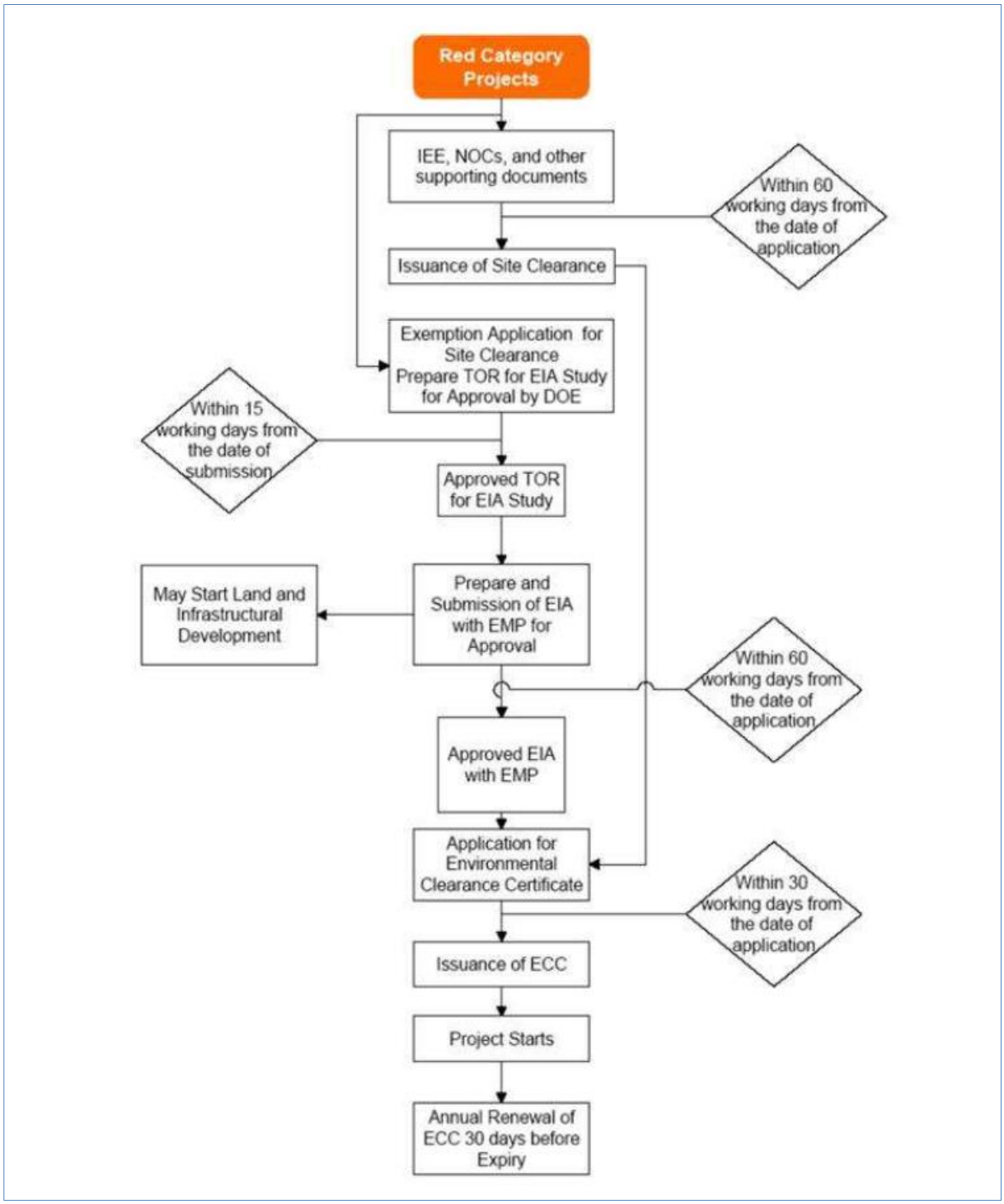


Figure 4-13: Procedure of obtaining an ECC from DoE

4.5.4.4 Preliminary baseline Environment

Introduction

Development of a detailed and comprehensive description of the existing environment is a critical step in impact assessment. The description of the existing environment provides the

baseline case for the environmental, social and economic aspects that could be influenced by the Project. Without a reliable and detailed baseline, any determination of impacts becomes difficult or unjustifiable.

However, at this inception, only site visit impressions of the existing environment have been developed. Detailed site visit and baseline information will be collected on due course of the project.

Physical Environment

Climate

The project area lies in the South-central climate zone of the country and shows tropical monsoon climate with three prominent seasons – summer (Pre-monsoon) - March to May; Rainy season (monsoon) - June to October; and winter season - November to February. Seasonal variation of rainfall, temperature, and humidity is the noteworthy aspect of the climate. The rainy season is hot and humid, and characterized by heavy rainfall, tropical depression and cyclone. The winter is predominately cool and dry. The summer is hot and dry interrupted by occasional heavy rainfall. Gentle north/north-westerly winds with occasional violent thunderstorms called northwester during summer and southerly wind with occasional cyclonic storm during monsoon are prominent wind characteristics of the region. Meteorological condition has been established using data on different metrological parameters accumulated from nearby Mongla station of the Bangladesh Meteorological Department. Summary of the analysis of metrological parameters are given in the following sections. See Figure 4-14 for 2018 figures of met data from Mongla meteorological station.

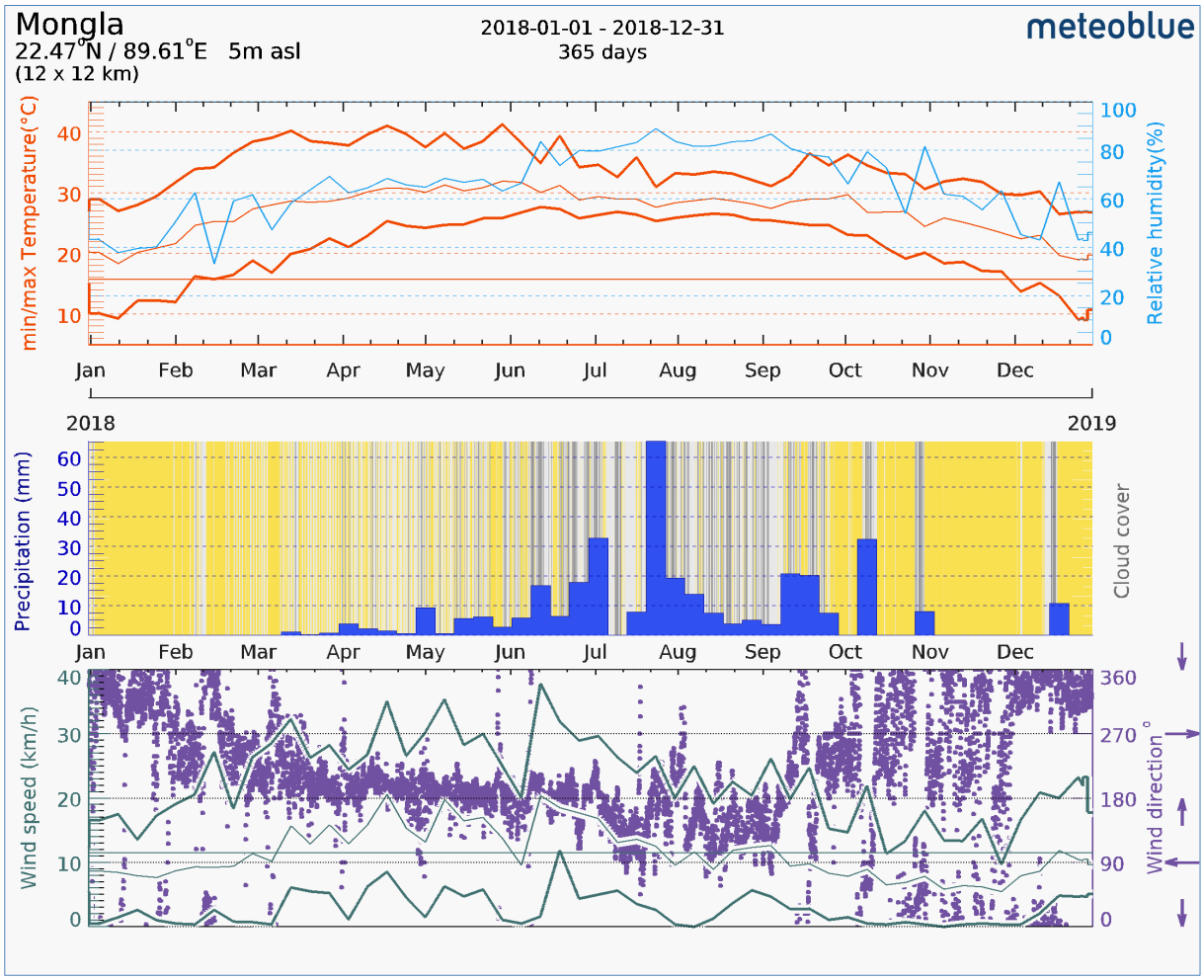


Figure 4-14: 2018 met data of Mongla meteorological station [BMD, modelled by: meteoblue.com]

Seasonal variation of the temperature is distinct but does not vary largely. Monthly maximum temperature varies from 23.3^0 to 36.5^0 C while April is the warmest month and the monthly minimum temperature varies in the range of 12.2^{o}C to 27.8^{0}C while January is the coldest month. The highest maximum temperature ever recorded within the last 20 years is 36.57^{0}C during May 1995 and the lowest ever recorded minimum temperature is 12.21^{0}C during January 2003.

Rainy season is very prominent in this region like other coastal areas of the country. The annual average rainfall is1946 mm/yr as per last 18 years recorded data of Mongla weather station. Since 1991, maximum monthly rainfall ever recorded is 983 mm in the month of June during 2002 and little or no rain during December. Average Monthly Normal Rainfall for Mongla is given in Table 4-10.

Table 4-10: Rainfall Distribution in Mongla over the Year [BMD]

No.	Month	Rainfall (mm)
1	January	16.9
2	February	35.9
3	March	58.1
4	April	72.4
5	May	180.9
6	June	323.8
7	July	342.7
8	August	344.4
9	September	313.0
10	October	149.9
11	November	48.0
12	December	1.6

Surface hydrology

Pussur is the major river flowing in the study area. The flow of the Pussur River is dominated by the Atai and Bhairab rivers. The wet season brings extra volume of water from the Ganges through Gorai- Nabaganga-Atai into the system. According to the most recent study of river phenomenon over the past 38 years establishes the increased sediment rates due to upstream river diversions specifically through into Pussur River south of Economic Zone (EZ) near Mongla Port. Gona (a small river) also a tributary of river Mongla flowing west end of EZ drains into Mongla River beyond EPZ.

Disasters

The project site is located in SW part of the coastal areas of Bangladesh. Numbers of cyclones have struck this area in past and has cause severe damages at few times. As per the cyclone risk zone map of coastal area of Bangladesh, project site is located in the wind risk zone of Bangladesh where no tidal surge is recorded. Cyclone risk zone and track map of Bangladesh is given in Figures below. Sixteen cyclones are recorded in last 25 years that had hit the coastal areas of Bangladesh. Most recent devastating cyclone is Aila which had hit this area in 2009.

Navigation

Both Mongla and Pussur River are navigable throughout the year. Navigation in Mongla River also includes localized transportation of men and material from one bank to other. Major navigation takes place in Pussur River. Nearest Mongla port, the second largest seaport in country, consists of shore-based facilities and a sheltered anchorage in the Pussur river. Navigation depth in Pussur River varies from 4 m (Near Mongla Port) to 35 m (Near Tinkona Dweep).

Land types

Land types are classified depending upon the depth of inundation during monsoon season due to normal flooding in an average year. SRDI has made the land type classification into five types, i.e. High land (Above flood level), Medium highland (Flooding depth 0-90 cm), Medium lowland (Flooding depth 90-180 cm), Lowland (Flooding depth 90-270 cm) and very lowland

(Flooding depth >270 cm). Land type classification based on flooding during Monson Season by SRDI is given below in Table 4-11.

Table 4-11: Land Types in the Project Area [SRDI]

Class	Definition	Flood Depth	Frequency
F0	Highland	0-30 cm	Non flooded to intermittent
F1	Medium Highland	30-90 cm	Seasonal
F2	Medium Lowland	90-180 cm	Seasonal
F3	Lowland	180-270 cm	Seasonal, but remains wet in early dry
F4	Very Lowland	> 270 cm	Seasonal but remains wet in most of the dry season

Soils

According to the FAO/UNDP (1988) classification, the project location falls under Acid Sulphate soil and peat soil (see Figure 4-15). Acid Sulphate soils Occur predominantly on the Chittagong coastal plain and in minor areas of the Ganges tidal floodplain. These soils contain sulphidic material, which turns extremely acid if exposed to air. The soils, which are under Mangrove Forest and flooded by saline tidal water are finely stratified soft muddy sediments. But where it has been embanked to prevent flooding with saline water, the soils of these areas have developed profiles similar to non-calcareous grey and dark grey floodplain soils with extremely acidic horizon. They are either Thionic Fluvisols or Thionic Gleysols.

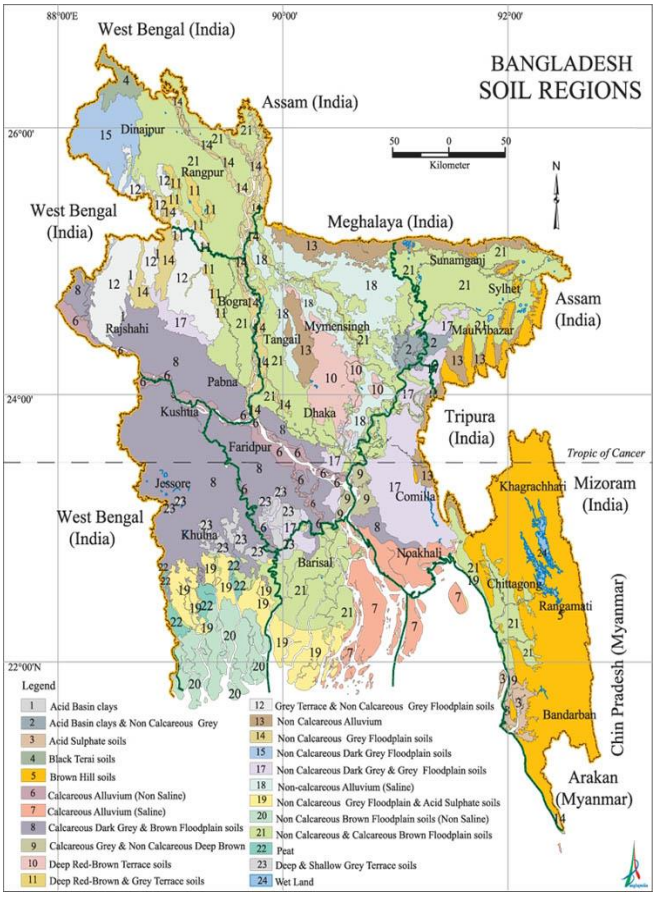


Figure 4-15: Soil classification and distribution in Bangladesh. The project site falls in category 22 [FAO/UNDP 1988]

Biological environment

The section mainly describes the preliminary assessment of the floral and faunal diversity of Project area. A wide variety of wildlife, fish, as well as plant species are available in the project area. The area is one of the most important bio-habitats of Bangladesh.

Flora

Figure 4-16: Typical strip of mangrove in the project area [Consultant]

The nearby settlement and river side area is enriched with diversified terrestrial flora, mainly coconut (Cocos nucifera), betel, nut/supari (Areca catechu), mango (Mangifera indica), black berry/jam (Syzygium cumini), babla (Acacia nilotica), koroi (Albizia procera), chattim (Alstonia scholaris), kadam (Anthocephallus chinensis), nim (Azadirechta indica), sishoo kath (Dalbergia sisoo), krishnachura (Delonix regia), mandar (Erythrina varigata), simul (Bombax ceiba), banyan/bot (Ficus benghalensis), assawath (Ficus religiosa), banana (Musa sapiantum), rain tree (Samanea saman), mehagoni (Swietania mehagoni), arjun (Terminalia arjunai) and pitali (Trewia polycarpa) are commonly found terrestrial flora. The area is predominantly mangrove. A typical strip of mangrove of the area is given in Figure 4-16.

Fauna

Northern parts of project area have villages that support varieties of terrestrial wildlife. Common wildlife in the area is black drongo- Dicrurus macrocercus, red-vented bulbul - Pycnonotus cafer, tailor bird- Orthotomus sutorius, small Indian mongoose- Hervested auropunctatus et4. Central parts of project area have been degraded due to shrimp culture, and as a result wildlife diversity in this region is not significant. It appears that species such as little cormorant – Phalacrocorax niger, pond heron- Ardeola grayii, skipper frog- Euphlyctis cyanophlyctis have managed to adjust with this altered habitat.

The southern part of project area is very rich in faunal diversity. Burrowing animals used dry areas of Project area as a nesting and breeding ground. Homestead bio-habitat of Project area is rich and able to produce plenty of food that invites wildlife to visit and stay in the area for

shelter, food, nesting and breeding. Agricultural habitat is preferred by paddy-field pipit- Anthus rufulus, black drongo- Dicrurus macrocercus, lesser bandicoot- Bandicota bengalensis etc.

Fantail Snipe- Gallinago gallinago, Little Ringed Plover- Charadrius dubius etc. are local migratory birds and they prefer the shore areas to stay, feed and breed. Monitor Lizard, mongoose, snakes, frogs etc. prefer marginal aquatic areas of Project area.

Agriculture

Some local varieties of rice have been cultivated in freshwater shrimp culture regions. Other species like chilli (Capsicum frutescens), brinjal (Solanum melongena), potato (Solanum tuberosum), tomato (Lycopersicon lycopersicum), ladies finger/dheros (Abelmoschus esculentus), puishak (Basella alba), sugarcane (Saccharum officinarum), jute (Corchorus capsularis) and sesame/til (Sesamum indicum) are also commonly grown crops in this block. Some grasses like Cynodon dactylon, Axonopus compressus, Dactyloctenium aegipticum, Eragrostis tenella, Cyperus kyllinga etc. are commonly found in cultivated field and on the divider land of cultivated fields.

Fisheries

Figure 4-17: Typical rice field in the project area [Consultant]

The dynamic network of Pussur river systems of this area connects fresh water fish habitats with brackish water habitats and maintains biological balance of the major groups of fishes. It offers the route for fish migration for both anadromus and catadromus fishes. The fishes use the Sundarbans as a nursery, breeding and feeding ground and return to the sea or freshwater. Fishes like Khorsula (Mugil corsula), Gulsha Tengra, Rui, Catla, Shol, Taki, Pungus Tengra, Shing, Magur, Koi, Puti, Datina (Pomadasys spp.), Bagda (Penaeus monodon) etc are very

common in these areas. A number of fish species spend most of their life stages outside the Sundarbans but come to breed here. These types of fishes are Gulsha Tengra, Poma, Phesa (Setipinna spp.), Pungus, Golda, Topshi (Polynemus paradiseus), Parsha, Chamua Chingri, etc. depending on ichthyoplankton concentration due to reduced salinity. Marine fishes like Ghagot (Tachysurus jella), Apula (Osteogeneisus militaris), Lakhya (Polynemus indicus) and Tailla (Polynemus Tetradactylus) are also present in this area. Fishes that use the Sundarbans as both nursery and spawning ground are Gulsha Tengra, and some other species. Many marine fishes come to the Sundarbans only for feeding, as this area is rich in food organisms. This type of fishes are Chaka Chingri, Chali Chingri, Motka Chingri, Tiger Chingri, Gura Chingri (Leander stylifera), Begi Ilish (Tenualosa ilisha), Rupchanda, Gang Thurina, Boiragi, Potka, Shapla Pata, Kamot, Tulardati (Silago domina), Pokki, Pankha, Baim, Churi (Lepturacunthas savale), Lottya (Harpadon neherius), Kaldi, Korina, etc.

Figure 4-18: Typical capture fishery (left) and gher system (right) in the project area [Consultant]

Agro-ecological zones

There are 30 Agro-Ecological Zones in Bangladesh. This 30 AEZ are sub divided into 88 agro-ecological sub regions (see Figure 4-19). Again, these are divided into 535 agro-ecological units. Agro-Ecological Zones of Bangladesh determined on basis of some definite characteristics and they are physiography (it is defined as soil parent materials and land forms of a particular area), hydrology (it is determined on the basis of water holding capacity of soil and the water level of agricultural land), cropping pattern (it is done on the basis of Length of Rabi and kharif season and major and minor agricultural crops which are cultivated in a particular area), season (it is done on the basis of the Depth and duration of seasonal flooding in a particular area), soil types and tidal activity The project location falls into Ganges Tidal Floodplain.

Ganges Tidal Floodplain (17,066 sq km): This region occupies an extensive area of tidal floodplain land in the southwest of the country. The greater part of this region has smooth relief having large areas of salinity. Riverbanks generally stand about a meter or less above the level of adjoining basins. Non-calcareous grey floodplain soil is the major component of general soil types. Acid Sulphate soil also occupies a significant part of the area, where it is extremely acidic during the dry season. Most of the topsoil are acidic and subsoils are neutral to mildly alkaline. Soils of the Sundarbans area are alkaline. General fertility level is high, with medium to high organic matter content.

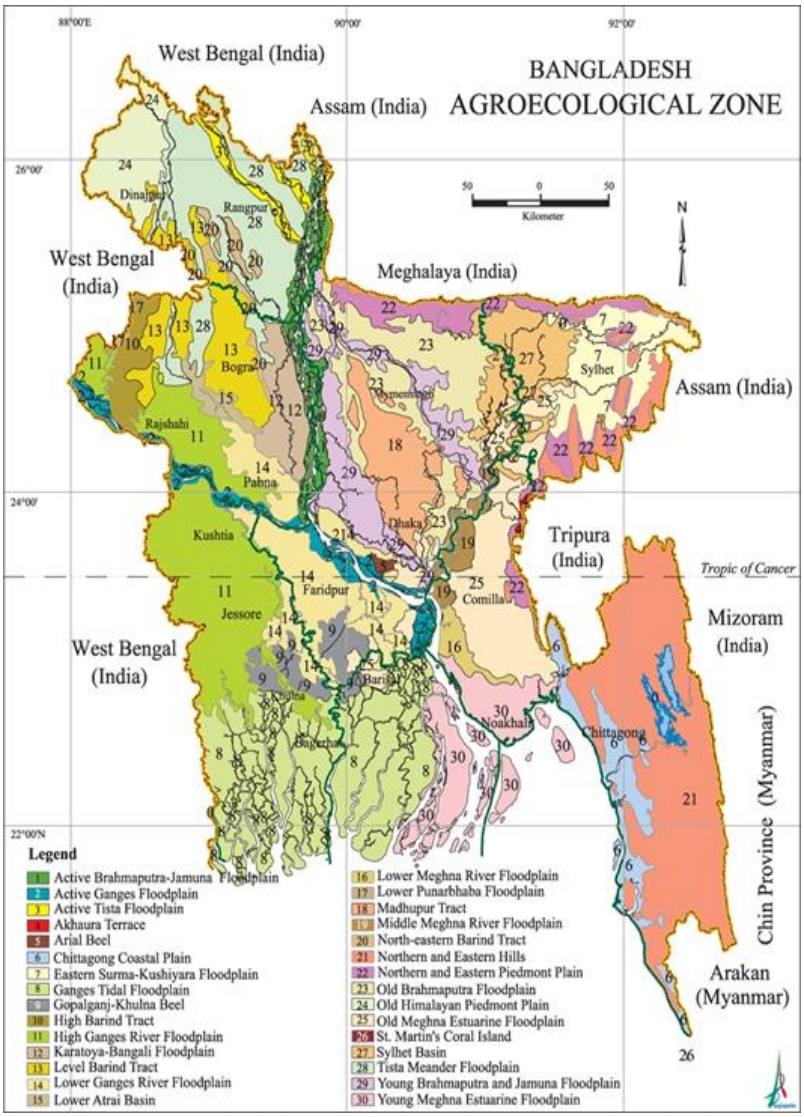


Figure 4-19: Agro ecological zones of Bangladesh

Table 4-12: Theoretical activity-impact matrix of the proposed project

Project Activity/ Hazards	Environmental Resources													Social Resources									
Activities	Landforms/ Profile	Soil/ Sediment Quality/erosion	Land Use	Air Quality	Climate Change	Drainage Pattern	Surface Water Quantity/Quality	Ground Water Quality	Ambient Noise Levels	Vibration	Occupational Health & Safety	Terrestrial Ecology	Aquatic Flora/ Fauna (Biodiversity)	Demographics (i.e. Displacement)	Economy & Livelihoods	Social & Cultural Structures	Land Use (Inc. Economic Displacement)	Infrastructure & Services	Cultural Resources	Community Health & Safety	Vulnerable Groups	Social/ Community Cohesion
Masterplan Planning Phase																						
Study and planning																						
Construction Phase (according to Master Plan)																						
Site Clearing/ Levelling																						
Building of structures laying of pipelines																						
Heavy equipment operations																						
Storage, handling and disposal of waste																						
Generation of sewage																						
Influx of construction workers																						
Transportation of equipment over water																						
Transportation by road																						
Storage and handling of chemicals																						
Maintenance of vehicles and equipment																						
Concreting works																						
Dredging																						

Project Activity/ Hazards	Environmental Resources													Social Resources									
Activities	Landforms/ Profile	Soil/ Sediment Quality/erosion	Land Use	Air Quality	Climate Change	Drainage Pattern	Surface Water Quantity/Quality	Ground Water Quality	Ambient Noise Levels	Vibration	Occupational Health & Safety	Terrestrial Ecology	Aquatic Flora/ Fauna (Biodiversity)	Demographics (i.e. Displacement)	Economy & Livelihoods	Social & Cultural Structures	Land Use (Inc. Economic Displacement)	Infrastructure & Services	Cultural Resources	Community Health & Safety	Vulnerable Groups	Social/ Community Cohesion
Dumping of excavated materials																						
Generation of waste/garbage																						
Generation of wastewater																						
Decommissioning Phase (existing structures)																						
Generation of waste/sewage																						
Clearing and disposal of waste																						
Heavy equipment operations																						
Operation Phase																						
Air emissions from stacks of the plant																						
Noise generation due to operation																						
Water demand for plant operations																						
Wastewater discharge/ disposal																						
Wastes handling and storage																						
Hazardous material and waste storages																						
Natural gas transportation by pipeline																						
HSD transportation by pipeline																						
Transportation raw material																						

Project Activity/ Hazards																							
Activities	Environmental Resources													Social Resources									
	Landforms/ Profile	Soil/ Sediment Quality/erosion	Land Use	Air Quality	Climate Change	Drainage Pattern	Surface Water Quantity/Quality	Ground Water Quality	Ambient Noise Levels	Vibration	Occupational Health & Safety	Terrestrial Ecology	Aquatic Flora/ Fauna (Biodiversity)	Demographics (i.e. Displacement)	Economy & Livelihoods	Social & Cultural Structures	Land Use (Inc. Economic Displacement)	Infrastructure & Services	Cultural Resources	Community Health & Safety	Vulnerable Groups	Social/ Community Cohesion
Disposal of wastes																							
Employment																							
GHG emission																							

	Represents “no” interactions is reasonably expected
	Represents interactions reasonably possible but none of the outcomes will lead to significant impact
	Represents interactions reasonably possible where any of the outcomes may lead to potential significant impact

4.5.4.5 Possible Impacts

General Impacts

The study of the masterplan is yet to begin. On an impact assessment is possible when the master plan is on board. However, using the site visit impression, a theoretical matrix of environmental and social impacts of the proposed project is outlined (Table 4-12). The matrix is only theoretical and will be modified, adopted, aligned and integrated with project proposals though the final master plan.

Dredging and its impacts

In the Master Plan, dredging will be unavoidable which is an engineering intervention and will impact the overall hydrology of the project area. Even this may impact regional hydrology and navigation as well. In describing the impacts related to the engineering interventions for the project one can distinguish between the temporary impacts directly related to the dredging operation and the long-term impacts associated with the modified physical environment and a consequence of the works. In addition, a systematic distinction can be made for the components of the environment, affected by various measures or activities, i.e. between impacts on the resources system and impacts on the user system. Table 4-13 present impact matrices for dredging. Many of the impacts listed can be mitigated substantially by adopting standard working procedures and ensuring responsible behaviour of the contractor, when engaged.

Table 4-13: Dredging Impact Matrix

Phase	Environmental component	Positive Impact	Negative Impact
During dredging	Water resources	• In long term navigability will increase	• Disturbance of aquatic (plankton & benthos) organisms in the riverbed. • Risk of pollution of surface water from oil spills and leaks. • Deterioration of water quality by disposal of liquid and solid waste. • Disturbance of fish and mammals in the river. • Increased water turbidity. • Loss of aquatic vegetation. • Risk of pollution of soil, surface water and ground • water. • Nuisance from dredger • Change of landscape
	Livelihoods	• Employment opportunities during dredging operation • During post dredging availability of dredged materials for land development, developed lands yield higher value • Use of spoils for settlement • Improved navigable depth.	• Noise, dust, exhaust gas emissions from dredging equipment. • Land for disposal of dredged spoil. • Obstacle to river traffic • Nuisance from stockpiling of spoils. • Local drainage congestion. • Occupational health and safety risk. • Obstruction to fishing.
Post-dredging	Water resources	• Improved river traffic. • Biodiversity.	• Hydro-morphological adjustment. • Erosion and sedimentation.
	Livelihoods	• River traffic • Employment. • Socio-economic development. • Attraction of tourists.	• Need maintenance dredging. • Accretion and erosion
	Land development	• Use of dredged materials for land filling	

4.5.4.6 Preliminary Social Assessment

Under this task different social assessments, social management plans and resettlement plan will have to be developed to

- strengthen the social outcomes of Mongla Port development;
- avoid adverse impacts on people and the environment;
- minimize, mitigate, and manage adverse impacts where avoidance is not possible and enhance positive impact;
- strengthen MPA capacities for managing social risks;
- ensure full and effective stakeholder engagement. Under this task following issues will be covered (see Table 4-14)

Table 4-14: Activities/Issues under Task 3.4

Activities/Issues under Task 3.4	Content	Methodology
Community/ Social Profile	Administrative area and location, population and demography, religion and ethnicity, archaeological heritage and relics, occupation and economic wellbeing, industrial landscape, economic and commercial infrastructure. Land use	Collect and review available secondary information and literature review. Conduct socio-economic survey.
Quality of the Living Environment	Health service, residence, water & sanitation, education, energy uses, electricity, connectivity & transportation, other public utilities	Collect and review available secondary information and literature review. Conduct socio-economic survey
Social Impact Assessment for Pre- and Post-Project Conditions.	**Identify all potential social impact with magnitude and types.** <u>Pre-construction phase</u> Land acquisition, resettlement Loss of income, physical & economic displacement. <u>Post implementation phase:</u> Economic and business development, labour influx, migration, work opportunity, livelihood development etc.	Conduct SIA survey Conduct inventory of losses (IOL) survey
Social Management Plan	How to manage, minimise and mitigate adverse impacts. How to enhance positive impact.	
Public & Stakeholder Consultation	Public participation, opinion in project design and implementation	FGD, Public consultation, KII

4.6 Task 4 – Overall Port Development Framework and Strategic Master Plan

4.6.1 Task 4.1 – Strategic Master Plan for Mongla Port

The Strategic Master Plan will be developed according to traffic demand scenario assumptions, handling and transport demand by numbers and types of vessels, both marine and inland water transport vessels for development planning of capacities of ship- port interfaces at common user and at industrial port facilities, including possible inland and lightering places / handling facilities for serving ocean going vessels on anchorage, and for different port areas.

The strategic plan will furthermore consider the corresponding and broadly assessed numbers of road vehicle and trainset movements for allocation and dimensioning of gates, holding areas and roads, rail and shunting and port – land interfaces facilities.

The strategic Port Master Plan, covered in bullet points, will strive to:

- clarify the port's own strategic planning for the medium to long term;
- provide input for regional and local planning bodies, and transport network providers, in
    - preparing and revising their own development strategies; and
    - to inform port users, employees and local communities as to how they can expect to see the port develop over the coming years.

This is aimed by the Consultant to be achieved by setting out:

- how the port could grow and develop its business over time;
- why this is feasible in the context of wider patterns of supply and demand;
- where changes of land-use are likely to be required to support potential growth areas;
- what alternative ways of meeting the forecasted demand have been and will be considered;
- what environmental measures will be required to ensure that not only are adverse effects mitigated, but as far as possible the port makes a positive contribution to environment and amenity;
- how people / stakeholders are to be consulted - both within the master planning process itself, and beyond; and
- how the port's present and proposed development plans integrate, support and inform the regional and local economic, transport and planning policy context as the result of close liaison with local and regional planning bodies during the production of the master plan.

It is important to state that a Master Plan is not intended to be rigid and inflexible. Ports worldwide operate in a dynamic commercial world and it is essential that they understand themselves to be flexible to adapt to changing patterns of demand, and to competitive opportunities, which may come along the years and which could not have been forecasted at the time of preparing this Master Plan.

A regular updating of the Master Plan approx. every 5 years, to identify necessary corrections / re-alignment of strategic developments is a paramount necessity for the long-term success of Mongla Port.

4.6.2 Task 4.2 – Relevant Rules and Regulations

The research for and collection of relevant rules and regulations has started. Significant information is available in Bengali language only and is in process of translation into English. Initial analysis has started.

4.6.3 Task 4.3 – Organisational Set-up of MPA

In preparation of interviews with MPA management regarding organisational setup an interview guideline was prepared by the Institutional Expert (International). This document was communicated in advance by the Deputy Team Leader (DTL) to the Project Director (PD) and a printout was handed to all interview partners to provide them with an overview of topics relevant for the Institutional experts in this initial phase.

On October 1st and 3rd, 2019 a series of interviews were held with the MPA Chairman, all three MPA board members and all Heads of Departments (HoD) with the exception of HoD Security, due to his unavailability. MPA managers in Khulna (Roosevelt Jetty) could not be interviewed during the first mission of the Institutional Experts from September 29th to October 3rd, 2019 to Khulna/Mongla.

The following initial observations were made:

- The current organisational setup of MPA is still based on the 'Organisational Set Up of Port of Chalna Authority (dated 1984), especially the Revised Organisation (Annexure E) and the 'Revised Charter of Duties (Annexure B)' of the officers. The approved manpower is 2,797, currently existing manpower is 1,155.
- Many departments have proposed their own organigrams and staff lists which were forwarded to MPA board members and the Chairman and incorporated into the 'Draft Mongla Port Authority Act 2019' which was approved in principle by the Cabinet of Bangladesh on August 19th, 2019.
- Although the duties of the officers were defined in 1984 although not updated (see above), complete current function descriptions including:
    - necessary qualifications
    - responsibility
    - authority
    - information duties
    - information rights
    - direct subordination
    - superior of
    - definition of representation (deputy)

  are not defined.
- The Chairman and members of the Board stated, that delegation of authority was given, but HoDs and subordinated officers often do not exercise this authority but refer back to top management for decisions.
- The Chairman's span of control is (too) wide: in addition to the three board members, the Director Administration and six HoDs – ten managers in total – report directly to him.

- MPA's internal and external information flow is mostly paper based with the associated aspects of long process time, high efforts for file administration, information retrieval and provision. Some departments use standard office software, but the number of workstations and qualified staff is limited. The Chairman strives for a 'digital office' organisation at MPA.
- A project named 'Port Automation System of Mongla Port Authority' with Dhaka based supplier Techno Vista Limited is currently being implemented, but due to limited MPA staff capacity the operational status (going live) has not been achieved yet.
- Currently MPA's IT projects are managed by the electrical engineering department, because currently no dedicated IT department within MPA exists.
- Many HoDs emphasised a general need to improve their staff's qualifications and competencies. Regular additional (formal) training for MPA staff (e.g. training by equipment manufacturer or technical courses at Chittagong Port Training Institute) is the exception. Mostly training-on-the-job by more experienced staff is done, if capacity allows.
- Outsourcing of tasks not deemed as core competencies of a Port Authority is currently handled only at a limited scope (e.g. 50% of security tasks). In alignment with the Chairman's guidance additional outsourcing potential should be identified.
- MPA seems to have fragmented processes, documented only in parts, or Standard Operation Procedures (SPOs). A holistic organisational approach e.g. an implemented and certified quality management system according to ISO 9001 currently does not exist.

Currently no delays are expected, if the documents requested from the Financial Department (current budget etc.) and the Director Administration (Draft Mongla Port Authority Act 2019, MPA's current rules regarding financial and administrative authority etc.) are provided to the Consultant in a timely manner, although translation into English might become a bottleneck if significant documents relevant for the work of the Institutional Expert (International) are only available in Bengali.

4.6.4 Task 4.4 – Recommend projects to be implemented with possible external financing form development partners or potential financing by private sector

The Consultant has assessed the present tariff and will, assumed amendments of tariffs or fees for handling of port- rail cargoes and for railway movement related services, formulae a base data set for indicative revenue assessments in case of no changes in tariff or organization. Depending in the level of coverage of investment/development cost, and of recurrent cost, by service categories the Consultant will identify areas a) attractive for private sector participation and b) not of mid- or long-term strategic relevance for port development. Furthermore, lease of concessions terms will be developed in accordance with mid- or long-term planning flexibility of the Port Authority as competent port development management facility (see projections until 2100).

Furthermore, field of activities for public- private joint ventures or special purpose vehicle constructions regarding provisions of non-strategic port and port related, or logistics, services, will be indicated and assessed by SWOT analyses or adequate risk assessment methods, depending on the conclusions derived once the forecast projections are discussed.

4.6.5 Task 4.5 – Alternative Financing Schemes

Alternative financing schemes will be elaborated in the context of the preparation and the outcome of above Task 4.4 and in view of the cost quantification of proposed port development strategies and related investment implementation

5 Outlook and Constraints

5.1 Observed Constraints during Inception Phase

There have been some constraints so far with the assignment as listed below:

1. Out of the more than 186 reviewed or requested documents (see Section 4.2.3), a number of 38 documents or granting of access to the requested information, are still not available for review and consideration.
2. Further contacts to additional stakeholders of local and regional development and their feedback on development prospects is required to complete the traffic analyses and the forecast projections in time.
3. The extension of the forecast projection term to 2100 is a challenge which requires to prevent for any constraints related to the complete and immediate data and study result and long-term projection data and other relevant information
4. Whilst the consultant will undertake all reasonable effort to comply with time and delivery frame facilitation of provisions of or access to the requested information is a pre-requisite for timely completion of the tasks as per the agreed work program.
5. Non-availability of raw data of bathymetric surveys
6. Non-availability of data / information on ships calling Mongla Port (quantity, type, dimensions) for the last 10 years. The Consultant already collected the said data from Chittagong Port Authority.
7. Data regarding actual draft (m) of ships when entering/ leaving Mongla Port.
8. Hydrographic Survey Chart of Pussur River for the last 10 years in pdf format (only most recent versions were shared).
9. Hydrographic & Morphological model of Pussur River (developed by IWM in 2004)
10. Information/ data related to hydrographic and hydrological study like, water levels, current velocities, sea states, wind, river sediment, navigational aids.
11. Number & size of inland waterway traffic both at Mongla Port and Roosevelt Jetty.
12. Number & size of trucks and trailers annually entering Mongla Port and Roosevelt Jetty.

Moreover, the website of Mongla Port Authority (www.mpa.gov.bd) is not designed properly and the information is not properly updated regarding present status of ships, cargo handling, hydrological conditions etc.

5.2 Outlook

The results of the Inception Report will be presented in the 1st workshop on 20th October 2019 in Khulna.

During the workshop the initial outcomes of the tasks will be discussed with the relevant stakeholders. It is the Consultant's objective to get as much feedback as possible which will be considered when preparing the traffic forecast which constitutes the main part of the Interim Report.

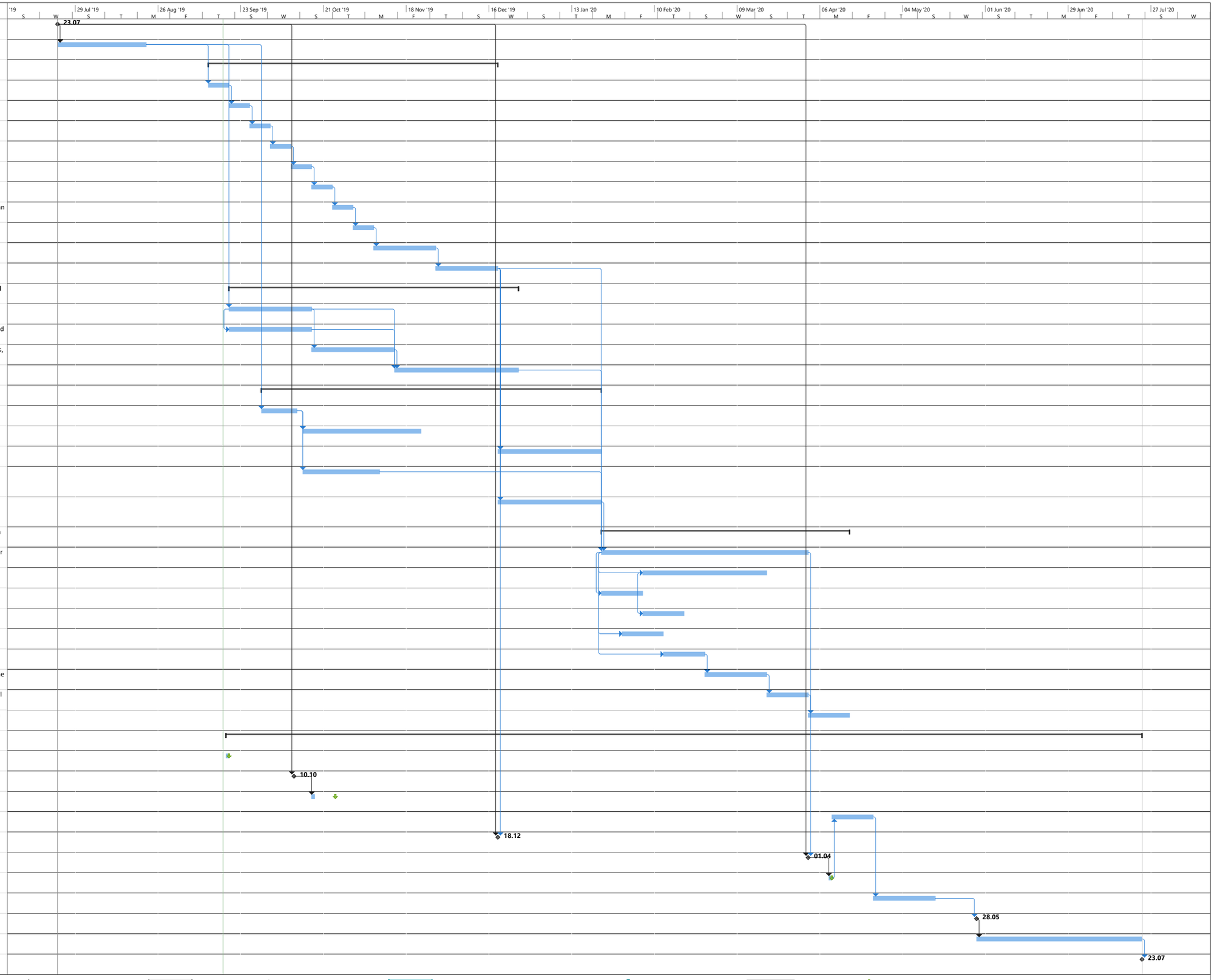
The Interim Report is scheduled to be submitted on 18th December 2019 after which the work on the actual master plan will start.

Appendices

A) Updated Project Time Schedule
B) Available and Required Information / Reports
C) Terms of Reference
D) Meeting Minutes of Kick-off Meeting
E) Stakeholder Information
F) Sector Information

Appendix A – Updated Project Time Schedule

ID	Task Mode	Vorgangsname
1		Signing of Contract
2		Mobilisation
3		**Traffic Forecast**
4		Coal Transportation and Handling for Rampal Power Plant
5		Completion of Padman Bridge connection to the Capital City of Dhaka
6		Construction of Khanjihan Ali Airport at Rampal
7		Mongla-Khulna Rail Connectivity
8		Congestion in Chittagong Port
9		Overall Industrial Development in South-Western and North-Western Area of the Country
10		Handling of Inland and Transit Cargo for India, Nepal and Bhutan
11		Full Operation of BEZA & BEPZA
12		Prepare Cargo Traffic Plan and Carry Out Necessary Additional Traffic Survey and Analysis
13		Prepare a Traffic Forecast based on Different Scenarios for Bangladesh and the Region as a Whole
14		**Detailed Hydraulic, Hydrologic, Hydrographic and Environmental Study of Passur River**
15		Carry Out Hydraulic, Hydrographic and Hydrological and Environmental Study of Port Area
16		Evaluate the Conditions of Support Vessels of the Port, Required for Port Operations
17		Better and Safer Navigability of the Channel, Safety of the Ships, Channels and Port, etc.
18		Define together with MPA Studies Advised to Be Undertaken / Updated by Third Parties
19		**Assessment of Infrastructure in the Port and Intermodal Connectivity**
20		Study Existing Legal Documents, Proposed Modifications incl. Port Tariffs, Financial Aspects, etc.
21		Study Hinterland Transport Connectivity and Suggest Physical and Operational Efficiency Improvements
22		Study Different Options to Improve Mongla Port Facilities with Additional Jetties or New Docking, etc.
23		Review Condition of Existing Land Use Plan, Buildings, Roads, Jetties and Other Maritime and Land Side Infrastructure, etc.
24		Undertake a Preliminary Enviromental Assessment, Social Assessment and Assessment of the Potential Need for Land Acquisition and Resettlement
25		**Overall Port Development Framework and Strategic Master Plan**
26		Prepare Strategic Master Plan for Mongla Port Development for Next 40 Years
27		Prepare Phased Plan for Port Development Based On Different Scenarios
28		Use Reference to Modern Port of Similar Nature
29		Maximum Utilisation of Total Land Areas and Properties of Mongla Port Authority
30		IMO, MARPOL, Bangladesh National Rules, Regulations, Environmental Issues, etc.
31		The Organisational Setup of MPA and Other Appropriate Authorities
32		Proposal of Phase Wise Development Plan with Priority Timeline
33		Recommend Projects to Be Implemented with Possible External Financing
34		Propose Alternative Financing Schemes for Effective Utilisation of Private Sector Financing
35		**Reporting**
36		Kick-off Meeting/Presentation
37		Inception Report
38		1st Workshop
39		Team Visit to at least Two Ports
40		Interim Report
41		Draft Final Report
42		2nd Workshop
43		Review Period Final Report
44		Final Report
45		3D Model of Masterplan
46		Completion of Assignment



Projekt: Project Schedule - Ma
Datum: Tue 17.09.19

Vorgang | Meilenstein | Projektsammelvorgang | Inaktiver Meilenstein | Manueller Vorgang | Manueller Sammelrollup | Nur Anfang | Externe Vorgänge | Stichtag | Manueller Fortschritt
Unterbrechung | Sammelvorgang | Inaktiver Vorgang | Inaktiver Sammelvorgang | Nur Dauer | Manueller Sammelvorgang | Nur Ende | Externer Meilenstein | In Arbeit

Appendix B – Available and Required Information / Reports

Legend:

Yes/Available
No/Missing

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
(Development-) Policies / Plans			Yes	Yes	Study/Publication	2015	Bangladesh Ministry of Planning - SEVENTH FIVE YEAR PLAN FY2016 - 2020	PDF	7th_FYP_18_02_2016.pdf
(Development-) Policies / Plans			Yes	Yes	Study/Publication	2017	Bangladesh Planning Commission - Bangladesh Delta Plan 2100 (DRAFT)	PDF	Bangladesh Delta Plan 2100 Draft Report.pdf
(Development-) Policies / Plans			Yes	Yes	Presentation	2017	Bangladesh Planning Commission - Bangladesh Delta Plan 2100 (DRAFT)	PDF	Bangladesh Delta Plan 2100-ppt.pdf
(Development-) Policies / Plans			Yes	Yes	Study/Publication	2012	General Economics Division - PERSPECTIVE PLAN OF BANGLADESH 2010-2021 - MAKING VISION 2021 A REALITY	PDF	Perspective-Plan-of-Bangladesh 2021.pdf
(Development-) Policies / Plans			Yes		Study/Publication	2011	Bangladesh Ministry of Planning - SIXTH FIVE YEAR PLAN FY2011-FY2015 - Accelerating Growth and Reducing Poverty	PDF	6th_FYP_17-08-2011.pdf
Competing Ports: Chittagong			Yes		Organisational Data	2014	LIST OF VESSELS	DOCX	BERTHING FILES Chittagong 01_06_2014.docx
Competing Ports: Chittagong			Yes		Organisational Data	2012	LIST OF VESSELS	DOCX	BERTHING FILES Chittagong 03_06_2012.docx
Competing Ports: Chittagong			Yes		Study/Publication	2015	Strategic Master Plan for Chittagong Port. Final Report, Part 1	PDF	Port Master Plan Chittagong_01.pdf
Competing Ports: Chittagong			Yes		Study/Publication	2015	Strategic Master Plan for Chittagong Port. Final Report, Part 2	PDF	Port Master Plan Chittagong_02.pdf
Competing Ports: Chittagong			Yes		Study/Publication	2015	Strategic Master Plan for Chittagong Port. Final Report, Part 3	PDF	Port Master Plan Chittagong_03.pdf
Competing Ports: Chittagong			Yes		Organisational Data	unknown	Chitagong Container Fees / Tariffs / Charges	PDF	Container Loading tarrif.pdf
Competing Ports: Chittagong			Yes		Organisational Data	unknown	Chitagong Fees / Tariffs / Charges on Goods an Vessels	PDF	CPA-Tariff-ilovepdf-compressed.pdf
Competing Ports: Chittagong			Yes		Organisational Data	unknown	Chitagong Fees / Tariffs / Charges on Containers Goods an Vessels	PDF	Pangaon Tariff.pdf
Competing Ports: Kolkata			Yes		Organisational Data	2013	Kolkata Port Trust - Administrative Report 2012-2013	PDF	Kolkata_Haldia_Port_Trust-Report_2012_13.pdf
Competing Ports: Kolkata			Yes		Organisational Data	2014	Kolkata Port Trust - Administrative Report 2013-2014	PDF	Kolkata_Haldia_Port_Trust-Report_2013_14.pdf
Competing Ports: Kolkata			Yes		Organisational Data	2015	Kolkata Port Trust - Administrative Report 2014-2015	PDF	Kolkata_Haldia_Port_Trust-Report_2014_15.pdf
Competing Ports: Kolkata			Yes		Organisational Data	2016	Kolkata Port Trust - Administrative Report 2015-2016	PDF	Kolkata_Haldia_Port_Trust-Report_2015_16.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Competing Ports: Kolkata			Yes		Organisational Data	2017	Kolkata Port Trust - Administrative Report 2016-2017	PDF	Kolkata_Haldia_Port_Trust-Report_2016_17.pdf
Competing Ports: Kolkata			Yes		Organisational Data	2018	Kolkata Port Trust - Administrative Report 2017-2018	PDF	Kolkata_Haldia_Port_Trust-Report_2017_18.pdf
General Standards and Regulations			Yes		Organisational Data	unknown	Function Description according to ISO 9001:2015, Section 5.3 'Organizational roles, responsibilities and authorities'	DOCX	Example-FunctionDescription_20190926_WO.docx
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2019	Is Bangladesh's Economy Approaching the Lewis Turning Point?	PDF	Bairagi2019LewisturningpointinBangladesh.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2017	Concurrent Challenges Before Bangladesh Economy	PDF	ConcurrentChallengesbeforeBangladeshEconomy.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	unknown / 2019	Diversification of Export Basket of Bangladesh	DOCX	DiversificationofExportBasket.docx
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2019	Economic Growth and Macroeconomic Fundamentals: Evidence from Bangladesh.	PDF	Economic-Growth-and-Macroeconomic..pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2019	FACTORS INFLUENCING PURCHASING POWER PARITY (PPP) IN BANGLADESH ECONOMY: 1986-2017	PDF	Factors-influencing-purchasing-power-parity-ppp-in-bangladesh-economy-1939-6104-18-2-3551.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes	Yes	Study/Publication	2015	Foreign direct investment and economic growth - An empirical study on Bangladesh economy	PDF	IJEBR100205SARKER.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2015	Impact of Macroeconomic Variables on Economic Development of Bangladesh Since Liberation War: An Empirical Study	PDF	ImpactofMacroeconomicVariablesonEconomicDevelopmentofBangladeshSinceLiberationWarAnEmpiricalStudy.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2019	Bangladesh among Five Fastest Growing Economies	PDF	ISAS-Briefs-No.-649-Bangladesh-Among-Five-Fastest-Growing-Economies-1.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2013	An Analysis of Macroeconomic Trends in Bangladesh	PDF	khairul_dev_compile.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes	Yes	Study/Publication	2019	Have Inflation Dynamics Changed in Bangladesh?	PDF	pn1901.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes	Yes	Study/Publication	2019	The Impact of Macroeconomic Factors on Exports Earnings in Bangladesh: 1971-2018	PDF	TheImpactofMacroeconomicFactorsonExportsEarningsinBangladesh1971-2018.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes	Yes	Study/Publication	2018	Trade (Exports) as an Opportunity for Bangladesh: A VECM Analysis	PDF	22ndAnnualWesternHemisphericTradeConferencePage249-260httpfreetrade.tamiu.eduwhtc_servicesshowPdf.aspshow22Conf-SessionsdMenu1markCNF.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes	Yes	Study/Publication	2017	Trade between Bangladesh and Vietnam	PDF	ABriefReport.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade	(Development-) Policies / Plans	Yes	Yes	Study/Publication	2018	Trade Expansion, International Competitiveness and the Pursuit of Export Diversification in Bangladesh	PDF	BIDS-Paper-1_Sarker_TradeExpansion-Feb27-2019.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	Bangladesh Economic Review 2019	PDF	Bangladesh_Economic_Review_2019.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	Bangladesh Bank - Annual Report (July 2017-June 2018)	PDF	Bangladesh Bank Report 2017_2018.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	Moody's Investor Service - Government of Bangladesh – Ba3 stable, Annual credit analysis	PDF	moody_report_july2019.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	Bangladesh 'BB-/B' Ratings Affirmed; Outlook Stable	PDF	snprep_july2019.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Organisational Data	mixed	Economic data from mixed sources	PDF	Summary Infomration.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Organisational Data	2015	World Bank - World Development Indicators, Bangladesh	XLS	WDI_2015_12_29_Bangladesh.xlsx
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2015	Ministry of Finance Bangladesh - Year End Report on Fiscal Position Fiscal Year 2014-15	PDF	year_end report_2014_15.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	Labour wage of Bangladesh	PDF	109-113.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2018	Constraints to small and medium-sized enterprises development in Bangladesh: Results from a cross-sectional study	PDF	constraints-to-small-and-medium-sized-enterprises-development-in-bangladesh-results-from-a-cross-sectional-study1.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2014	Determinants of Unemployment in Bangladesh: A Case Study	PDF	DeterminantofUnemploymentinBangladesh.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2008	FOREIGN DIRECT INVESTMENT IN BANGLADESH: A POSITIVE PERSPECTIVE	DOCX	ForeignDirectInvestmentinBangladeshAPositivePerspective.doc
General Statistics / Information: Economics and Finance, Inflation	General Standards and Regulations		Yes		Study/Publication	2019	Investigating Impact of Expansionary Fiscal Policy on Output in Bangladesh Economy: An Econometric Study	PDF	IMPACTOFEXPANSIONARYFISCALPOLICY.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2011	Infrastructure and Growth and Poverty in Bangladesh	PDF	Infrastructure_and_Growth_and_Poverty_in_Banglades.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2018	An Empirical Assessment of the Nexus between Terms of Trade and Inflation in Bangladesh	PDF	Muntasir_BIDS.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2018	Post-LDC Challenges for Bangladesh Economy	PDF	Post-LDCChallengesforBangladeshEconomy.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	unknown / 2019	Impact of Monetary Policy on the Economic Growth of a Developing Country: An Empirical Study on Bangladesh Economy	PDF	SSRN-id3391280.pdf
General Statistics / Information: Economics and Finance, Inflation			Yes		Study/Publication	2019	STRATEGIC DETERMINANTS AND STABILITY OF REAL EXCHANGE RATE IN BANGLADESH: 1976-2017	PDF	Strategic-determinant-and-stability-of-real-exchange-rate-in-bangladesh-1976-2017-1939-6104-18-3-369.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2017	Global Trade Slowdown and Globalisation Backlash: Trade and Development perspectives from Bangladesh	PDF	00-Tradeslowdown-globalisationbacklash_Razzaque.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2016	Factors Affecting Volatility of Bangladesh Trade Deficit: An Econometric Analysis	PDF	520-1033-1-SM.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade	(Development-) Policies / Plans	Yes		Study/Publication	2016	Causal Relationship between Government Size and Trade Openness in Bangladesh: An Empirical Analysis	PDF	14982492667.Dr.SakibBinAminMuntasirMurshed.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2016	Impact of International Trade on Economic Growth in Bangladesh	PDF	HasnainInternationalTrade.pdf
General Statistics / Information: Economics and Finance, Inflation	Trade		Yes		Study/Publication	2019	Problems of Bilateral Trade Deficit between Bangladesh and India: A Regression Analysis	PDF	muntasirmargub2019.pdf
General Statistics: Demographics/Population	Maps		Yes		Study/Publication	2009	Bangladesh Population Density Map and Elevation	PDF	Population_Density_Map_and_Elevation.jpg
General Statistics: Demographics/Population			Yes		Study/Publication	2019	Aging Population in Bangladesh. A new and important group in terms of social and health policy of a country	PDF	Aging-Mahmood-et-al.-Sept-2019.pdf
General Statistics: Demographics/Population			Yes		Study/Publication	unknown	Future Aging through Population Momentum: An Experience with Bangladesh Population	PDF	book_chapt-6.pdf
General Statistics: Demographics/Population			Yes		Study/Publication	2019	Analysing and Projection of Future Bangladesh Population Using Logistic Growth Model	PDF	IJMNTA_2019070414471118.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2011	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2011.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2012	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2012.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2013	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2013.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2014	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2014.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2015	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2015.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2016	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2016.pdf
General Statistics: Statistical Year Books			Yes	Yes	Organisational Data	2017	Statistical Year Book of Bangladesh	PDF	BBS-Yearbook-2017.pdf
General Transport & Logistics	Trade		Yes	Yes	Study/Publication	unknown	India-Bangladesh Trade: The Prospect of Inland Water Transportation System	PDF	2018vol2bmj-02-01-03.pdf
General Transport & Logistics			Yes	Yes	Study/Publication	2019	An Examination of Economic Loss of Poor Port Infrastructure in Bangladesh	PDF	AnExaminationofEconomicLossofPoorPortInfrastructureinBangladesh.pdf
General Transport & Logistics	Sustainability Issues		Yes	Yes	Study/Publication	2019	Bangladesh Railway: Perspective for sustainable transport in Bangladesh	PDF	BangladeshRailway-PerspectiveforsustainabletransportinBangladesh_SaidurRahman_BR.pdf
General Transport & Logistics			Yes	Yes	Study/Publication	2019	Development of Third-Party Logistics Services in International Trade: Bangladesh Perspective	PDF	DevelopmentofThird-PartyLogisticsServicesinInternationalTradeBangladeshPerspective.pdf
General Transport & Logistics			Yes	Yes	Study/Publication	2019	Human Resources Competitiveness in Shipping Industry: Bangladesh Perspective	PDF	ICBM2019ConferencePaperShemonKadirISBN978-984-344-3540.pdf
General Transport & Logistics			Yes	Yes	Study/Publication	2019	Implementation of Deep Sea Port in Bangladesh: Demand and Dilemma	PDF	ImplementationofDeepSeaPortinBangladesh_DemandDilemma.pdf
General Transport & Logistics	Trade		Yes	Yes	Study/Publication	2019	Unfolding Bangladesh-India maritime connectivity in the Bay of Bengal region: a Bangladesh perspective	PDF	MaritimeCooperation-Routledge.pdf
General Transport & Logistics			Yes	Yes	Study/Publication	2016	The Future of Intermodal Freight Transportation in Bangladesh	PDF	Saha2015WCTRS2016_2419Abstract.pdf
General Transport & Logistics	Trade		Yes	Yes	Study/Publication	unknown / 2019	Intermodal freight transportation facilities for two major cities of Bangladesh in providing maritime logistics support to cater to international trade	PDF	Saha2019c.pdf
General Transport & Logistics	Trade		Yes	Yes	Study/Publication	2019	The role of Bangladeshi ports in developing integrated intermodal freight transportation system in South Asia	PDF	SahaRC2019PhDJournal-3.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
General Transport & Logistics	Sustainability Issues		Yes		Study/Publication	2017	Sustainable Transport Modes and its Potentiality: Bangladesh Perspective	PDF	04-2-Islam-Transport-Reviewed.pdf
General Transport & Logistics	Sustainability Issues		Yes		Study/Publication	2016	SAFER ROAD INFRASTRUCTURE FOR SUSTAINABLE TRANSPORT DEVELOPMENT IN BANGLADESH	PDF	FinalPaper.pdf
General Transport & Logistics	Sustainability Issues		Yes		Study/Publication	2017	Analysis of Future Aspects of Alternative Fuel Driven Vehicles in Bangladesh	PDF	JSAER2017-04-11-127-134-1.pdf
General Transport & Logistics	Trade		Yes		Study/Publication	2019	Multimodal Transportation and International Trade Facilitation: Bangladesh Perspective	PDF	MultimodalTransportationandInternationalTradeFacilitationBangladeshPerspective.pdf
General Transport & Logistics	Competing Ports		Yes		Presentation	unknown / 2017	Country's Port: Bangladesh	PDF	CountryPresesntationatMIMAMY.pdf
Industries: Agriculture			Yes		Study/Publication	2019	Economic Analysis of Rice Production in Bangladesh	PDF	Paper_Forhad_Hilarius__UIJRTV1I20002.pdf
Industries: Agriculture	Trade	General Transport & Logistics	Yes		Study/Publication	2017	The Vegetable Supply Chain of Bangladesh: Is it Capable to Meet the Requirements of International Trade?	PDF	2nd7.pdf
Industries: Energy			Yes	Yes	Study/Publication	2019	Electricity consumption and GDP nexus in Bangladesh: a time series investigation	PDF	10-1108_JABES-04-2019-0029.pdf
Industries: Energy			Yes	Yes	Study/Publication	2019	An Empirical Investigation on the Relationship between Remittance and Energy Consumption towards Bangladesh Economy	PDF	AnEmpiricalInvestigationonthe RelationshipbetweenRemittanceandEnergyConsumptiontowardsBangladeshEconomy.pdf
Industries: Energy			Yes	Yes	Study/Publication	2017	Prospects of Liquefied Gases in Bangladesh Economy as a move towards Fuel Diversification	PDF	Muntasir.pdf
Industries: Energy			Yes	Yes	Study/Publication	2018	Renewable energy in Bangladesh: Status and prospects	PDF	RenewableenergyinBangladeshStatusandprospects.pdf
Industries: Energy			Yes		Study/Publication	unknown / 2018	Power generation capacity continues to grow in response to high demand supply gap	PDF	Bangladesh-Power-Sector-Overview-2018.pdf
Industries: Ship Breaking			Yes		Study/Publication	2019	Ship Breaking and its Future in Bangladesh	PDF	ShipBreakinganditsFutureinBangladesh.pdf
Legistlation			Yes		Study/Publication	unknown / 2008	Public Procurement Rules	PDF	4. Public-Procurement-Rules-2008-Bangla1.pdf
Legistlation			Yes		Study/Publication	2000	National Shipping Policy	PDF	5. National Shipping Policy 2000.pdf
Legistlation			Yes		Study/Publication	2006	Bangladesh Labour Act 2006	PDF	6.-Bangladesh_Labor_Law_2006_Eng-1.pdf
Legistlation			Yes		Study/Publication	2017	Essentials of the Laws of the Belt and Road Countries Bangladesh, Pakistan, Sri Lanka	PDF	CHAPTER_2.pdf
Maps	General Statistics: Demographics/Population		Yes	Yes	Study/Publication	unknown	Rail and Road Network Map of Bangladesh	PDF	Bangladesh Road and Rail Map.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Maps	Mongla Port: Environmental and Navigational Conditions	General Transport & Logistics	Yes	Yes	Study/Publication	unknown	Bangladesh Inland Navigation Routes and depths	JPG	Navigation Routes_wo dis name.jpg
Maps			Yes	Yes	Organisational Data	unknown	Google Earth maps of Mongla Port	Folder	GoogleMaps kmz
Maps			Yes	Yes	Organisational Data	unknown	Map of Mongla Port, seemingly based on CAD-Data	PDF	Revised Port Plan_8_MPA-11 component.pdf
Mongla Port: Environmental and Navigational Conditions			Yes	Yes	Study/Publication	2015	Sedimentation processes at the navigation channel of Mongla port on the Pussur-Sibsa river system in Bangladesh	PDF	1577.pdf
Mongla Port: Environmental and Navigational Conditions			Yes	Yes	Study/Publication	2013	ASSESSING THE CAUSES OF DETERIORATION OF THE MONGLAGHASHIAKHALI NAVIGATION ROUTE FOR RESTORATION OF NAVIGABILITY	PDF	ASSESSINGTHECAUSESOF DETERIORATIONOFTHEMO NGLA-GHASHIAKHALINAVIGATIO NROUTEFORRESTORATIO NOFNAVIGABILITY.pdf
Mongla Port: Environmental and Navigational Conditions	Maps		Yes		Study/Publication	unknown	Navigational Charts / Maps : Bay of Bengal, Chalna to Digraj, Digraj to Mongla, Mongla to Base Creek, Joymonirgol to Harbaria, D'Souza Point to Mazhar Point, Cheilabogi Khal to Sundakirota Khal, Sundakirota Khal to Kaga Boga Khal, Kaga Boga Khal to Tinkona DWIP, Tinkona DWIP to Hiron Point	Folder	Navigational Charts
Mongla Port: Equipment			Yes	Yes	Organisational Data	unknown	List of Equipment (e.g. cranes) in Mongla Port	PDF	Mogla_Port_Equipment.pdf
Mongla Port: Fees and Charges	Mongla Port: Administration		Yes	Yes	Study/Publication	unknown / 2019	Mongla Port Fees and charges	PDF	MonglaPortTariff_Gazette.pdf
Mongla Port: Fees and Charges	Mongla Port: Administration		Yes	Yes	Study/Publication	unknown / 2019	Mongla Port Fees and charges	PDF	MPA Port Tariff.pdf
Mongla Port: Fees and Charges	Mongla Port: Administration		Yes	Yes	Study/Publication	2015	Determination of the Transit Fee for Mongla-Ghasiakhali Canal: Savings from the Daily Running Cost of Ships	PDF	56839109d2952.pdf
Mongla Port: Handling Data	Industries: Other		Yes	Yes	Organisational Data	unknown / 2019	Cars handled at Mongla Port from 2008-2009 to 2018-2019	PDF	car handling.pdf
Mongla Port: Handling Data			Yes	Yes	Organisational Data	unknown / 2019	Total weight of Imported / Exported Cargo in Metric Tonnes	PDF	Cargo hnadling.pdf
Mongla Port: Handling Data			Yes	Yes	First Hand Data / Interviews	unknown / 2019	Request for Information. Information requirements: Port User Terminals and Port Industry facilities, Cement Clinker mills	DOCX	Cement Factories 190921.docx
Mongla Port: Handling Data	Industries: Container		Yes	Yes	Organisational Data	unknown / 2019	Containers handled at permanent Port jetty, Mongla from 2004-2005 to 2018-2019.	PDF	Container handling.pdf
Mongla Port: Handling Data	Industries: Agriculture		Yes	Yes	First Hand Data / Interviews	unknown / 2019	Request for Information. Information requirements: Port User Terminals and Port Industry facilities, Fertilizers	DOCX	Fertilizers 190921.docx
Mongla Port: Handling Data	Industries: Agriculture		Yes	Yes	First Hand Data / Interviews	unknown / 2019	Request for Information. Information requirements: Port User Terminals and Port Industry facilities, Grain Silo / Grain Importers or Rice Exporters	DOCX	Grain Silo 190921.docx

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Mongla Port: Handling Data	Industries: Energy		Yes	Yes	First Hand Data / Interviews	unknown / 2019	Request for Information. Information requirements: Port User Terminals and Port Industry facilities, LPG Tank and Distributions plants	DOCX	LPG tank and distribution plants 190921.docx
Mongla Port: Handling Data	Industries: Energy		Yes	Yes	First Hand Data / Interviews	unknown / 2019	Request for Information. Information requirements: Port User Terminals and Port Industry facilities, Refinery Tank farm	DOCX	Refinery_Tank Farm_190921.docx
Mongla Port: Handling Data			Yes	Yes	Organisational Data	2019	Ships & Cargo handled at Mongla Port by tonnes and commodity 2004-2019	PDF	Commodity-wise Import ExportMongla Port 2004-2019.pdf
Mongla Port: Handling Data			Yes	Yes	Organisational Data	2019	Commodity-wise Import & Export handled at Mongla Port from 2004-2005 to 2019-2020	PDF	Import Export Mongla Port 2004-2019-2020.pdf
Mongla Port: Handling Data	Industries: Container		Yes	Yes	First Hand Data / Interviews	2019	Present connectivity of Mongla Port to the international container trade	DOCX	Mongla Liner Services rev2.docx
Mongla Port: Maps			Yes	Yes	Organisational Data	unknown	Map / detailed layout plan of Mongla Port	GIS / CAD	Revised Plan_8 MPA-11.dwg
Mongla Port: Maps			Yes	Yes	Organisational Data	unknown	Google maps of Mongla Port and its exclaves	PDF	Google_Maps_of_Mongla_Port_and_Exclaves.pdf
Mongla Port: Maps			Yes	Yes	Organisational Data	unknown	Google maps of Mongla Port's Roosevelt Jetty in Khulna	JPG	Khulna Area Question.jpg
Mongla Port: Maps			Yes	Yes	Organisational Data	unknown	Google Earth maps of Mongla Port's Roosevelt Jetty in Khulna	GIS / CAD	Mongla Port Khulna.kmz
Mongla Port: Maps			Yes	Yes	Organisational Data	unknown	Map of Pussur Channel and Mongla Port Extent, incl. Lighthouses and further details		Map_of_Pussur_Channel_and_Mongla_Port_Extent.pdf
Mongla Port: Maps			Yes	Yes	Study/Publication	unknown	Map Coast Bangladesh	JPG	Map Coast Bangladesh.bmp
Mongla Port: Planning Studies			Yes	Yes	Study/Publication	2019	Mongla Port Authority - Feasibility Study Modernization and Expansion of Mongla Port Facilities	PDF	Modernization and Expansion of Mongla Port Facilities.pdf 1902_Modernization and Expansion of Mongla Port Facilities.pdf
Mongla Port: Planning Studies			Yes	Yes	Study/Publication	2018	Mongla Port Authority - Feasibility Study for the Upgradation of Mongla Port	PDF	REVISED FINAL_181113_Final Report_Upgradation of Mongla Port.pdf 1811_Feasbility Study for Upgradation of Mongla Port.pdf
Mongla Port: Planning Studies			Yes	Yes	Study/Publication	2016	Mongla Port Authority - Detailed Assessment of Structural Capacity and Safety of Jetty No. 5 to 9 at Mongla Port Protected Area	PDF	Jetty_Assessment_Report-KUET.pdf
Mongla Port: Planning Studies	Mongla Port: Environmental and Navigational Conditions		Yes	Yes	Study/Publication	2004	Feasibility Study for Improvement of Navigability of Mongla Port	PDF	0409_Feasibility Study for Improvement of Navigability of Mongla Port.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Mongla Port: Planning Studies	Mongla Port: Infrastructure	Mongla Port: Equipment	Yes	Yes	Study/Publication	2016	Mongla Port Authority - Structural Capacity and Safety of Jetty No. 5 to 9 at Mongla Port Protected Area	PDF	1603_Jetty_Assessment_Report-KUET.pdf
Mongla Port: Planning Studies	Mongla Port: Environmental and Navigational Conditions		Yes	Yes	Study/Publication	2016	Feasibility Study for Improvement of the Navigability of Pussur Channel at Outer Bar Area	PDF	1609_Feasbility Study for Improvement of the Navigability of Pussur Channel at Outer Bar Area.pdf
Mongla Port: Planning Studies	Mongla Port: Infrastructure	Mongla Port: Equipment	Yes	Yes	Study/Publication	2017	Feasibility Study for the Extension of Roosevelt Jetty	PDF	1703_Feasibility Study for the Extension of Roosevelt Jetty.pdf
Mongla Port: Planning Studies	Mongla Port: Infrastructure		Yes	Yes	Study/Publication	unknown	Master Plan Layout for Chalna Port (Historic Document)	PDF	Master Plan Layout for Chalna Port.pdf
Mongla Port: Relevant Industries			Yes	Yes	Organisational Data	2019	Invitation for bids for coal transportation	PDF	INvitation to tender coals logistics.pdf
Mongla Port: Staffing			Yes	Yes	Organisational Data	unknown	Mongla Port Organigram 1	JPG	MPA-Organogram_E.PNG
Mongla Port: Staffing			Yes	Yes	Organisational Data	unknown	Mongla Port Organigram 2	JPG	MPA-Organogram_E1.PNG
Mongla Port: Studies			Yes	Yes	Study/Publication	2019	'Tool port' to 'landlord port': a game theory approach to analyse gains from governance model transformation	PDF	MPM_Toolporttolandlordport-gainsfromgover.PDF
Mongla Port: Studies	Trade		Yes	Yes	Study/Publication	2019	Mongla Port — dealing with future maritime trade	PDF	Saha2019.PDF
Mongla Port: Studies	Maps		Yes	Yes	First Hand Data / Interviews	2019	Pictures of: Cement Jetty Feastures, Maps_Charts Nautical Access, Mongla RL, Rooseveld Jetty, Roosevelt Jetty RL	Folder	Pictures of Mongla Port
Mongla Port: Studies			Yes	Yes	First Hand Data / Interviews	unknown	Mongla Port at a Glance	DOCX	Mongla Port at a Glance.docx
Mongla Port: Studies	Mongla Port: Environmental and Navigational Conditions	Mongla Port: Planning Studies	Yes		Study/Publication	2019	Assessment of heavy metals concentrations in the soil of Mongla industrial area, Bangladesh	PDF	ehemj-Heavymetals.pdf
Mongla Port: Studies	Mongla Port: Environmental and Navigational Conditions		Yes		Study/Publication	2017	Social Sufferings Due to Saline Water Issues in Mongla Upazilla, Bagherhat	PDF	ICERIE_2017_paper_121.pdf
Mongla Port: Studies	Environment and Society	Sustainability Issues	Yes		Study/Publication	2019	Nexus between Vulnerability and Adaptation in the Context of Climate Change: Evidence from Coastal Area in Bangladesh	PDF	NexusbetweenVulnerabilityandAdaptation.pdf
Mongla Port: Studies	Industries: Agriculture	Sustainability Issues	Yes		Study/Publication	2020 / in press	EXORBITANT SHRIMP CULTIVATION INHIBITING AGRO BASED LIVELIHOODS IN MONGLA UPAZILA OF BANGLADESH	PDF	Preprint-ICCESD2020.pdf
Mongla Port: Studies	Mongla Port: Environmental and Navigational Conditions	Sustainability Issues	Yes		Study/Publication	2015	CHANGES OF SEDIMENT DISCHARGE ON THE PASUR RIVER USING FUTURE CLIMATE CHANGE SCENARIO	PDF	Proceeding_of_I3CWE_2015_Gazipur_Khan_et_al_Changes_of_sediment_discharge.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Mongla Port: Studies	General Transport & Logistics	Competing Ports	Yes		Study/Publication	2018	Efficient Fuel Handling and Management in Port: Context Bangladesh	PDF	Saha2018b.pdf
Mongla Port: Studies	Mongla Port: Environmental and Navigational Conditions	Mongla Port: Planning Studies	Yes		Study/Publication	2018	Health Risk Assessment of Heavy Metals in the Leafy, Fruit, and Root Vegetables Cultivated Near Mongla Industrial Area, Bangladesh	PDF	zums-jhehp-v4n4p144-en.pdf
Mongla Port: Support Vessels	Mongla Port: Equipment		Yes	Yes	Organisational Data	unknown / 2018	Vessel Maintenance Schedule 2019-2022	JPG	100_5570.JPG
Mongla Port: Support Vessels	Mongla Port: Equipment		Yes	Yes	Organisational Data	unknown / 2018	List of vessels	PDF	List_of_Vessels.pdf
Studies of Mongla Port			Yes	Yes	Study/Publication	2011	Bangladesh: Port and Logistics Efficiency Improvement (Financed by the Technical Assistance Special Fund) Section 2: Summary and Recommendation for Mongla Port	PDF	ADB Logistics Study Mongla Port-02.pdf
Sustainability Issues	General Statistics / Information: Economics and Finance, Inflation		Yes		Study/Publication	2019	Blue Economy and Climate Change: Bangladesh Perspective	PDF	BlueEconomyandClimateChange.pdf
Sustainability Issues	General Statistics / Information: Economics and Finance, Inflation		Yes		Study/Publication	2016	For sustainable economic development of Bangladesh	PDF	ForsustainableeconomicdevelopmentofBangladesh.pdf
Sustainability Issues	General Statistics / Information: Economics and Finance, Inflation		Yes		Study/Publication	2019	Future Importance of Maritime Activities in Bangladesh	PDF	FutureImportanceofMaritimeActivitiesinBangladesh.pdf
Sustainability Issues	General Statistics / Information: Economics and Finance, Inflation		Yes		Study/Publication	2019	Initial Measures of the Bangladesh Blue Economy	PDF	InitialMeasuresoftheBangladeshBlueEconomy.pdf
Sustainability Issues	General Statistics / Information: Economics and Finance, Inflation	(Development-) Policies / Plans	Yes		Study/Publication	2019	Policy Interventions for the Development of the Blue Economy in Bangladesh	PDF	PolicyOptionsforBlueEconomyinBangladesh.pdf
Trade	General Statistics / Information: Economics and Finance, Inflation		Yes	Yes	Study/Publication	unknown	Free trade zones and global supply chain	JPG	Freetradezonesandglobalsupplychain.jpg
Trade	General Statistics / Information: Economics and Finance, Inflation		Yes	Yes	Study/Publication	2011	Trade Flows of Bangladesh: A Gravity Model Approach	PDF	Trade_Flows_of_Bangladesh_A_Gravity_Model_Approach.pdf
Trade	General Statistics / Information: Economics and Finance, Inflation		Yes	Yes	Study/Publication	2018	Trade (exports) as an opportunity for Bangladesh: A VECM Analysis	PDF	TradeexportsasanopportunityforBangladesh-AVECManalysis.pdf

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Trade	General Statistics / Information: Economics and Finance, Inflation		Yes	Yes	Study/Publication	2017	Trade Relations between Bangladesh and Cambodia	PDF	TradeRelationsbetweenBangladeshandCambodia.pdf
Transport & Logistics			Yes	Yes	Study/Publication	2011	Bangladesh: Port and Logistics Efficiency Improvement (Financed by the Technical Assistance Special Fund) Section 3: Summary and Recommendation for Benapole Land Port	PDF	ADB Logistics Study Mongla Port-03.pdf
Transport & Logistics			Yes	Yes	Study/Publication	2011	Bangladesh: Port and Logistics Efficiency Improvement (Financed by the Technical Assistance Special Fund) Section 1	PDF	ADB Logistics Study Mongla Port-01.pdf
Competing Ports: Payra			No / Missing	Yes	Study/Publication		Payra Port Master Plan, Payra Cargo Throughout and Vessel Traffic Statistics		
General Standards and Regulations			No / Missing	Yes	Study/Publication		Bangladesh laws and regulations etc.		
General Standards and Regulations			No / Missing	Yes	Study/Publication		Relevant environmental laws with regard to river and coastal modifications		
General Standards and Regulations			No / Missing	Yes	Study/Publication		Legal regulations for private investments		
General Transport & Logistics			No / Missing	Yes	Study/Publication		Bangladesh Railway – Plans, Maps, technical and operations conditions; investments/ master planning 2020 - 2040		
General Transport & Logistics			No / Missing	Yes	Study/Publication		Ministry of Communications, Bangladesh Road Authority - Plans, Maps, technical and operations conditions; investments/ master planning 2020 - 2040.		
General Transport & Logistics			No / Missing	Yes	Study/Publication		Bangladesh Inland Water Transport Authority (BIWTA) - Plans, Maps, technical and operations conditions; investments/ master planning 2020 - 2040		
General Transport & Logistics			No / Missing	Yes			Mongla Port hinterland infrastructure developments		
Maps	Mongla Port: Maps	General Transport & Logistics	No / Missing	Yes	Study/Publication		Detailed Road, railway and inland waterway map of the region (up to Dhaka) and technical information of these		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Draft Mongla Port Authority Act 2019		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		MPA's current rules regarding financial and administrative authority etc.		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Govt. Gazette of MPA Protected area		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Govt. Gazette of Port Limit		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Valid SOP of the port		

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Institutional framework and financing scheme of the port		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Documents/regulations relevant to Mongla Port development		
Mongla Port: Administration			No / Missing	Yes	Organisational Data		Information on potential investors and development partners		
Mongla Port: Environmental and Navigational Conditions	Mongla Port: Infrastructure	Mongla Port: Equipment	No / Missing	Yes	Organisational Data		Size and draft of ships handled at anchorage, mooring buoys and jetties		
Mongla Port: Environmental and Navigational Conditions			No / Missing	Yes	Study/Publication		Hydrodynamic and Morphological model of Pussur River (done by the Institute of Water Modelling in a separate study)		
Mongla Port: Environmental and Navigational Conditions			No / Missing	Yes	Organisational Data		Tide Tables Pussur River - 2019		
Mongla Port: Environmental and Navigational Conditions			No / Missing	Yes	Study/Publication		Mathematical Model Study of Pussur-Sibsa River System and Karnafully River Entrance by Danish Hydraulic Institute – 1991		
Mongla Port: Environmental and Navigational Conditions			No / Missing	Yes	Study/Publication		Hydrography Survey Chart of Pussur River for the last 10 years in pdf format.		
Mongla Port: Environmental and Navigational Conditions			No / Missing	Yes	Study/Publication		Results from hydrographic and morphological model of Pussur River (provided by IWM)		
Mongla Port: Equipment			No / Missing	Yes	Organisational Data		List of Equipment (aside cranes) in Mongla Port		
Mongla Port: Equipment	Mongla Port: Infrastructure		No / Missing	Yes	Organisational Data		Latest status of cargo handling equipment at Mongla Port (incl. mobile harbour cranes to be shortly expected).		
Mongla Port: Financial Data			No / Missing	Yes	Organisational Data		Current budgets etc.		
Mongla Port: Infrastructure			No / Missing	Yes	Organisational Data		List of Infrastructure etc.		
Mongla Port: Infrastructure			No / Missing	Yes	Organisational Data		Present Land Use Plan showing positions of all infrastructure of Mongla Port		
Mongla Port: Infrastructure			No / Missing	Yes	Organisational Data		Present and future utilities (electricity generation/supply and distribution, potable water supply…)		
Mongla Port: Staffing			No / Missing	Yes	Organisational Data		Numbers on port staff and their payment		
Mongla Port: Support Vessels			No / Missing	Yes	Organisational Data		Specification of Service Vessels in Mongla Port		
Competing Ports	General Statistics / Information: Economics and Finance, Inflation		No / Missing	Yes			Studies on prospects of competing ports (national and international)		
General Statistics / Information: Economics and Finance, Inflation			No / Missing	Yes			Customs data on (re-)imports, (re-)exports and Transits by commodity type and origin / target, value and weight		

Primary Topic:	2nd Topic (if applicable):	3rd Topic (if applicable):	Available / Missing	Appears Highly Important	Data Type	Year Published:	Title / Content:	File Type:	File / Folder Name:
General Statistics / Information: Economics and Finance, Inflation			No / Missing	Yes			Studies on prospects of relevant (agro-)industries and products (e.g. Textiles, Ready Made Garments, energy, Leather & Leather Goods, Pharmaceuticals and other Chemical products, Ceramic Products, Bicycles, Jute and Jute Goods, IT, Agricultural Products, Fish and Seafood)		
Maps	General Statistics / Information: Economics and Finance, Inflation	General Transport & Logistics	No / Missing	Yes			Maps of locations of relevant industries and economic geography in general		
Maps			No / Missing	Yes			Digital maps. E.g. on transport infrastructure and routes	GIS / CAD	
General Transport & Logistics			No / Missing	Yes			Statistical information on technical potential and actual utilisation / traffic volumes on nationwide transport routes (all modes)	XLS	
Mongla Port: Administration			No / Missing	Yes			List of services offered by MPA and financial outlines of these	XLS	

Appendix C – Terms of Reference

Section- 6
Terms of Reference

Terms of Reference (TOR) for

Strategic Master Plan for Mongla Port

Terms of References (ToR)

Introduction:

The Mongla Port is the 2nd sea port of Bangladesh. It is located 131 km up stream of Bay of Bengal. The economy of the country is growing at a respectable rate. In order to achieve the National Goal 2021 and 2041, it is essential to further mobilize the national economy. As such, the Government has been taking multiple steps to enhance the capacity of Mongla Port in order to take upcoming load of cargo through this port. With this objective, it is necessary to employ competent consultant to evaluate the existing capacity of the port, the growing volume of cargo throughput and suggest measures for a balanced development of Mongla Port for next 30-40 years (from 2020) considering the existing rules, regulation, SOPs (Standard Operating procedures), UNESCO obligation/ suggestions etc. The Mongla port Authority MPA has already made certain changes in the layout plan in the past. The MPA is now intend to appoint a firm of Consultants to prepare a master plan showing layout facilities required in the port area and associated areas outside. The consultants will collect data and information from relevant Ministries, Agencies, and Organizations etc. as required to be incorporated in the Master plan.

Scope of work:

In consultancy service the following may be considered..

a) Traffic forecast for MPA

Consider the following while determining the capacity building of MPA

i) Coal transportations and handling for Rampal Power plant.
ii) Completion of Padma Bridge connecting to the capital city Dhaka is completed.
iii) Construction of Khanjhan Ali Airport at Rampal.
iv) Mongla Khulna Rail connectivity.
v) Congestion in Chittagong Port.
vi) Overall Industrial development in South Western and north western area of the country.
vii) Handling of Inland and transit cargo for India, Nepal and Bhutan.
viii) Full Operation of BEZA & BEPZA etc.
ix) Prepare cargo traffic plan and carry out necessary additional traffic survey and analysis.
x) Prepare a traffic forecast based on different scenarios for the economic development of Bangladesh and the region as a whole.

b) Detailed hydraulic, hydrologic, hydrographic and environmental study of Passur River

i) Carryout hydraulic, hydrographic and hydrological and environmental study of port area, preferably Sundarban tourism, Cement and LPG industry , Other future industry for dredging, ship movement, pollution, salinity, noise, emission etc.

ii) Evaluate the Conditions of support vessels of the port required for port operations, providing assistance of merchant ships, inland shipping, ships in distress, search and rescue (SAR), security duties etc and suggest replacement, new induction, repair, phase out etc as appropriate.

iii) Better and safer navigability of the channel, safety of the ships, channels and port, Instruction of navigational aids and efficient services etc to be considered.

iv) Define together with the consultant carrying out detailed hydraulic, hydrological and geo-morphological study on Pussur River and the scope for studies to prepare interventions for river training work or other siltation mitigation measures that would ensure long-term sustainability of investments in Mongla Port.

c) **Assessment of infrastructure in the port and intermodal connectivity**

i) Study existing legal documents, proposed modifications including port tariffs, financial aspect, SOPs (Standard Operating procedures) IMO obligation, court verdict etc.

ii) Study all modes of hinterland transport connectivity, especially road, rail and inland water ways and air to identify barriers to inter-modal connectivity of the port and at possible origins/destinations of the shipments. Suggesting physical and operational efficiency improvements and propose alternative measures to remove barriers for inter-modal connectivity.

iii) Study different options to improve Mongla Port facilities with additional jetties or new docking and/or holding basins also on the western bank of Pussur River and at southern anchorage area.

iv) Review the condition of existing land use plan, building, roads, jetties and other maritime and land side in fractures including ongoing and planned projects and suggest for repair, modification demolition or new structures etc as appropriate.

v) Undertake a preliminary environmental assessment, social assessment and assessment of the potential need for land acquisition and resettlement.

d) Overall port development framework and strategic master plan

i) Prepare a strategic master plan for Mongla Port development in the next 30-40 years with inputs from the evaluation of the above studies, such as traffic demand, technical feasibility, hinterland access, navigability, economic and financial viability, environment, and social and resettlement aspects.

ii) Prepare a phased plan for port development based on different scenarios for port development.

iii) Use reference of modern port of similar in nature in terms 8 geographic location, environment and operation.

iv) Maximum utilization of total land areas and properties of Mongla port authority etc. Old Mongla, Foyla, Hiron point, Jafford point, khulna main port area,Mongla etc. Shifting of most of the facilities from Khulna to Mongla to save time and cost.

v) IMO (International Maritime Organization), MARPOL, Bangladesh national rules, regulations, environmental issues, UNESCO obligations, MPA Ordinance, rules and regulations and other relevant orders / instructions etc.

vi) The organizational setup of MPA. The HRM (Human Resource Management) dimension, depending on present and future operational and maintenance capability needed.

vii) The suggestion /wish list of MPA and other appropriate authorities.

viii) Proposal of Phase wise development plan, setting of priority wise timeline.

ix) Recommended projects to be implemented with possible external financing from development partners or potential financing by the private sector

x) Propose alternative financing schemes for effective utilization of private sector financing and or management expertise , and identity the need for further study and /or support for implementation.

e) The following aspects, but not limited to, should be considered while preparing the master plan :

i) All the relevant previous studies/reports, proposals, instruction, guidelines should be consulted as appropriate.

ii) Viability of establishing separate deep draft anchorage/floating jetties in the Sibsha and Passur river confluence in area around latitude $21^{0}26.90'$ N longitude $89^{0}34.4'$ E or any other suitable location along with associated facilities.

iii) Navigable charted depth of about 10 m. throughout the channel up to port jetty.

iv) Helicopter with Helicopter landing facilities including hanger's and maintenance facilities.

v) Evaluating future projection of freight and need for capacity building of the port in terms of terminal facilities equipment, automation yard management, HRM (Human Resource Management), maintenance, Research and Development, security, legal aspects etc.

vi) Need for expansion of port protected area along with including all kinds of facilities required backyard facilities, security arrangements equipment, scanner, etc.

vii) Facilities like commercial spaces, community services, High rising building along with commercial space, and family living facilities, shopping complex cum community centre, Navy contingent, custom office, custom check post, banks, telephone, post office, training center, mariners club, Green belt, Five star hotel, Recreation facilities like park, Amusement Centre, MPA land mark tower, school, collage, Office facilities for port users, hospital, Police station, coast guard office, road network, water supply, drainage system with culvert, rail route, cable route, storage yard for break bulk cargo, Ships reception system including spoil dump area, Lighted Tower, Off-docks, Container terminal at Joimonigoal / appropriate location etc.

viii) Determine the requirement of water front structures such as quay wall and retaining wall, marine drive showing tentative lay out plans etc.

ix) Procedural and material innovation.

x) Need for safety and security of channel, merchant ships, search and rescue facilities including fast moving boat, search and rescue boat, salvage ship, port reception system, VTS (vassal traffic system) etc.

xi) Automation of various aspects, port operation and integration with other appropriate user's agencies/services in the country and beyond.

xii) Obligation as required by ISPS code.

xiii) Any proven/ rational framework may be used while preparing the master plan.

xiv) The consultant should discuss with MPA and relevant authority in time to time to appraise the progress of the Master Plan.

xv) Relevant information will be provided by MPA as far as practicable.

xvi) The experiences of the consultant will be logically applied basing on the context of Bangladesh and the region.

XX) Pre-emptive measures to reduce future traffic congestion in port area and around entry point by considering construction of flyover, overpass, international truck terminal bridges etc.

f) The outline of master plan should include following or as deem appropriate by the consultant:

i) Any proven/ rationl outline may be used.

ii) Detail evaluation of existing capacity and facilities vis-a-vis future demand.

iii) Proposal regarding acquisition more land, ships, equipment, manpower, use of technologies, SOPs, legal frameworks, intermodal connectivity, infrastructure development, social/ community needs etc.

iv) Implementation cost and sources of fund.

v) Implementation strategy and alternative proposals.

f) Schedule and Staff Requirements:

The consulting services will be completed in 18 months, from March 2018 to Sept. 2019. A consulting firm will be engaged having following Experts and as deem appropriate.

i) The consultant team will comprise 20 man-months international and about 28 man-months national inputs as stated below:

Table A-3: Composition of Consulting Team

International Expert	Person-Months	National Expert	Person-Months
Team Leader and Transportation Planner (expertise in port master planning and multimodal logistics)/ similar qualification.	8	Deputy Team Leader and Ports Engineer/ similar qualification.	12
Port and River Engineer and Dredging Expert/ similar qualification.	3	River and Coastal Morphologist/ similar qualification.	2
Port Traffic cum Transport Economist/ similar qualification.	2	Traffic modeler and survey engineer/ similar qualification.	2
Port Engineer (Electro-mechanical)/ similar qualification.	2	Financial Analyst.	2
Institutional Expert/ similar qualification.	2	Environmental Expert/ similar qualification.	2
Design Engineer/Foundation Engineer/ similar qualification.	2	Social and Safeguard Expert/ similar qualification.	2
Land and Aerial Surveyor.	1	Harbor and Navigation Engineer/ similar qualification.	2
		Railway Engineer/ similar	2

		qualification.	
		Custom Expert/ similar qualification	2
Total	20.00	Total	28.00

ii) Reporting & Responsibilities of the Consult:

- An inception report within 1 months signing of the contract, detailing the initial work program and the terms of reference.
- Interim reports 6 months after starting their services, including the progress on designing the overall development framework for Mongla Port development.
- The draft final report after 15 months of services.
- The final report on TA completion, incorporating comments by the government and MPA, to be completed 2 weeks after receipt of the comments. The consultants will also submit monthly progress reports with a summary of activities and recommendations for action on issues.
- Two national workshops will be conducted during TA/the project implementation. The fast, with all relevant stakeholders involved in business with and trade through Mongla port, will discuss the objective, approach, and methodology to establish the master plan for Mongla Port and collect inputs from these stakeholders. The first workshop shall be held within 1-2 months from the start of services. The second workshop will discuss TA outputs for finalization after submission of the draft final report.
- After completion of 1st national workshop, the consultant should arrange a team visit at least two ports of 8 personnel preferably one Asian and one European port with his own cost.
- The consultant should submit 30 copies in English version of final report along with soft copy.
- The consultant should submit beautifully designed 2 nos 3-D model of the Master Plan.

The consultant shall carry out the services as detailed in the Terms of Reference and perform the tasks of the terms of agreement with reasonable care, skill and diligence with sound professional and financial practices. The Consultant shall be liable to the PD for discharge of responsibilities. The Consultant should interact time to time with PD and concern MPA/ appropriate officials.

Qualifications, Experience and Responsibilities for Consultants

International Experts:

Consultants	Educational qualification	Experience	Responsibilities
1	2	3	4
Transportation Planner (Team Leader)	Graduate in Civil Engineering & Post Graduation	Min. 20 years experience in Transport Planning with assessment of port service performance and technology for a broad range of cargo types (container, bulk and hazardous materials); evaluation of port/marine/inland water transport operational interface & analyzing port operational practices and policies. Familiar with the methods for determination terminal and port capacity, evaluation of port productivity and defining non structural measures for increasing utilization and improving labour productivity.	• Full responsibility for all aspects of Planning, design reporting and preparing update Master Plan for Mongla Port. • Provide advice and direction to technical group of the multidisciplinary team. • Prepare project plan, schedules, and period for publications of reports. • Arrangement of all procurement for services, equipment, and materials needed for the work. • Orientation of work plan and necessary training programme to ensure maximum technology transfer and develop in country capability and use. • Accomplish all works for review and technical committee meeting & seminar for concerning project. • Determine terminal and port capacity, evaluate port productivity and define non-structural measures for increasing utilization and productivity of the port. • Team Leader will bear all responsibility for successful accomplishment of the total project.
Port and River Engineer and Dredging Expert	Master in Civil Engineering Water Resources. Engineering & Post Graduation Diploma in Hydraulics & Port Engg.	At least 15 years experience with 10 years experience in Port and Harbour Channel dredging.	• Analysis and interpretation of model results • Provide necessary relevant information of Hydrographic Survey Chart • Provide necessary relevant information of the port channel designs and planning of dredging, retaining walls, groins, quay walls & other water front and Land Port structure. • Bear all responsibility relating to port and water resources engineering, hydrology, and morphological aspect of the project.

Consultants	Educational qualification	Experience	Responsibilities
1	2	3	4
Port Traffic cum Transport Economist	Masters in Economics	15 years working experience in the relevant field.	• Study the present socio-economic situation of the country. • Consultant will collect all the relevant data and analyze • Study major modes of hinterland transport and their potential future role for access to Mongla Port, especially road, rail and inland waterways to identify barriers for inter-modal connectivity in the port and at possible origins/destinations of the shipments. • Provide suggestion in terms of physical and operational efficiency improvement and provide alternative measure to remove barriers for inter-modal connectivity • Prepare future cargo forecast. • Perform any other works necessary to accomplish study of the project.
Port Engineer (Electromechanical)	Graduate in Economics & Post Graduation	15 years working experience in the relevant field.	• Analyze the equipment being used in the port and recommend improvements to cater for the expected traffic growth and modernization of the equipment and port efficiency of recent developments in the sector. • Review operation and maintenance of the port equipments used and suggest improvements where needed.
Institutional Expert	Post Graduate in any discipline	Min. 15 years working experience with large public sector organization.	• Review the port's institutional structure and recommend adjustments and or improvements to increase the efficiency, client orientation and security system. • Analyze the interfaces between port operation and hinterland transport need suggest necessary improvements, if any, especially convening the institutional setup and cooperation between different modes of transport. • Review manpower requirement, occupational health and safety based on different development scenarios and provide suggestions for improvements. • Assess the need for legal reforms covering e.g. rules and manuals • Assess the institutional and governance capacity of the Mongla Port Authority and provide specific recommendations on substantial institutional improvement and capacity development.
Design Engineer/Foundation Engineer	Masters in Civil/Foundation Engineering	15 years experience in the relevant field.	• Responsible for foundation design of high-rise bldg. Including site selection and technical specification
Land and Aerial Surveyor	Graduate in Civil Engineering and Post Graduation in related discipline	Min. 12 years experience. 8 years experiences in inland survey.	• Establish the necessary plant document to carry out the study on the master plan, update the data were needed and establish a comprehensive, integrated land use plan for the port, access to the port and related auxiliary facilities overall.

National Experts:

Consultants	Educational qualification	Experience	Responsibilities
1	2	3	4
Deputy Team Leader and Ports Engineer	Masters in Civil or water Engineering in post graduate Diploma in Hydraulics or Port Engineer.	10 years experience in the work of similar nature of project and preferable working experience with ports in Bangladesh.	• Overall supervision of the study to assess the characteristics of existing port operation and of existing and planned maritime and landside infrastructure and prepare the overall port development framework. • Responsibility for all aspects of Planning, design, reporting, and preparing update Master Plan for Mongla Port • Provide advice and direction to technical group of the multidisciplinary team. • Prepare project plan, schedules, and period for publications of reports. • Arrangement of all procurements of services, equipment and materials needed for the work • Orientation of the work plan and necessary training programme to ensure maximum technology transfer and develop the country capability and use. • Accomplish all works for review and technical committee meeting and seminar for concerning project • Determine terminal and port capacity, evaluate port productivity and define non-structural measures for increasing utilization and productivity of the port. • Bear responsibility for successful accomplishment of the whole project.
River and Coastal Morphologist	Minimum of Master degree in Civil/Water Resources engineering/ Hydrology.	At least 10 years experience with 5 years experience in mathematical/ numerical modeling and river hydraulics. Experience of work in the southwest tidal rivers and working experience in seaport of Bangladesh will get preference.	• Implementation of the morphology model for the Pussur-Sibsa river system • Analysis and interpretation of model results • Provide necessary relevant information of the port and river designs and planning of dredging, retaining walls, groins, quay walls, & other water front structure.
Traffic Modeler and Survey Engineer	Graduate in Civil Engineering or BSC. in recognized qualification or membership of appropriate institution	At least 15 years of practical experience and preferable working experience in seaport of Bangladesh	• Planning and supervising of all necessary surveys • Analysis and Quality Control of Survey data • Ensure proper storage and reporting of all survey data collected • Bear all responsibility relating to survey.

Consultants	Educational qualification	Experience	Responsibilities
1	2	3	4
Financial Analyst	Should have master degree in Finance/Management/ Accounting	Minimum 15 years experience in financial evaluation and analysis including structure of port financing. Pricing and management by variable & fixed component. Cash flow and debt service requirement and preparation of financial proformas. Sources of financing analysis and development of port tariff structures and management. Should have knowledge in determination of financial feasibility of investment programs and strategies. Must have knowledge in financial cost benefit analysis.	• Determine pricing of variable and fixed component. • Analyze of cash flow and debt service requirement. • Prepare various financial proformas. • Calculate financial viability and cost benefit analysis. • Develop port tariff structures and management. • Determine financial feasibility of investment. • Based on various technically feasible project alternatives identified in the engineering analysis and considering necessary time phasing and shadow pricing, identified all cost and benefits and formulate project financial plan with the objectives of maximizing net present value. Calculate the Internal Rate of Interest (IRR) and carry out sensitively analysis due to variations in all critical factors of cost and benefits.
Environmental expert	At least Master Degree in Environmental Engineering or Environmental Science	15 years working experience in the related field. Working experience in Bangladesh will get preference.	• Inventory of present environmental situation. • Carryout Environmental Impacts Assessment (EIA) • Preparation of Environment Management and Monitoring Plan • Co-ordinate activities especially with the Department of Environment. • Bear all responsibilities relating to environment aspect of the project.
Social and Safeguard Expert	Graduate in any discipline and Post Graduation	15 years working experience in the related field.	• Responsible for undertake an initial poverty and social assessment • Responsible for assessment of the potential need for land acquisition and resettlement • Responsible for Conduct Social Impact Assessment (SIA) and prepare Resettlement Plan (RP).
Harbour and Navigation Engineer	Graduate in Marine Engineering with Post Graduation	Experience in the similar type of work. Minimum 8 years working experience in service as Navigation Engineer serving in port. Working experience in seaport of Bangladesh will get preference.	• Assist in identifying needs for improvements of the navigability in the Bay of Bengal, in the channel and alongside berths and jetties and studying different options to improve Mongla Port facilities with additional jetties or new docking and/or holding basins also on the southern bank of the Pussur River.
Railway Engineer	Minimum Graduate in Civil Engineering	Experience in the similar field and similar type of work. Minimum 10 years working experience in Railway projects in design and construction	• Collect all the relevant data. Prepare design of railway, truck, BoQ of internal rail lines of port.
Custom Expert	Graduate in any discipline	Min. 15 years experience with large public sector organization as customs officer. Min. 3 years experience in Senior Customs Officer in port.	• Review the processes for customs clearances within the port and in the country context. • Recommend imports to reduce the time, goods need to be carried within the port by risk management systems for the custom and remote customs clearance of goods.

Appendix D – Meeting Minutes of Kick-off Meeting

Mongla Port Authority
Mongla, Bagerhat-9351
Fax No : 04662-75224
E-mail : engg.rabeyarouf@gmail.com
Website : www.mpa.gov.bd

No-18.14.0158.420.014.202.30(Part-3).2019- September 2019

Minutes of the project Kick-off Meeting	
Date/ time	18th of September 2019/ 10:30 – 11:30 a.m.
Place	Mongla Port Authority, Mongla-9351, Conference Room
Presence	See attached list of participants

Proceedings

The participants were welcomed by Rear Admiral M. Mozammel Haque, Chairman Mongla Port Authority.

The meeting was attended by the senior Management of the Mongla Port Authority. The participants introduced themselves by an introductory round. The list of participants s provided by attachment 1

The Chairman expressed his gratitude that the works on the Strategic Master Plan for Mongla Port commenced now, and ensured the full management attention and unlimited support to the Consultant's team by the Port Management.

It is of outmost important to harmonize the Master Plan recommendations and their time lines with the national development planning horizons. The Masterplan has to consider interlinks to the achievement of vision 2021, vision 2041, Stragegic Development Goals 2030 and Delta Plan 2100 regarding the port's contributions to national economic growth in this respect.

Dr. Ulrich Malchow, Team Leader of the Consultant introduced the Consulting Team, summarized understanding of the Terms of Reference, Approach, Method and Scope of work as well as the Work plan and the proposed time schedule for the deliverables by a kick-off meeting presentation (see attachment 2).

Understandings and Agreements:

1. Any request for information will be complied with high priority by Mongla Port Authority, and all data required and available with Mongla Port Authority will be provided.

2. Furthermore the Port Authority Management will support the consultant in getting access to information required and available at other sources apart from Mongla Port Authority.

3. A list of information requested which will help to accelerate the processes and prevent any misunderstandings. That list shall be given to the respective department or section heads of the port via the Project Director and Executive Engineer Rabeya Rouf.

4. The Consultant is advised to prepare respective questionnaires. The PD will extend all help in this regard and send respective requests/ recommendation letters to the respective Port Users/Stakeholders accordingly.

5. The time frame for deliverables and workshops is confirmed. The Inception Report will be submitted by the 10th of October 2019, and the first workshop will be held on October 20, 2019, in Khulna. The objectives of this first workshop are to present initial findings, to address further needs for clarification, information and data, and to discuss with the port and selected stakeholders invited by Mongla Port Authority to get further information and to proceed jointly and best. The venue of the workshop will be selected on mutual discussions between Mongla Port Authority and the Consultant.

6. The second workshop shall be held in Dhaka to present the outcome of the Port Masterplan and the masterplan result to the all stakeholders and the broad business community and the public on national level.

7. The offered and agreed time horizon for forecast and planning projections (2020-2070 / outlook to 2070) will be adjusted to 2100 in order to synchronize the Port Master Plan development recommendations with the national planning in additions to the requirements for port development as follows.

    - Three forecast scenarios a) optimistic, b) base case and c) modest growth will be developed as offered according to socio economic and trade and welfare development parameters.
    - For each scenario, cargo throughput, vessel movements and port hinterland traffic projections for all parts of Mongla port (e.g. the own piers and jetties, mooring points/ship lightering places, Roosevelt jetty at Khulna and the industrial, private jetties and loading and unloading facilities will be elaborated for the term in congruence with national goal planning of the Peoples Republic of Bangladesh,
    - Timely extended forecast projections will be prepared as an outlook until the year 2070 in order to provide a set of forecast data for a term of 50 years to allow for mid-term phased port development planning.
    - A high level forecast data trend projection on aggregated level until

- 2100 will outline potential developments to consider the time frame of the Bangladesh Delta Vision 2100. These projections will serve as a guideline for long term development prospects.
- Mongla Port is looking for a Master Plan according to the proposed TOR and covering their wish list. The consultants will provide service to the client accordingly were discussed.
- As per Request for proposals (RFP), one room will be provided to the consultants from Mongla Port Authority (MPA) to perform their field works. That the consultants can carry out their duties accordingly and smoothly.

The Kick-off Meeting ended with the votes of thanks to all attendants of the meeting

Rear Admiral M Mozammel Haque
Chairman, Mongla Port Authority

Attachments:

1. List of participants
2. Kick-off presentation slides

MONGLA PORT AUTHORITY

A kick of meeting on strategic Master Plan is held on 18th Sep 2019. The following officers are present

SL No	Name of Officers	Signature and date	Mobile Number
01	Yeasmin Afsana Member (Finance)	18.09.19	01712-046651
02	Engr. Md. Altuf Hossain Khan Member (ECD)	18.09.2019	01711207695
03	Md. Gias Uddin ~~AA~~	18/9/19	01712736956
04	Lt Col Mizanur Rahman	18/09/19	01711302240
05	Capt Md Ali		01715026014
06	Quazi Faizur Rahman;		01711981527
07	Shaikh Masoodullah Deputy Chief of planning	18/9/19	01712984006
09	Dr. ULRICH MALCHOW		
10	Ralf Behrens		01314962459
11	SK. ALI AHMED Deputy Team Leader IL-SPMC	18.9.19	01711385246
12	Md. Zahirul Huq C.D	18/09/19	01673903179
13	Rabeya Rouf P.D of Master Plan		01711450245
14	Cdr Fakhar Uddin	18/09/19	01865636666

15	Abul Kalam Azad SDM (Admin)		
16	A F M Zahidur Rahman		CE(M)
17	GOLDER SHABAZ		
18	Ohiuddin Chowdhury Secy (CMPR)		
19	SK. Sourkat Ali CE (CRH)	18/09/19	01715144296
20			
21			
22			

Appendix E – Stakeholder Information

Stakeholder Sector Information

Port User Terminals and Port Industry facilities
Fertilizers

General information

Annual or other production report

	Fertilizer (M Ton)		
Year	Urea	TSP	Am Sulp
2010-11	908,837	63,457	725
2011-12	933,686	65,047	359
2012-13	1,026,999	40,152	98
2013-14	838,628	86,432	28
2014-15	878,360	87,536	-
2015-16	1,007,498	95,082	-
2016-17	922,717	47,507	-
2017-18	764,006	10,719	-

Ref: Bangladesh Statistics-2018 (Table 7.2)

History past, present and future development

The annual consumption of fertilizer in Bangladesh is always higher, where the major portion of the demand is fulfilled by imports. Although, there have always been concerns about the quality of these imported fertilizers.

In Bangladesh, balanced fertilization is necessary for sustainable higher yields. Imbalanced application of chemical fertilizers is one of the key obstacles to the sustainable development of agriculture production, farm. Bangladesh Chemical Industries Corporation (BCIC) operates six urea fertilizers, one ammonium sulfate, and two DAP Company Limited (KAFCO), a joint venture between the government of Bangladesh and foreign companies to produce urea fertilizer and extra ammonia product for export. The total installed capacity of seven plants 2.8957 million tons of urea and 1.8867 million tons of ammonia per year.

Source: Bangladesh Rice Research Institute (BRRI)

Traffic and throughput

Inbound material flows per year during recent years (in M MT, Mongla Port)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fertilizers					1234648	1342361	1727917	1565327	1465570	1813010
Coal					20000		336325	1059143	1263940	1767844

Ref: Year 2018, Bangladesh Bureau of Statistics

Information on Port Users and Port Industry
Cement Clinker mills

Correct name of Cement mills at Mongla port

- Meghna Cement Mills Ltd
- Bashundhara Cement Mills Ltd
- Mongla Cement Mills Ltd
- Dubai-Bangla Cement Mills Ltd
- Holcim(Bangladesh) Ltd.

General information

- History , past, present and future development

Bangladesh is on its way to creating a solid concrete foundation for its future through various mega projects aiming to develop the nation's infrastructure. With more than $3.5bn budgeted in FY19 for the 7 infrastructure mega projects including bridges, rail lines, power plants, and a metro rail [2], the cement market in the country looks to be a bullish market. Besides these large scale projects, however, a higher income per capita for the greater population also has led to greater consumption as building personal homes, a somewhat tradition of Bangladesh is, has become more affordable.

Developments in real estate and commercial/ public institutions have also contributed to consumption. An increasing number of migrants traveling from rural areas to the big cities for opportunities of better education, jobs, and wages, increasing urbanization in the country is also fueling greater growth in the industry.

The cement industry in Bangladesh has been showing double digital growth over the last 5 years. The nation currently consumes less that one fourth of the world's general consumption of 500 kg cement per capita [1], but looks to be rapidly closing the gap. High growth in this sector is further reflected considering Bangladesh is one of the largest global importers of clinkers.

Market Fundamentals

Of the 5 types of Portland cement used in the world, Bangladesh uses Ordinary Portland Cement (OPC) and Portland Composite Cement (PCC), with the former composed 95% of clinker and latter 65%-80% [8]. As a result PCC has been gaining popularity in the country due to its cost effectiveness, low environmental impact, and versatility in various applications. The cement sector in Bangladesh is heavily influenced by seasonality due to Bangladesh's subtropical monsoon climate. September/October to April/May are peak seasons with demand declining during May/June to August/September, with activity of varying depending on the duration of the rainy season. Over the past 5 years, the industry has seen a compound annual growth rate (CAGR) of 12.67% [1], significantly greater than the country's GDP growth even considering future targets by the government set at 10%.

However, the market is highly dependent on imported goods required for production including oil, clinker, limestone, and gypsum, and as a result also carries a considerable risk in foreign exchange rates. Of the main imported goods required for production, clinker alone comprises of 60-70% of the total materials used. Bangladesh mainly sources clinkers from China, Thailand, Vietnam, and Malaysia. High cost of logistics has also been a major cost driver in the past and has only been on the rise as government policy has reduced the allowed load of trucks by half to reduce pressure on the roads.

According to a survey report by Bangladesh Cement Manufacturers Association, Bangladesh currently has a production capacity of 54 Mn MT [10], producing only 32 Mn MT with overall operations utilization at around 80% [1]. 2018 saw the market's highest sales of 33 Mn MT. Currently 82% of the local demand for cement is met locally, with imports making up for the gap.

Challenges & Prospects

The cement industry currently faces challenges of low utilization of resources, a growing overcapacity, as well as sensitivity to prices of raw material and energy required for production. The market is also highly sensitive to changes in foreign exchange rates as majority of fuel/raw materials are imported. Recently the devaluation of the taka against USD (from BDT 80/USD to BDT 85/USD [10]) further raised costs in 2018 causing manufacturers to raise their prices for the first time in 6 years [5]. Costs of production are further exacerbated due to government policy of allowing less truck loads to reduce pressure on roads. This has in turn pushed producers to turn to barges for transport on water to reduce costs. Although producers are seeking to transport cement and raw materials by boat, an inadequate supply of barges hinders progress. All together, these factors are contributing to operational inefficiencies despite measure taken by producers to reduce costs, such as strategically locating facilities to reduce high transportations costs.

Despite the many challenges at work, the cement industry has recently announced record sales in 2018, due to the increased consumption in rural and infrastructure projects. This year sales of 33 Mn TT took place, a 12% growth in consumption [10]. Exports to India have also been on the rise with a 24% growth during July 17 to May 18 according to Export Promotion Bureau [11].

Competitive Landscape

Currently in Bangladesh there are 32 cement manufacturing companies of which 7 are currently listed and 4 are multinationals [1]. 30 Mn MT of cement per annum is being produced with local companies holding 80% of the market share due to their competitive advantage in price and quality [1]. Despite the many market players, the industry is dominated by 10 major companies of which only 2 are multinationals, one (Lafarge Holcim) of which is second in market due to a recent acquisition [1]. Surprisingly, although 2 global cement companies, Emirates Cement and Cemex are divesting their operations, a Saudi business firm is soon set to enter the market in the near future [3]. MI Cement has also recently announced an expansion set to increase production capacity 76% by 2021 from a current 11,000 tonnes per day to 19,400 [9].

The Way Forward

Prospects for overall growth in the sector are bright for the country in terms of increasing demand due to:

- urbanization,
- real estate development, and
- government projects,

however, uncertainty in price fluctuations due to imports of raw materials, fuel, logistics, and foreign exchange may get the better of the industry. Competitors are also expanding their capacity despite having unutilized facilities in anticipation of increasing demands. It is almost certain without a doubt that growth in this sector will continue, however, a question of profitability in terms of rising costs must be addressed for the industry to further flourish. In the same way that a large majority of cement producers have their own private road transportation, we may see an increase in barges for water transportation to reduce costs. New technologies are also being adopted in order to improve operational efficiencies to not only reduce wastage in the industry but also reduce the amount of clinker required for production without sacrificing quality. This is especially important in the future as new players enter the market, and competitors seek greater profits in a current situation of price wars between competitors (Ref. https://databd.co/stories/cement-in-bangladesh-building-a-concrete-future-1451)

Facilities, areas, and area allocations in m², acres or hectare

Description or facilities	areas	area allocations in (m², acres or hectare)
Mongla Cement Factory: the biggest industrial enterprise of Sena Kalyan Sangstha has been established near Mongla Port in 1994 on an area of 10.66 acres of land with the production capacity of 3,90,000 metric tons of cement per year. The mill went into trial production from Dec 1994 to June 1995. It has gone into commercial production since July 1995. The second unit was installed on 25th January 2003 with the production capacity of 2,10,000 metric tons of cement. Establishment of 3rd Cement Ball Mill (Capacity 110 MT/hour) is in under construction.	10.66	Acres
Meghna Cement Mills Ltd is the first manufacturing unit of Bashundhara Group and it is one of the largest Cement Industries in the country producing 1.2 million metric tons a year. The Meghna Cement Mills Ltd is an International Standard Organization (ISO 9001: 2008) certified company having accreditation of manufacturing products for both domestic and international markets. Trade Mark "King Brand Cement".	9.83	Acres
Dubai Bangladesh Cement Mills Ltd. production capacity of 0.6 million metric tons per year		
Bashundhara Cement Mills Ltd at Bashundhara Industrial Complex Limited, Mongla with production capacity of 2.65 million per year.		56 Acres(for total industrial park)

Present and recent production capacity in tons of cement per year-

Year	2011	2012	2013	2014	2015	2016	2017	2018
Production Capacity in Mil MT	22	25	27	33	33	39	45	51
Sales in Mil MT	14	16	16	19	20	23	28	31
Actual production is hovering around 31-32 million tons. On an average the utilization rate of cement manufacturing companies over the years has been around 55.0-65.0%. Since 1994, more than 120 companies registered as cement manufacturer, out of which 75 came into operation. In the following years, dependency on import diminished significantly and local companies started flourishing. Later in 2003, M.I Cement started exporting Cement for the first time.								
Ref: Bangladesh Cement Industry: Resilient; Better Days Await by EBL Securities Ltd.								

Development plans

Total cement production capacity is expected to reach about 65 million tons by 2019. Bangladesh is the 40th largest Cement market in the world and the industry grew at approximately 11% CAGR over the last seven years as demand doubled from 14.5 million metric ton per year to around 31 million metric ton per year. **(**Ref: Bangladesh Cement Industry: Resilient; Better Days Await by EBL Securities Ltd.)

Ships handled at Mongla Port

Maximum length of vessel that can enter in the anchorage is 225 M and for the Mooring Buoys it is 185 M. Efforts are made to increase this permissible length to 225 M. Vessel of 9.0 M, 8.0 M and 7.0 M maximum draught can take berth in the anchorage, Mooring Buoys and Jetties respectively. (Presently, vessels of up to 15,000 DWT are being handled alongside. (Ref: TA 7389-BAN: PORT AND LOGISTICS EFFICIENCY IMPROVEMENT, July 2011, ADB)

Operations of berths by MPA or private parties

Berth as follows from North to South					
1	Mongla Cement Factory Jetty	11	Mooring Buoy No.5	21	Mooring Buoy No.10
2	Meghna Cement Mills Jetty	12	Mooring Buoy No.6	22	Anchorage No.10
3	Kleenheat Gas Jetty	13	Mooring Buoy No.7	23	Anchorage No.14
4	Summit Surma LP Gas Ltd.	14	Mooring Buoy No.8	24	Anchorage No.15
5	Jetty No.9	15	Anchorage No.3	25	Anchorage No.16
6	Jetty No.8	16	Anchorage No.4	26	Anchorage No.17
7	Jetty No.7	17	Anchorage No.5	27	Anchorage No.18
8	Jetty No.6	18	Anchorage No.6	28	Anchorage No.19
9	Jetty No.5	19	Anchorage No.7	29	Anchorage No.20
10	Mooring Buoy No.1	20	Mooring Buoy No.9	30	Anchorage No.21
Facilities					
	Berth operated by MPA				
	Jetty Berths	5			
	River Mooring Buoys	7			
	Anchorage Berths	14			
	Specialized berths				

	Mongla Cement Factory Jetty	1			
	Meghna Cement factory Jetty	1			
	Union LPG Jetty	1			
	(Kleenheat) LPG Malaysia Bangladesh Jetty	1			
	Summit United Petroleum Jetty	1			
	Dubai-Bangladesh Cement factory Jetty	1			
	Holcim Cement Factory Jetty	1			
	Vessel Concrete Jetty	1			
	Pontoon Berth (for Fresh Water)	1			
	Pontoon berth (Inland vessels & Ferry)	1			

(Ref: Bangladesh Shipping Agents' Association, Khulna, Basic Facts)

Meghna Cement Mills and Bashundhara Cement Industries:

Raw material unloading & Storing:

There exists a **modern equipped jetty facility** in this organization where the sea going vessel can berth easily. There exists**02 nos. of hydraulic crane** of modern technology of **German origin** having unloading capacity of **250 MT/Hr** each of which contribute a lot to faster unloading. There exists a **clinker shed** having storing capacity of **35000 MT** and for easy and faster conveying there exists a substantial numbers of belt conveyors which has been designed technically and which lengths about 02 kilometres. Besides the two nos. of hydraulic crane there also exists 02 nos. of mechanically driven crane namely Fransiab Crane which are mainly engaged for limestone unloading. Bashundhara has a huge fleet of River going and Ocean going vessels for carrying the inbound raw materials and also for the distribution of Cement nationwide.

Type	Total	Objective
Own Barge	55	For carrying finished goods
Mother vessels	7	For carrying raw material
Lighter vessels	36	For Lighterage from deepsea
Total	98	

(Ref: Web site of Bashundhara Group)

Inbound material flows per year during recent 10, years (in M Tons, Mongla Port)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Clinker					866241	1011942	1236442	1572211	2025269	2378291
Limestone										
Gypsum					57550					
Fly Ash										
Iron ore										
Bauxite										
Cement (in '000 M Ton)						10323	12334	13922	17669	17391

(Ref: Year Book 2018, Bangladesh Bureau of Statistics)

Main sources and origins of above input material and coming by which mode of transport

Ocean vessel/short see ship via Mongla port- Main sources and origins: Most of the manufacturers import clinker from Vietnam, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, and Thailand. Some manufacturers also use local limestone collected from Sylhet. Majority portion of imported fly ash is sourced from India; slag is imported from China, India, Japan and Singapore while Gypsum is sourced from China, India, Indonesia and Japan. (Ref: Bangladesh Cement Industry: Resilient; Better Days Await by EBL Securities Ltd.)

Port User Terminals and Port Industry facilities

Grain Silo / Grain Importers or Rice Exporters

Production of Major Crops (lac metric ton)						
Major Crops	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16 (provisional)
Aus	21.33	23.32	21.58	23.26	23.28	22.89
Aman	127.91	127.98	128.97	130.23	131.9	131.9
Boro	186.17	187.59	187.78	190.07	191.92	191.92
Wheat	9.72	9.95	12.55	13.03	13.48	13.48
Total cereals	345.13	348.85	350.88	356.59	360.58	360.19
Maize	10.18	12.98	15.48	21.24	23.5	23.5
Potato	83.26	82.05	86.03	89.5	92.54	92.54
Jute (Lac bale)	83.96	80.03	76.11	74.36	75.01	75.58

Ref: **http://data.gov.bd/dataset/production-major-crops-2012-16**

Inbound material flows per year during recent 10, years (In M MT-Mongla Port)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
FoodGrain/ Wheat					159654	284351	140832	129632	441359	896324
Rice										
Any other products										

User Terminals and Port Industry facilities
Refinery-Tank farm

7.4 Import of Crude, Refined and Lube base oil						
					Qty in MT	
Item	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
A. Cruide Oil Import	1085937	1292102	1176693	1303194	1090000	1379000
B. Import of Refined Oil	4090915	3630764	4155336	4095592	3672000	4452000
C. Import of Lube Base Oil	0	4853	0	0	0	0
Total	5176852	4927719	5332029	5398786	4762000	5831000

Source: Bangladesh Statistics 2018

Port User Terminals and Port Industry facilities
LPG Tank and Distributions plants

Orion Gas Ltd. – Mongla Plant

A. Storage Capacity: 3000 MT(2 nos Spherical storage tank of each capacity 1500 MT)
Filling Capacity: 12,000 nos cylinders per day in single shift
B. Products: Bottled and bulk LP Gas in different pack sizes as :

1. **Domestic Use:** 12 kg (Option of 20mm and 22mm valve size)
2. **Commercial Use:**35 kg, 45 kg (Option of 20mm, 22mm, Compact and POL Valve Size)
3. **Bulk Supply:** Ability to supply bulk LPG by European standard LPG Road Tankers to clients all over Bangladesh. We have a fleet of LPG Road tankers of different size to full fill industrial client's demand.
4. **Satellite Filling Plant:** Especially for domestic and industrial cylinders, there would be a number of filling plants near to the major demanding locations to facilitate the distributors at their nearest points and quick delivery.

C.Plant Location: Plot No. I-20, Mongla Port Industrial Area, Mongla, Bagerhat.
D.LPG Terminal Plant: The Company has its own 8 Acres Industrial Plot with LPG Import Jetty facility and 3000 MT LPG Storage facility. Bulk LPG would be imported by LPG Tanker Vessels from Malaysia, Indonesia, Singapore, UAE, KSA etc.

The Storage Tank from Korea and LPG Filling equipment from Kosan Crisplant, Denmark already installed. Other related accessories from Europe with the latest computer controlled Digital technology which would ensure 100% accurate and safe operations. The plant would be designed, Constructed and commissioned as per the latest version of International

Standards. To execute, maintain and operate the plant as per design, there is an efficient management professional team having long experiences at home and abroad. The plant construction, testing and commissioning was completed within December, 2016. Marketing started from End of January, 2017. Ref: https://orion-group.net/concern/11/32/orion-gas-ltd

Mongla LP Gas Plant

Being a subsidiary of country's one of the most well revered conglomerates, Bashundhara Group, since our start in the year of 1999, we set a benchmark for Bashundhara LPG. No matter what it takes, we would be the epitome of 'standard' and 'reliability' for the people and the country. The Mongla LPG plant houses 7 gas storage tank with 5,000 MT capacity. And the 48 filling posts of the carousel filling system of the plant have maximum monthly refilling capacity of the country. No matter what goes on, we stay committed to make our delivery on time.

Mongla Cylinder Manufacturing Plant

In 2011, the company saw its establishment of world class cylinder manufacturing plant in the name of Sundarban Industrial Complex Ltd. situated in Mongla Port Industrial Area on the bank of river Pashur to meet the growing demand. These plant strictly adhere to 40 production stages as well as exclusive lab facilities to ensure safe cylinders in marketplace. Ref: http://www.bashundharalpgas.com/plant-overview

LAUGFS Gas

LAUGFS Gas Bangladesh is one of the largest LPG Player who is doing LPG Importing, Storing, Bottling, Marketing, Distributing and sales across the Bangladesh. Being the only 100% owned international entity, it has entered the local LPG downstream industry in 2001 with the brand name of Kleenheat Gas. We have grown rapidly over the years, establishing an expansive distribution network across the country.

LAUGFS presently operates a world-class LPG import, bottling and distribution facility in Mongla Port with a storage capacity of 2,000 MT and in the process to extend a further 3000 MT by upgrading the storage size of Terminal & setting up satellite filling stations in different parts of the country. We distribute LPG for domestic, commercial and industrial customers with an extensive nationwide cylinder distribution network under the brand name of LAUGFS, PETREGAZ & KLEENHEAT. LAUGFS is also the pioneer to introduce Autogas to Bangladesh, supplies LPG to service stations across the country.

LAUGFS Gas Bangladesh is part of LAUGFS Gas PLC, a fast expanding energy conglomerate in the region and a part of the diversified multinational LAUGFS Holdings Ltd. With 4,000 employees LAUGFS has a strong presence across 20 industries in the power and energy, retail, industrial, services, leisure and the logistics sectors. LAUGFS has an extensive regional presence in Power and Energy with LPG downstream activities of LAUGFS Gas, logistics services provided by LPG vessels owned and operated by LAUGFS Maritime, renewable energy operations of LAUGFS Power, and petroleum retailing by LAUGFS Petroleum. Ref:https://www.laugfsgas.com.bd/about-us.php

Beximco LPG Mongla Plant

The primary hub for bottling and distribution for Beximco LPG is the Mongla plant, with a production capacity of almost 100,000 MT/year. The plant is located by the Passur River for easy access to the BexPetro-1 ocean tanker. The jetty is used to transfer imported LPG from the ocean tanker to the storage tanks of the Mongla plant, where Smart Cylinders are bottled and Beximco LPG road tankers are filled, ready to transport to LPG industries and auto gas stations.

The Mongla plant exists for one purpose – to fulfill the country's energy demands. It provides fuel for the nation for both domestic (cooking oil) and industrial (auto gas and bulk solutions) demands. The plant has a storage capacity of 3000 MT, with an extension for another 3000 MT of storage; this new extension will also provide barge loading facilities, letting us supply the islands in the Bay of Bengal and the rest of the country through the wide river network. Ref: http://bexpetro.com/mongla-plant.php

OMERA PETROLEUM LIMITED

Omera Petroleum Limited (OPL), a subsidiary of MJL Bangladesh Limited, has launched Omera LP Gas in Bangladesh considering the growing demand of customers. OPL has started LPG venture in Bangladesh with utmost commitment to convenience, availability, functionality and safety. To ensure uninterrupted distribution throughout the country, OPL has made robust investment on European standard bottling and storage facilities in Mongla, Ghorashal, Bogra and Mirasharai with consolidated capacity of 1 lac metric ton per year. OPL has a competitive edge in addressing the growing demand as it has the largest bottling and storage complex in Bangladesh. OPL has significantly invested in building three LPG carrying Barge named "M.T Omera Princess", "M.T Omera Glory" and "M.T Omera King" based on Japanese

Navigation & Communication Devices and European Technology. Building of these three barges is itself a revolution in the industry. Ref: http://omeralpg.com/opl/

Annual production and market demand developments

Liquefied Petroleum Gas (LPG) LPG demand is estimated 500000 tones with actual consumption 150000 tones. Demand supply gap is huge (while demand grown 60% in the last 3 years, the consumption has not (only 13% in 5 years). High (87%) import dependence BPC and other private entities supply LPG • Demand is to shoot up with policies of gas tariff increase- CNG price (70 % rise), new gas connection stopped plan to convert consumers(2.3 million NG users) to LPG, environmental awareness will increase demand for LPG more coverage is uneven and low ranging 10-30% across districts. Supply Infrastructure is inadequate and problematic. LPG is costlier than its alternatives (LPG USD 36/MMBTU, while domestic gas (1-3 USD, HSD is 24/MMBTU, KEROSENE 25/MMBTU). Not affordable for many particularly in rural areas (bio-mass based fuel popular). Need to augment supply and distribution infrastructure. Clean energy – lead free and low in sulphur, less frequent refilling needed than CNG for cars. Source: ADB(2016), Ref: http://www.bids.org.bd/uploads/events/D-2_S-4A_MM.pdf

Production/filling and throughput capacity

Bangladesh LPG market now stands approximately at 820,000 MT per year which is forecast to be 2.0 million MT by 2025 and 3.0 million MT by 2030. People's per capita income going high, life style changing, and awareness about clean cooking fuel will push up the number that we have targeted so far. It is a huge support to the government plan to provide clean cooking fuel access to all within the shortest possible time and conveniently as well. Apart from this, use of LPG as Autogas is another great aspect of LPG usage variation in Bangladesh.

Ref: http://ep-bd.com/view/details/article/MzIwNA%3D%3D/title?q=sustainability+of+lpg+industry+in+bangladesh

Traffic via Mongla port

Inbound material flows per year during recent 10 years (Mongla port, in metric tons)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
LPG					61144		103000	164000	300000	
Any other products										

Ref: BBS yearbook-2018 and https://steemit.com/news/@swat33/lp-gas-hub-mongla, https://www.linkedin.com/pulse/bangladesh-lpg-future-market-pricing-govt-policy-lipton

Port traffic and tariff Features

Protocol on Inland Water Transit and Trade between Bangladesh and India

To utilize the rivers for transportation of goods between the two countries and for transportation of goods from one Indian place to another Indian place, there exists a Protocol on Inland Water Transit and Trade between Bangladesh and India. To transport the inter-country trade cargo following 'Ports of Call' have been designated under the Protocol:

Bangladesh	**India**
Narayanganj	Kolkata
Khulna	Haldia
Mongla	Pandu
Sirajganj	Karimganj

Under the Protocol, eight IWT routes have been designated for the purpose of transport. Following are the main transit routes:

- Kolkata – Pandu
- Kolkata – Karimganj
- Karimganj - Pandu

Bangladesh Inland Water Transport Authority (BIWTA) were been appointed by the Government as Competent Authority for all working under the Protocol, while Inland Waterways Authority of India (IWAI) by the Indian Government.

Outbound Material Flow per most recent 10, years in metric tons (Mongla Port)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cement in bags										
Cement in bulk (silo truck)										
Other products?										
Jute					79095	42000	21479	13152	25752	50104
Jute Goods					74783	47733	32195	25171	19801	53858
Frozen Goods						34399	34260	35856	3142	33278
Shrimp					35959					

(Ref: Year Book 2018, Bangladesh Bureau of Statistics)

Vessel movements per recent 10, years

MONGLA PORT AUTHORITY

TRAFFIC DEPARTMENT

Statement showing the ships handled at Mongla Port from 2004-2005 to 2018-2019

Year	No. of ships called			No. of ships sailed		
	Ships	IND-BD Protocal vessel & others	Total	Ships	IND-BD Protocal vessel & others	Total
2004-2005	142	313	455	144	310	454
2005-2006	131	254	385	131	260	391
2006-2007	110	83	193	110	83	193
2007-2008	95	33	128	93	33	126
2008-2009	139	12	151	140	11	151
2009-2010	156	34	190	153	34	187
2010-2011	272	30	302	268	30	298
2011-2012	234	31	265	239	29	268
2012-2013	282	56	338	275	55	330
2013-2014	345	2	347	354	2	356
2014-2015	416	86	502	406	86	492
2015-2016	482	154	636	488	154	642
2016-2017	623	236	859	620	236	856
2017-2018	784	336	1120	777	336	1113
2018-2019	912	368	1280	915	368	1283

Required: Number of truck movements per most recent 10, years

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Size/loading capacity per truck bagged cement										
Size/loading capacity per truck cement in bulk										

PORT EQUIPMENT

Cargo Handling Equipment

	Name of Equipment	Nos.	Capacity (M/Ton)
	Mobile Crane	1	100 (Existing capacity-30 M/Ton)
	Mobile Crane	1	40 (Existing capacity-24 M/Ton)
	Mobile Crane	1	35 (Existing capacity-30 M/Ton)
	Mobile Crane	1	25
	Mobile Crane	2	19
	Mobile Crane	2	10
	Dockside Crane (Metalna)	7	5
	Forklift Truck	5	5

Forklift Truck	2	3.5
Forklift Truck	3	3
Forklift Truck	1	2.5
Forklift Truck	8	2

Container Handling Equipment

Name of Equipment	Nos.	Capacity (M/Ton)
Heavy Duty Forklift Truck	1	35
Heavy Duty Forklift Truck	1	30.5
Heavy Duty Forklift Truck	1	25
Heavy Duty Forklift Truck	1	16
Prime Mover	2	–

	Trailer 20′ – 0′	8	–
	Trailer 40′ – 0′	2	–
	Towing Truck	1	–
	Straddle Carrier	3	30

Container Storage Space

Container Yard 3 (Nos.) >> 35,752 Sq. Meter >> 2180 TEUS (single stacking)

Reefer Plug Point 120 (Nos.) >> 440 / 220 / 110 Volts.

(Ref: Bangladesh Shipping Association, Khulna, Basic facts)

Storage capacities

Name	Quantity	Length/ Area	Capacity
Transit Shed	4 Nos.	4.907 Sq m (each)	17.932 MT (Total Capacity)
Warehouse	2 Nos.	4.907 Sq m (each)	15.326 MT (Total Capacity)
Container yard	3 Nos.	35.752 Sq m (Total)	2180 TEUS (at a time)

Ref: https://dlca.logcluster.org › download › attachments › Bangladesh Port of M...

Mongla Port Cost and Tariffs

Dues and charges on Ship

Services	Basis Of charge	Rate
Berth occupancy charges	Per GRT per day	
Mooring occupancy charge **At mooring** **At Own anchor**	Per GRT per day Per GRT per day	0,03$ 0,015$
Sea-going ships **200 to 1.000 GRT** **Over 1.000 to 5.000 GRT** **Over 5.000 GRT**	Per Tug per Mct do do	55$ 185$ 396$
Water supply charge **At Roosvelt jetty** **At Mongla (local)** **At Mongla(to Ships)** **At Hironpont (local)** **At Hiron pint(to ship)**	Per 1000 l Per 1000 l Per 1000 l Per 1000 l Per 1000 l	30BDT 60BDT 7$ 400BDT 15$
Jetty Crane Charge **Use of Jetty crane** **Use of British crane** **If cancelled within less than 6 hours of booked period** **If cancelled previous to 6hours**	Per crane per period of 8 hours Idem Per crane Idem	45$ 33,75$ 40$ 20$
Holliday charge (working on jetty)	Per ship per holyday	60$
Holliday charge (working on jetty)	Per ship per night	30$

3 Powerful Tugs Boats including 1 Fire Fighting Tug available.

Shifting / Detention Fees

Services	Basis of Charge	Rate
Fees for shifting vessels from one berth or mooring or swinging her to another	Per movement	29,80$
Fees for such shifting taking place in whole or in part between 6:00 pm to 6:00 am	Per movement	59,90$
Detention fees for failure of a vessel in arriving or at sailing from the port in time	Per day	100$
Pilot detention fee	Per day	20$
Berthing or de-berthing at the time of arrival or sailing of the vessels	Each occasion	88,5$
Same at the time of shitting	Each occasion	44,25$

Port and harbour dues

Services	Basis of Charge	Rate
River dues: **Import cargo** **Domestic cargo**	Per 1000 kg idem	33Tk 15,3
Landing charge / Handling charge **Bagged cargo-wheat and rice** **Other bagged cargo** **Cement, iron, steel, etc** **Wheeled or tracked equip.** **All other import less than 3Mt** **All other import more than 3M** **All other import more than 20Mtt** **Raw material of cement** **Garments, cloths,**	Per 1000 kg Idem Idem Idem Idem Idem Idem Idem	33Tk 32Tk 60Tk 175Tk 90Tk 180Tk 250Tk

cotton, etc	Per carton	60Tk 16Tk
Hoisting charge	Per 1000 Kg	100% of the landing or shipping charge for the cargo concerned
Weight bridge charge	Per 1000 Kg	2,5Tk
Trans-shipment charge **At the same wharf** **At different wharves**	Per 1000 Kg Idem	150% of the landing charge 200% of the landing charge
Terminal charge on river traffic	Per 1000 Kg	21,7Tk
Removal charge **With the MPA equip.** **Without equipment**	% of landing charge Idem	7 times of the landing charge 2 times of the landing charge
Restacking charge	% of landing charge	50% of the landing charge

Container charges

Services	Basis of charge	20' Container	40' container
Loading / Discharging:			
FCL Container	Per container	43,40$	65,1$
LCL Container	Idem	130$	195$
Empty Container	Idem	22,1$	33,7$
Container storage:			
Loaded Container	Idem	1,5$	3,00$
Empty Container	Idem		
First 7 days	Idem	1,50$	3,00$
Thereafter	Idem	3,00$	6,00$
Over height Container	Idem	3,00$	6,00$
Handling Equipment:			
Trailer less than 21'	Per day	1,00$	
Trailer more than 21'	Idem	2,00$	

Forklift less than 21’	Idem	1,00$	
Forklift more than 21’	Idem	2,00$	
Other equipment	Idem	1,00$	
Extra Container MT charge			
Loaded container	Idem	42,6$	63,9$
Empty container	Idem	21,7$	32,5$
Reefer container Charge			
Pre-trip inspection	Idem	2,00$	
Supply of electricity	Idem	5,00$	
Monitoring service	Idem	4,00$	
Change of status charge	Idem	10,00$	
River dues on container			
FCL Container	Idem	408Tk	816Tk
LCLContainer	Idem	184Tk	368Tk
Empty Container	Idem	102Tk	204Tk
Stuffing and unst. Charge			
Stuffing	Per 1000kg	75Tk	
Unstuffing	Idem	92Tk	
Transhipment charge			
Loaded container	Empty Container	1000Tk	1.500tk
Empty Container	Idem	500TK	750TK

Dues and charges on Goods

Rent Charge (Wharf rent) for import cargo (covered storage)	Basis of charge	0 to 7 days	8 to 14 days	15 to 21 days	For each add days up to 22days
Bagged cargo	Per 1000kg	1,85Tk	4,62TK	7,39Tk	4,62TK
Iron and steal	Idem	1,85Tk	4,62TK	7,39Tk	4,62TK
Wheeled or tracked vehicles	Idem	16,2Tk	46,12Tk	73,88Tk	46,12Tk
All other imports	Idem	3,13Tk	7,88Tk	12,53Tk	7,88Tk

Space rent charge

Service	Basis of charge	rates
Cargo inside the protected area:		
First month	Per sq² / months	37,5Tk
Second month	Idem	45,00Tk
Subsequent months	Idem	56,25Tk
Cargo outside protected area	Idem	15Tk
Storage of gears equip and other	Idem	15Tk
International transit	Idem	30Tk

Charges for general service

Service	Basis of charge	rates
Mechanical Equipment		
Mobile crane up 10 Mt	Per hours	190Tk
Mobile crane above 10 Mt	Idem	300Tk
Forklift truck up to 10Mt	Idem	95Tk
Forklift above 10Mt	Idem	190Tk
Prime Mover up to 10Mt		85Tk
Prime mover above 10Mt		170Tk
Trailer up to 10 Mt		30TK
Trailer above 10MT		60Tk
Battery Operated truck BOT		50tk
Hire of tarpaulin		
Above 10sq²	Per day	10Tk
10 to 100sq²	Per day	20Tk
100 to 150	Per day	30Tk
150 to 200	Per day	40Tk
200 to 250	Per day	50Tk
Up to 250	Per day	70Tk
Hire of tub	Each per day	31, 25Tk
Hire of Sling		
Above 3MT	Each per day	45Tk

3 to 10Mt	Each per day	90Tk
10 to 20Mt	Each per day	180Tk
Up to 20Mt	Each per day	360Tk
Hire of gangway	Idem	3Tk
Good Carrier on board water barges (Mongla to Khulna)	Per MT	100Tk
Security service engaged on the sea-going vessel	Per person	150Tk

Ref: https://dlca.logcluster.org › download › attachments › Bangladesh Port of M...

Applicability of port dues

Vessels chargeable	Rate of port dues
Rate of port dues	0,241 $ per GRT
Sea-going vessel engaged in lightering within port limits	0,150 per GRT
Sea-going vessels not engaged in lightering have not left the port after 30 days from the date of entry	0,050 $
Sea-going vessel entering for taking fuel, stores and water, etc.	0,08$
Vessels working within port limits, excluding seagoing lighters	Not exceeding 10 GRT: 25 BDT per vessel Between 10 – 100 GRT: 200 BDT Between 100 - 200 GRT: 500 BDT Exceeding 200 GRT: 3 BDT per GRT Barge/flat: 1,5 BDT per GRT Country boat/Shampan: 0,25 BDT per GRT

Appendix F – Sector Information

Sector Information

Port traffic and tariff Features

Protocol on Inland Water Transit and Trade between Bangladesh and India

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Outbound Material Flow per most recent 10, years in metric tons (Mongla Port)

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Vessel movements per recent 10, years

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Required: Number of truck movements per most recent 10, years

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Size/loading capacity per truck bagged cement										
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PORT EQUIPMENT

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Prime Mover	2	–

	Trailer 20′ – 0′	8	–
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	Towing Truck	1	–
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Container Storage Space

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River dues: **Import cargo** **Domestic cargo**	Per 1000 kg idem	33Tk 15,3
Landing charge / Handling charge **Bagged cargo-wheat and rice** **Other bagged cargo** **Cement, iron, steel, etc** **Wheeled or tracked equip.** **All other import less than 3Mt** **All other import more than 3M** **All other import more than 20Mtt** **Raw material of cement** **Garments, cloths,**	Per 1000 kg Idem Idem Idem Idem Idem Idem Idem	33Tk 32Tk 60Tk 175Tk 90Tk 180Tk 250Tk

cotton, etc	Per carton	60Tk 16Tk
Hoisting charge	Per 1000 Kg	100% of the landing or shipping charge for the cargo concerned
Weight bridge charge	Per 1000 Kg	2,5Tk
Trans-shipment charge **At the same wharf** **At different wharves**	Per 1000 Kg Idem	150% of the landing charge 200% of the landing charge
Terminal charge on river traffic	Per 1000 Kg	21,7Tk
Removal charge **With the MPA equip.** **Without equipment**	% of landing charge Idem	7 times of the landing charge 2 times of the landing charge
Restacking charge	% of landing charge	50% of the landing charge

Container charges

Services	Basis of charge	20' Container	40' container
Loading / Discharging:			
FCL Container	Per container	43,40$	65,1$
LCL Container	Idem	130$	195$
Empty Container	Idem	22,1$	33,7$
Container storage:			
Loaded Container	Idem	1,5$	3,00$
Empty Container	Idem		
First 7 days	Idem	1,50$	3,00$
Thereafter	Idem	3,00$	6,00$
Over height Container	Idem	3,00$	6,00$
Handling Equipment:			
Trailer less than 21'	Per day	1,00$	
Trailer more than 21'	Idem	2,00$	

Forklift less than 21’	Idem	1,00$	
Forklift more than 21’	Idem	2,00$	
Other equipment	Idem	1,00$	
Extra Container MT charge			
Loaded container	Idem	42,6$	63,9$
Empty container	Idem	21,7$	32,5$
Reefer container Charge			
Pre-trip inspection	Idem	2,00$	
Supply of electricity	Idem	5,00$	
Monitoring service	Idem	4,00$	
Change of status charge	Idem	10,00$	
River dues on container			
FCL Container	Idem	408Tk	816Tk
LCLContainer	Idem	184Tk	368Tk
Empty Container	Idem	102Tk	204Tk
Stuffing and unst. Charge			
Stuffing	Per 1000kg	75Tk	
Unstuffing	Idem	92Tk	
Transhipment charge			
Loaded container	Empty Container	1000Tk	1.500tk
Empty Container	Idem	500TK	750TK

Dues and charges on Goods

Rent Charge (Wharf rent) for import cargo (covered storage)	Basis of charge	0 to 7 days	8 to 14 days	15 to 21 days	For each add days up to 22days
Bagged cargo	Per 1000kg	1,85Tk	4,62TK	7,39Tk	4,62TK
Iron and steal	Idem	1,85Tk	4,62TK	7,39Tk	4,62TK
Wheeled or tracked vehicles	Idem	16,2Tk	46,12Tk	73,88Tk	46,12Tk
All other imports	Idem	3,13Tk	7,88Tk	12,53Tk	7,88Tk

Space rent charge

Service	Basis of charge	rates
Cargo inside the protected area:		
First month	Per sq² / months	37,5Tk
Second month	Idem	45,00Tk
Subsequent months	Idem	56,25Tk
Cargo outside protected area	Idem	15Tk
Storage of gears equip and other	Idem	15Tk
International transit	Idem	30Tk

Charges for general service

Service	Basis of charge	rates
Mechanical Equipment		
Mobile crane up 10 Mt	Per hours	190Tk
Mobile crane above 10 Mt	Idem	300Tk
Forklift truck up to 10Mt	Idem	95Tk
Forklift above 10Mt	Idem	190Tk
Prime Mover up to 10Mt		85Tk
Prime mover above 10Mt		170Tk
Trailer up to 10 Mt		30TK
Trailer above 10MT		60Tk
Battery Operated truck BOT		50tk
Hire of tarpaulin		
Above 10sq²	Per day	10Tk
10 to 100sq²	Per day	20Tk
100 to 150	Per day	30Tk
150 to 200	Per day	40Tk
200 to 250	Per day	50Tk
Up to 250	Per day	70Tk
Hire of tub	Each per day	31, 25Tk
Hire of Sling		
Above 3MT	Each per day	45Tk

3 to 10Mt	Each per day	90Tk
10 to 20Mt	Each per day	180Tk
Up to 20Mt	Each per day	360Tk
Hire of gangway	Idem	3Tk
Good Carrier on board water barges (Mongla to Khulna)	Per MT	100Tk
Security service engaged on the sea-going vessel	Per person	150Tk

Ref: https://dlca.logcluster.org › download › attachments › Bangladesh Port of M...

Applicability of port dues

Vessels chargeable	Rate of port dues
Rate of port dues	0,241 $ per GRT
Sea-going vessel engaged in lightering within port limits	0,150 per GRT
Sea-going vessels not engaged in lightering have not left the port after 30 days from the date of entry	0,050 $
Sea-going vessel entering for taking fuel, stores and water, etc.	0,08$
Vessels working within port limits, excluding seagoing lighters	Not exceeding 10 GRT: 25 BDT per vessel Between 10 – 100 GRT: 200 BDT Between 100 - 200 GRT: 500 BDT Exceeding 200 GRT: 3 BDT per GRT Barge/flat: 1,5 BDT per GRT Country boat/Shampan: 0,25 BDT per GRT