Government of The People's Republic of Bangladesh
Ministry of Shipping

Bangladesh Inland Water Transport Authority (BIWTA)

MONTHLY PROGRESS REPORT
FEBRUARY 2023

Consultancy Services for Supervision & Monitoring of Performance-Based Dredging Contracts with Maintenance Dredging and Installation& Maintenance of Navigational Aids along the Navigational Routes under the Contract

Bangladesh Regional Waterway Transport Project 1 (BRWTP-S1A)

Jurutera Perunding Zaaba SDN.BHD., Malaysia (JPZ)

Demas Dredging Consultants BV, the Netherlands (DEMAS)

JPZ Consulting Ltd., Bangladesh (JCL)

EXECUTIVE SUMMARY

BIWTA included Route 3 & 4, Route 5, Route 6, Route 9, Route 10, Route 11, Route 12, Route 15 & 16, Route 17, Route 7 & 8, Route13, Route 13a, Route 21 in its BIWTP1 project as the category of OPBC under which S1A & W1A appointed as consultant and contractor respectively for execution. This monthly report compiles construction and quality control activities of the Development, Improvement, Maintenance & Emergency dredging and related services integrating Environmental & Social, Health & Safety, GRM, COVID & HIV/AIDS and Gender issues following contractual standard, specifications, guidelines, rules and policy since commencement December 2022. At present Route 9 & Route 21 is in progress with hydrographic surveys and development dredging works by cutter suction dredger for the routes to maintain LAD according to the route classification all year around. Required number of professionals have been mobilized in order to execute the project works within the planned time span using state of the art equipment's.

ABBREVIATION

ASAP	As Soon As Possible
BDT	Bangladeshi Taka
BELA	Bangladesh Environment Lawyer Association
BIWTA	Bangladesh Inland Water Transport Authority
BM	Bench Mark
BRAC	Bangladesh Rural Advancement Committee
BRWTPI	Bangladesh Regional Waterway Transport Project I
CBM	Cubic Meter
CEAP	Conservation Effects Assessment Project
CSD	Cutter Section Dredger
DCC	Dhaka Chittagong Corridor
EIA	Environmental Impact Assessment
ES	Environmental Safety
ESHS	Environment, Social and Health Safety
ESMP	Environment and Social Management Plan
GBV	Gender Based Violence
GRC	Governance, Risk, And Compliance
GRM	Grievance Redress Mechanism
HSE	Health and Safety Expert
ID	Identity
IWT	Inland Water Transport
JPZ	Jurutera Perunding Zava
JV	Joint Venture
Km	Kilometer
LAD	Least Available Depth
MOEF	Ministry of Environment, Forest and Climate Change.
MoS	Ministry of Shipping
NID	National Identity
OPBC	Output and Performance-Based Contract
PIU	Project Implementation Unit
QTY	Quantity
SOB	Survey of Bangladesh
SQM	Square Meter
TBM	Temporary Bench Mark
WB	World Bank

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CHAPTER 01: PROJECT INFORMATION

1.1 Background

Bangladesh lies predominately within the Bengal basin, the world's largest delta formed by the Ganges, Brahmaputra (Jamuna) and Meghna (GBM) river system and its tributaries and distributaries . Bangladesh is a riverine country with some 700 rivers, streams and canals with a total length of about 24,000 km. Approximately 6,000 km are navigable during the monsoon (wet) period for different size vessels, shrinking to about 3,900 km in the dry periods. While the larger rivers are up to 50 meters (m) depth in places and the lower Meghna (the main trafficked route on the Dhaka Chittagong Corridor or DCC) is generally 10-25m depth. Navigation is hindered by very shallow depths on bars, especially in the delta area, at the confluences of the major rivers and their tributaries, river bends and mouths. Navigation is further complicated by the braided nature of the main rivers. These are characterized by high sediment delivery and extremely low gradients, leading to very low sediment throughput. In total, the GBM System annually carries up to one billion tons of sediment and drains into the Bay of Bengal principally through the Shahbazpur and Hatia estuaries in the Mouths of the Ganges - feeding the Bengal Fan, the largest depositional system in the world.

Inland Water Transport carries over 50 percent of all Bangladesh's cargo traffic and one quarter of all passenger traffic. There are over 22,300 registered vessels engaged in this trade, mainly transporting dry and liquid cargoes in bulk or break-bulk form. Investment by the vibrant shipping and inland water transport industry in Bangladesh totals approximately US$ 4 billion. The Government has identified 65 main river navigation routes that are essential to passenger and freight transport within Bangladesh. The routes are categorized as Classes I through IV depending on their advertised depths as given below Table

Table 1: Main River navigation routes that are essential to passenger and freight transport within Bangladesh

Class	Max Vessel Draft/ Least Advertised River Depth	Length	%
I	3.65 m/ 3.96 m	683 km	11%
II	2.13 m/ 2.43 m	1,000 km	17%
III	1.52 m/ 1.82 m	1,886 km	32%
IV	<1.52 m	2,400 km	40%

The development and control of Inland Water Transport (IWT) is the responsibility of the Bangladesh Inland Water Transport Authority (BIWTA), under the Ministry of Shipping (MoS). Among its functions for passenger traffic, BIWTA is responsible to:

- Develop, maintain and operate inland river routes to maintain the advertised Least Available Depth (LAD) and width by necessary surveys and dredging works including maintaining the necessary navigation measures to operate the vessels effectively;
- Develop, maintain and operate inland river ports, landing ghats and terminal facilities in such ports or ghats; and,

Develop the most economical facilities for passenger traffic to ensure comfort, safety and speed on mechanized craft.

In order to improve key multi-modal transport corridors and networks that would address current transport bottlenecks in Bangladesh, the World Bank is financing the Bangladesh Regional Waterway Transport Project I (BRWTP-1). It is centered on the main Dhaka-Chittagong IWT route, with branches to Ashuganj, Ghorashal and Barisal

Major Components of BRWTP-1 includes the following:

- Capital and maintenance dredging, installation and operation of aids to navigation and construction and maintenance of Vessel Storm Shelters (VSS) / Idle Berthing Centers (IBC);
- Development of Cargo Terminals;
- Development of Passenger Terminals; and,
- Development of Landing Ghats.

The main objective of this consultancy service is to monitor, supervise, and administer the contracts for performance-based dredging works, installation and operation of aids to navigation along the navigational routes under the BR WTP-W 1 A package.

The above-mentioned works are to be undertaken under an output and performance-based method of contracting. Output and Performance-Based Contracting for Inland Water Navigation (OPBC-IWN) is a results-oriented contracting method that focuses on the outputs, quality, or outcomes and ties at least a portion of a contractor's payment, contract extensions, or contract renewals to the achievement of specific, measurable performance standards and requirements. Supervision of OPBC-IWN contracts is to be done with due care and diligence following the highest professional practices and International Hydrographic Organization (IHO) S-44 5th edition standards and surveys.

This Monthly report is titled as the Monthly progress report, February 2023 which includes Commencement of Work, Mobilization, Document Review and Inception, Workshop and Training Program, Managing, Supervision and Monitoring of the OPBC-IWN Contract, Technical and Management Support to Client, Monitoring and Supervision of Environmental and Social Outputs etc. from 04 February 2023 to 28 February 2023.

1.2 Objectives

The main objective of this consultancy service is to monitor, supervise, and administer the contracts for performance-based dredging works, installation and operation of aids to navigation along the navigational routes under the BRWTP-WIA package (Lot-2 & 3).

The above-mentioned works are to be undertaken under an output and performance-based method of contracting. Output and Performance-Based Contracting for Inland Water Navigation (OPBC-IWN) is a results-oriented contracting method that focuses on the outputs, quality, or outcomes and ties at least a portion of a contractor's payment, contract extensions, or contract renewals to the achievement of specific, measurable performance standards and requirements. Supervision of OPBC-IWN contracts is to be done with due care and diligence following the highest professional practices and International Hydrographic Organization (IHO) S-44 5th edition standards and surveys

1.3 Scope of Works

1.3.1 Approaches for the Assignment:

The Consultant must be aware that the Output and Performance- Based Contract for Inland Water Navigation has its own characteristics. The performance 'Statement of Objectives' are:

1.3.2 Purpose:

To guarantee advertised depths and widths on all river routes except some routes in the delta area for at least 95%, i.e., 347 days/year, whilst, the dredging availability target will be 85% for the routes in the delta area (route 21 under Lot-3); and to guarantee a 95% availability of aids to navigation.

1.3.3 Scope and period of performance:

The scope of the OPBC-IWN (works Package No. W1A, comprises 2 lots, under 2 separate contracts) includes:

- **Mobilization**, Setup and Establishment: Mobilization/Demobilization, Rental of Major Plant and Equipment, Site Set-up and Establishment (including ESHS) which will include mobilization of all necessary survey, dredging and other vessels and attendant plant to Bangladesh, retention of the all plant and equipment in Bangladesh for the duration of the Works, site establishment, setting up and eventual demobilization.
- **Development of Dredging Works**: The activity of restoring advertised navigation channel depths and widths on the various Inland Waterways under Package No. W1A contract(s) and is to be conducted over the first 30 (thirty) months period of the contract.
- **Improvement Works:** Consisting of a set of specific interventions indicated in the Specifications to add new characteristics, including provision of new aids to navigation to the Inland Waterways under Package No. WIA contracts, which shall be conducted over the first 18 (eighteen) months period of the contract.
- **Maintenance Services**: Consisting of all interventions on the inland waterways, which are to be carried out by the Contractors in order to keep the Inland Waterways to specific performance standards, including all activities relate management and evaluation of the Inland Waterway network under the contracts. Inter-alia, Maintenance Services include: Maintenance Dredging Works starting from 31st month of the contract and continuing up to 66th month of the contract; and (ii) Maintenance of Aids to Navigation starting once installed and continuing up to 66th month of the contract.
- **Support on Environmental and Social Safeguards**: To prepare site-specific Dredge Disposal Management Plan and Resettlement Action Plans (RAPs) as required for on-land disposal of dredge materials and support the PIU in the E&S management under the W1A package including implementation of the Dredge Disposal Management Plan, RAPs, GBV Action Plans and project's GRMs.
- **Emergency Works**: Consisting of activities needed to reinstate the Inland

Waterways and reconstruct their structure or their right-of-way which has been damaged as a result of natural phenomena such as cyclones and earthquakes with imponderable consequences, or severe accidents blocking passage of vessels, which may be required any time during the contract, up to 66th month from the Start Date.

1.3.4 Place of performance:

The works package on dredging shall operate for 66 (Sixty-six) months on the river routes tabulated below with their corresponding WGS84 coordinates.

LOT 2: Route 3&4, Route 5, Route 6, Route 7&8, Route 9, Route 10, and Route 11

Route 3&4: Shitalakshya (Munshiganj to Ghorashal)
Route 5: Meghna (Munshiganj to Ashuganj)
Route 6: Meghna (Loop (joining Route 5)
Route 7&8: Meghna (Narshingdi Northern and Southern Approaches)
Route 9: Meghna (Bancharampur/Homna Loop)
Route 10: Meghna (Homna to Daudkandi)
Route 11: Gumti (Meghna to Daudkandi)

LOT 3: Route 12, Route 13, Route 13a, Route 15&16, Route 17, Route 21

Route 12: Meghna (Chandpur to R140 Bridge)
Route 13: Meghna Arial Khan Route (Approach from Alubazar North of Batamara up-to Hat Hazar)
Route 13a: Meghna (Looping Route inside Char Hijla)
Route 15 &16: Meghna (Mehendiganj to Bheduria)
Route 17: Meghna Tetulia (Bheduria to Route 14)
Route 21: Tetulia (Bheduria to Laharhat)

The Scope during Dredging Operations:

- Joint hydrographic survey by the Contractor, S1A, BIWTA
- Supervise and certify dredging performance, review achieved depth, compare with targets and identify shortfalls;
- Supervise, witness and certify pre, post, and monitoring surveys, environmental monitoring and monitoring of hydraulic and morphological parameters performed by the contractor;
- Check dredged volumes based on pre and post survey hydrographic data;
- Calibrate and update of available water model with data from surveys and monitoring;
- Assess backfilling rate and maintenance dredging requirements based on survey data;
- Update dredged material management plan;
- Verify and certify contractor's invoices;
- Organize progress meetings with the contractor, the client and the donor on a regular basis;

- Organize stakeholder meetings, RAPs, GRM action plan / workshops to disseminate project schedule and progress

Scope of Environmental Assessment and Monitoring:

- Environmental assessment and mitigation measures
- Investigation of baseline information of physical, biological and social environment;
- Assessment of anticipated impacts of the project activities on the physical, biological and social environment;
- To ensure that the Environmental Management Plan (EMP) and monitoring plan is followed strictly in order to minimize the adverse effects due to project interventions.
- Monitoring water availability, irrigation, fisheries and livelihood and flooding through field survey and consultation with multi-stakeholders
- Prepare environmental monitoring report
- Review and comments on W1A contract environmental reports

Social Services:

- RAPS
- Good faith
- Organize stakeholder meetings

Hydrographic and Bathymetric Survey Services:

- Conduct baseline hydrographic survey before the dredging plan
- Conduct joint pre-and post- dredging survey with the Contractor and BIWTA representative
- Conduct Interim Survey to monitor progress of work
- Compute the volume of dredging work as per design and also as per work done
- Submission of reports

1.4 Outputs

- Baseline hydrological, and morphological and environmental conditions of the project rivers routes
- Prepared hydrological data and hydrographic charts for the project rivers routes
- Best-suited dredging alignments for dredging of different navigational routes;
- Dredged material disposal plan
- Development and maintenance dredging volumes for different river stretches of project rivers routes
- Benefit of dredging (maintaining (LAD) on physical and socio-economic conditions

- Monitoring results on dredging, water availability, navigability, irrigation, erosion and flood improvement
- Monitoring results on agriculture, fisheries, livelihood and environmental conditions
- Reports: All work performed by the consultancy team of engineering services shall be documented in written reports submitted to the PIU
- Preliminary charts for delineating dredging alignments and computation of dredging volume;
- Different reports that shall highlight output of survey works through preliminary estimate of dredging requirement, Volume of dredging needed as per Joint Prework Survey and design, Progress of dredging work, actual volume of dredging performed as per Joint Postwork Survey
- Report mentioning status of dredge channel after completion of dredging work. All work performed by the survey team services shall be documented in written reports submitted to the PIU.

CHAPTER 02:
PERFORMANCE OF THE CONSULTANT UP TO DATE

2.1 Environmental Assessment/ Environmental Issues

2.1.1 S1A Team Field visit

Field visit was made on 9th February 2023 along with the PIU members to discuss and observe the present status of the progress of Lot 2 Route 9 (Nabinagar - Homna Loop). The contractor (Gulf Cobla - Karnaphuly JV) have yet to start the dredging as they are lagging behind the schedule. Initial identification of the dumping sites were observed during the visit but some of the activities needed prior to dredging like riverbed and surface water sampling and analysis were not done till then but were done later on.

Figure 1: View of the dredging site of Route 9 (Nabinagar-Homna Loop of the Titas River) of Lot 2.

Figure 2: Some glimpses from the Route 9 observed during the visit on 09 February 2023

The site was visited again along with the PIU and the World Bank Mission team members on the 25th of February 2023. One of the sites selected for dumping the dredged material was inspected by the team members.

Also, Field visit to the dredging and the dredged material disposal sites Lot 3: Route 21 (Laharhat – Bheduria) was made on the 24th February 2023 along with the PIU and World Bank Mission team members. The riverbed material, surface water, air, and noise quality samples were taken earlier and analyzed and reported in the previous monthly reports submitted by Dharti-Banga JV.

Figure 3: Dharti-Bangla dredger in operation at Route 21

Dredged materials were being dumped in three (03) dumping sites. During the visit some observations were made by the WB team. The use of plastic sheets to contain the dredge material dumping compartments has been prohibited rather advised to use biodegradable materials.

Figure 4: (Top) WB Mission members visited Route 9 dredge material dumping site and boarded the dredger; (Bottom) The WB Mission members being briefed on the progress of Lot 3 dredging and dredged material management.

2.1.2 Environmental Quality Measurement:

The main objective of this monitoring program is to assess the basic environmental variables in and around the dredging sites considering the possible exposures. The monitoring includes air, surface water, groundwater quality, dredge material, and noise level testing according to the standard procedures

2.1.2.1 Air Quality Measurement:

Dredging work can pollute ambient air in several ways. Considering this issue, the CEAP has suggested many mitigation approaches to lower the air pollution. The contractors are maintaining these management plans to control the air pollution. As frequent monitoring is required to ensure the implementation of CEAP, the contractor measures suggested parameters of ambient air quality in and around the dredging site on a monthly basis.

Monthly monitoring of Air quality has been conducted in this reporting month. All the testing parameters were found within the standard limit.

Figure 5: Air quality monitoring for February at Solimganj ghat

2.1.2.2 Surface Water Quality Measurement:

In the month of February 2023, surface water sampling was conducted at 5 locations of Lot2 site, specifically in the Solimganj ghat (R-9).

Biological Oxygen Demand (BOD) values in the sampling points were found within the standard level as per ECR'97.

The acceptable range of pH set by the DoE is between 6.5 and 8.5. This is the range, which indicates adequate protection to the life of freshwater fish and bottom dwelling invertebrates. The pH value was ranging from 7.24 – 7.28. The pH value follows both Bangladesh standards (ECR, 1997).

The standard for inland surface water for Total Dissolved Solids is 1000mg/L. The concentration of Total Dissolved Solid (TDS) of surface water was between 168 – 174 ppm. Test results showed that the TDS value for all the locations was found within the national standard.

The concentration of Total Suspended Solid (TSS) of surface water was between 86 – 92 mg/L. There is no stipulated standard in Bangladesh for TSS.

Dissolved oxygen (DO) is one of the most important indicators of water quality. It is essential for the survival of fish and other aquatic organisms. Oxygen is also introduced into the water as a byproduct of aquatic plant photosynthesis. When dissolved oxygen becomes too low, fish and other aquatic organisms cannot survive. Decrease in DO values below the critical level of 3 mg/L causes the death of most fishes and other aerobic aquatic organisms. DO value in all samples also met the standard level of Bangladesh.

2.1.2.3 Ground Water Quality Measurement:

One groundwater sample was collected in February 2023 from Solimganj ghat (R-9) site. The analyzed results of the groundwater testing were compared to the Bangladesh Standards (ECR, 1997). The analysis indicated that all of the parameters tested were within the limits specified by the ECR standards. Based on these results, it can be concluded that the groundwater quality in the study area is considered to be satisfactory for drinking purposes.

2.1.2.4 Noise level Monitoring:

Noise level monitoring were conducted at due to the ongoing work activities at Solimganj ghat (R-9) location. The objective of these assessments was to measure and evaluate the levels of noise generated during these activities. The results of the noise level monitoring indicate that the noise levels at the monitoring locations are in compliance with the International Finance Corporation's Environmental, Health, and Safety guidelines. However, it is noted that the levels are slightly higher than the standards set by Bangladesh. The noise level recorded was 67.8 dBA at Solimganj ghat (R-9).

2.1.3 OHS Related Incident and GRM Status

Labor/Worker's employment status, health, safety, and security such as accommodation facilities, working condition, sanitation, safety, and security, drinking water supply, reporting accidents, dust control, noise control, waste management, emergency response facilities, and grievance mechanism were observed through direct visual observation, site visit, consultation with workers and respective officers of the project

An accident record/register book has been found to keep record of any accidents. Designated personnel have been assigned to maintain the safety book and datasheet with collaborating checklists. A dedicated first aid box is also available at the project site office for ensuring emergency response to any accidents/incidents and first aid requirement by workers and other staff. If any health safety issues raised or an accident occurred, first aid is ensured immediately. If further medical support is required or in case of any major accident, the immediate medical treatment is ensured at nearby hospital. Safety signboards are also planned to be installed in the project site area for workers' and community people's awareness.

One (1) minor accident has been found recorded during the monitoring period. Once the accident occurs, immediate medical treatment has been ensured. It is highly recommended that more safety sign, and emergency contact lists are required to be hanged to raise awareness and provide information about the contact person for any emergency

2.1.4 Reports

The results of the riverbed material, surface water, ground water, air and noise were included in the Contractor's Environment Action Plan (CEAP) which was submitted on 22nd February 2023. The CEAP has been reviewed by S1A and submitted to the PIU for their comments prior to the finalization and subsequent submission to the WB.

The revised Lot 3 Contractor's Environment Action Plan (CEAP) has been reviewed and submitted to the PIU for their comments prior to the finalization and subsequent submission to the WB. The Contractor's Social and Environment Management Plan (C-ESMP) have been submitted to S1A by the Contractor later in the month, and is being reviewed before submitting to the PIU.

The Lot 2 contractor has yet to submit the Contractor's Social and Environment Management Plan (C-ESMP) and has been reminded by S1A to submit as soon as possible

2.1.5 Meeting

To monitor dredging operation progress, resolve Environmental Health and Safety (EHS) concerns, and discuss other pertinent subjects as needed, monthly progress meetings are usually held at Lot2 and Lot3 field offices. Three meetings (Out of three meetings one meeting with PIU and DSC and another one meeting with World Bank Team) were held at the location throughout the reporting period to assess progress and discuss the EHS-related issues. These team sessions enable efficient and safe job development by fostering teamwork and good communication.

2.1.6 Training

The PIU organized a training program in association with the Bangladesh Environmental Lawyers Association (BELA) on the 16th, 17th February 2023 at the Young Women Christian Association auditorium. The training title was "Water and Environment". Lectures were presented by reputed personalities on various aspects of the environment (see Table). The last leg of the training program was held on the 19th February 2023 at the Lake Shore Hotel with Commodore Golam Sadeq, Chairman, BIWTA attending and distributing certificates to the participants. Project Coordinator and Environment Specialist from S1A participated in the training program.

Table 2: Training on Water & Environment: Lecture Topics & Presenters

Topics	Presenter
Challenges of Rivers and Waterways	Dr. A. K. M. Matiur Rahman, Jt. Secretary, BIWTA
Rivers of Life	Dr. Mahfuzul Haque, Former Secretary, MOEF
Laws and Judicial Decisions on Rivers	Syeda Rizwana Hasan, Chief Executive, BELA
OPBC for River Dredging & Modal Shifting	M. M. Islam, Project Coordinator, BRWTP-1
International Water Laws	Dr. Asif Nazrul, Professor, University of Dhaka
Urban Development & Rivers	Dr. Adil M. Khan, Jahangir Nagar University
Health of Rivers and Sand Mining	Sheikh Rokon, Secretary General, Riverine People
Port Development & EIA	Dr. Masud Shamim, Director, Dept. of Environment
River behavior	Dr. Ainun Nishat, BRAC University
Culture and Rivers	Dr. Rokun Wadud, Begum Rokeya University
Impact of Dredging on Aquatic Resources	Dr. S. M. A. Rashid, Environment Specialist, S1A, BRWTP-1
Breaking the Plastic Cycle	Rumana Afroze Dipti, BELA

Figure 6: Participants from S1A receiving certificates from the Chairman, BIWTA

There were three training was carried out throughout the reporting month. However, within the reporting month, new hire induction training took place. Environmental and health and safety topics were covered as basic instructions for all staff members at the introduction sessions for all new admissions. Table 3 summarizes training for the month of February.

Table 3: Training summary for the month of February

Serial No.	Training	Date and Venue	No of Participants	Trainers
01	Induction Training	01 February 2023, Site office (Route 9)	25	Md. Monzurul Haque
02	HIV – AIDS and First Aid Training	15 February 2023, Dredging Unit (Route 9)	22	Dr. Mrinal Kanti Saha
03	Preventive Training for Snake Hazard	22 February 2023, Houseboat (Route 9)	15	Kazi Milon Mahmud

2.2 Social and Resettlement Activities

2.2.1 Social Survey

A social survey has been conducted by the Social and Resettlement Expert and data collectors, in the project areas of Bancharampur, Nabinagar, B. Baria and Mehendigonj of Barisal and Bhola Sadar made detail profile of some lands and land owners. The dredging activities have been doting on these lands January 2023. Progress of Land Lease and quality of land for dumping Dredged Materials. Following tables show the detail of the information till 28th February 2023.

Table 4: Progress of the land lease - Bancharampur and Nabinagar, B.Baria

Area: Bancharampur and Nabinagar, B. Baria. Dredging Company: Gulf Cobla – Karnafuly Joint Venture.						
Dyke No.	Rout No	Land Owner		Land		
		Name and NID	**Address**	**Description**	**Quantity (Decimal)**	**Quality of Land**
1	9	Md. Monir Hossain NID: 6447046241	Village: Joy Nagar Upazilla: Bancharampur District: B. Baria	Plot No: 1117.1118, 10, 65, 1016, Mouja: Jay Nagar, Upazila: Bancharampur, Dist: B. Baria	95	Agricultural land (Two Crops)
2	9	Siblu Mia NID: 1210488091772	Village: Imam Nagar Upazilla: Bancharampur District: B. Baria	Plot No: 158, 155, 166, 147. Mouja: Imam Nagar Upazila: Bancharampur, Dist: B. Baria	107	Fallow land
3	9	Md. Afzal Hossain NID:1210488092232 (Chairman of the School committee)	Village: Joy Nagar Upazilla: Bancharampur District: B. Baria	Plot No: 461, 711, 712, 713, 714, 715 1016. Mouja: Jay Nagar Upazila: Bancharampur, Dist: B. Baria	150	School and School Field
4	9	Md. Monzur Mahabub NID: 1210488092428	Village: Imam Nagar Upazilla: Bancharampur District: B. Baria	Plot No: 3473, 3474, 171, 172, 173, Mouja: Imam Nagar Upazila: Bancharampur, Dist: B. Baria	84.5	Agricultural land (One crop)
5	9	Abdul kaium NID:4617746765	Village: Barail Upazila: Nabinagar District: B. Baria	Plot No: 316, 318,397, 399, 314, 315, 401.	132	Agricultural land (Two Crops)

Table 5: Progress of the land lease - Mehendigonj, Barisal and Bhola sadar.

Area: Mehendigonj, Barisal and Bhola sadar. Dredging Company: Dharti – Banga Joint Venture						
Dyke No.	Rout No	Land Owner		Land		
		Name and NID	**Address**	**Description**	**Quantity (Decimal)**	**Quality of Land**
6	21	Nur Nabi Vhuya NID: 0616213050970	Village: Seripur Upazilla: Mahandigong, District: Barishal	Plot No: 1468, Mouja: Ghaguria Upazila: Mahandigong District: Barishal,	365	Agricultural land. (Two Crops) (Watermelon, Bitter Gourd)
7	21	Nur Nabi Vhuya NID No: 0616213050970	Village: Seripur Upazilla: Mahandigong, District: Barishal	Plot No: 1468, Mouja: Ghaguria Upazila: Mahandigong District: Barishal,	120	Agricultural land (Two Crops) (Watermelon, , Bitter Gourd)

Table 6: Land for Dyke rented by Banga without proper document (earlier)

Land for Dyke rented by Banga without proper document (earlier) Area: Mehendigonj, Barisal and Bhola sadar.						
Dyke No.	Rout No	Land Owner		Land		
		Name and NID	**Address**	**Description**	**Quantity (Decimal)**	**Quality of Land**
1	21	Salam Fakir and Milon Mia *(Take Possession of)*	Village & Mouja: Ghagoria. Union: Bheduria Upazila: Mehendigonj Dist: Barishal. (Near Bheduria Ferryghat)	Plot No: 1901/56	100	Agricultural and (One Crops)
2	21	Mizanur Rahman *(Take Possession of)*	Village & Mouja: Char Veduria. Upazila and District: Bhola	Plot No:	50	Agricultural and (One Crops)
3	21	Salam Fakir and Rokya Begum *(Take Possession of)*	Village & Mouja: Ghagoria. Union: Bheduria Upazila: Mehendigonj Dist: Barishal.	Plot No: 591/120	200	Fallow land and Agricultural land (One Crop)

**Dyke No: 4 and 5 of (Rout-21) are under process.

2.2.2 Good faith Agreement:

Draft good faith agreements have been done for these lands (881.5 decimals). Final agreement will be done with signature on the 'Stamp' within March 2023.

2.2.3 Grievance Redress Mechanism (GRM):

The BRWTP-1 project has its own GRM system with three stages of mechanism (Field site level, River port level and Project level) and the compensation system follows the World Bank rules. The Consultant assists the Client in monitoring the functioning of the GRM that have been set up by the Client to receive and process project-related feedback, suggestions, concerns and complaints, especially in relation to the dredging activity carried out under the OPBC-IWN contracts and the Vessel Storm Shelters construction contract. This includes the following: (i) continuously checking in the field to ensure that the information on GRM remains publicized in an appropriate manner at the relevant sites and any complaints received by the Contractors and the Consultant himself is forwarded to the Client. (ii) Assisting the Client to prepare and disseminate brochures and signboards containing information of interest to people living close to the project sites.

Till February 2023, the dredging consultant 'DHARTI–BANGA JV' has prepared two Grievance Redress Committees (GRC). But no progress report has submitted by them on the committee's activities or resolve of the grievance. The GRM expert will start work soon on behalf of S1A and we hope to receive better information from her. The GRC committees of 'DHARTI–BANGA JV' are as follows:

The Local Level Complaint Resolve Committee:

Table 7: The Local Level Complaint Resolve Committee

Name	Designation	Organization	Position in GRC	Mobile No.
Capt. Abdur Razzak Bhuiyan	Team Leader	DHARTI–BANGA JV	Chairman	
Md Aftabuzzaman	Social and Communication Officer	DHARTI–BANGA JV	Member	
Mizanur Rahman	Environmental Specialist of Engineer	BRWTP-1	Executive Member	
Tanvir Hossain	HSE Manager	DHARTI–BANGA JV	Executive Member	
Walid Hossain	Environmental Health Safety Officer	DHARTI–BANGA JV	Member	
Robiul Islam	Site In charge	DHARTI–BANGA JV	Member	

The Project Level Committee:

Table 8: The Project Level Committee

Name	Designation	Organization	Position in GRC
-	Project Director		Chairman
Md. Khandekar Mahbub	GRM Expert	BRWTP-1	Executive Member
Mizanur Rahman	Environmental Specialist	BRWTP-1	Executive Member
-	Project Manager	BRWTP-1	Executive Member
-	Project Manager	DHARTI–BANGA JV	Member
Mr. Shahid Ali	Team Leader, Social	RDM – EQMS JV	Member
Dr. Rezaul Karin	Team Leader	S!2/3	Member
Dr. SMA Rashid	Environmental Expert	S1A	Member

2.3 Development dredging Work:

This part is the main task of contractors, scope of services. The key responsibility is implemented in Lot-02 and Lot -03 according Project Development Plan. Development Dredging Works includes selection of dredged material disposal area, survey works (Baseline survey, Hydrographic survey), and mobilize the dredger for starting the dredging work.

2.3.1 Survey work:

2.3.1a Joint Line Survey

Lot3 Contractor has reported survey works in cumulatively from the commencement of the project. The joint line survey has been conducted for finding the shoals area over the length around 9.174km for the river route 21 (Laharhat - Bheduria). Length 95.00km for Route 13 &13a (Alubazar to At Hazar and Batamara to Hizla), Length 26.00km for Route 15 & 16 (Bheduria to Patherhat to towards Elisah Ghat), Length 117.00km for Route 17 (Athazar to Bheduria). Route:12 (Chandpur to R140 Bridge) is yet to get approval for Joint line survey.

Joint In-Survey (Post Survey) for Km 1.00 out of 2.100 km for the river route 21 (Laharhat - Bheduria) has been completed on 8th February, 2023.

2.3.1b Joint Detail Bathymetry survey

Joint Team was created consisting 1 representative from PIU, 2 representatives from Consultant S1A, and 3 from Dharti - Banga JV to conduct the survey work. River design with alignment and ESHS report is submitted for reviewing and alignment approval to S1A. Reviewed documents are given back for correction. Corrected report resend on 16th February 2023 for Route- 15 & 16 (Bheduria to Patherhat to towards Elisah Ghat).

2.3.2 Dredging Work Supervision

In the reporting period up to 28th February 2023 the dredging work was ongoing on River Route 21- Laharhat-Bheduria of Lot3. One cut was completed in the left side between Ch7+500 to Ch 6+950 & Ch6+625 to Ch6+675 and the length is 600m in length and width is 32.5m.

2.3.3 Disposal Area Dyke Construction Supervision

2.3.3a Laharhat-Bheduria Route 21 under Contract No. BRWTP-W1A-03

Disposal area R21-D1, R21-D2, R21-D3, R21-D4, R21-D6 and R21-D7 used up to 28th February 2023. Detail measurements are as follows:

- R21-D1: Area is 12729sqm, Height is 1.8m and estimated capacity containing 22912.2 m3 cum spoils.
- R21-D2: Area is 4899 sqm, Height is 0.974m and estimated capacity containing 4772 m3cum spoils.
- R21-D3: Area is 9069 sqm, Height is 1.62m and estimated capacity containing 14692 m3cum spoils.
- R21-D4: Area is 3358 sqm, Height is 1.1 m and estimated capacity containing 3391.58 m3 cum spoils
- R21-D6: Area is 18571.5sqm, Height is 1.5m and estimated capacity containing 27857.25 m3 cum spoils.
- R21-D7: Area is 7900 sqm, Height is 1.2m and Estimated capacity containing 9480 m3 cum spoils.

2.3.3b Solimgonj Bridge to Homna loop Route 09 Under Contract No. BRWTP-W1A-02

Disposal area R09-D1, R09-D2, R09-D3 and R09-D4 used up to 28th February 2023. Detail measurements are as follows:

- Disposal Area: R09-D1: Area (approx.) 2520sqm, Height (approx.) 3.5m and capacity containing 8820 m3
- Disposal Area: R09-D2
- Disposal Area: R09-D3
- Disposal Area: R09-D4

2.4 Project Management and Programme Support Activities

2.4.1 Meeting:

2.4.1.1 Progress Meetings with PIU

Several meetings have been held with the PIU members on the progress of the project (7TH, 12th, 13th February 2023). In addition, an on-line meeting was also held with the WB staff on 22nd February 2023 to evaluate the progress before the WB Mission.


Figure 7: Several progress review meetings were held with the PIU.

2.4.1.2 Progress Meeting with WB missions

The WB Mission visited the dredging sites of Route 21 on the 24th February and Route 9 on the 25th February 2023. An exclusive meeting on the performance of S1A and consultation to discuss issues related to the contract and dredging was held on the 27th February 2023 at the WB Office, Dhaka. The WB Mission came up with several observations which were discussed in detail to resolve any misunderstanding among the stakeholders, particularly among the contractors, client and the WB

2.4.2 S1A Team composition

Team is working in BRWTP-1 project in S1A at present is given below:

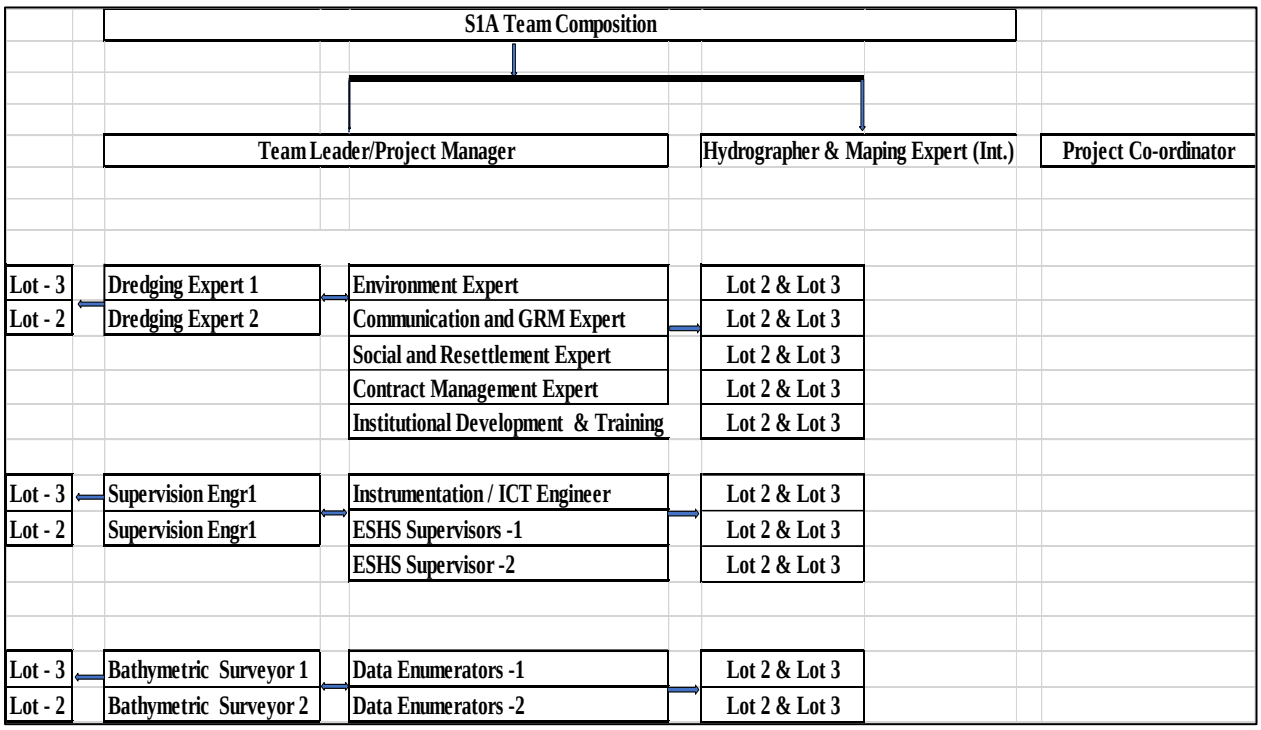


Figure 8: S1A Team Composition

2.5. Progress of Survey and Dredging Works in February 2023

2.5.1 Progress of Hydrographic Survey

There are two types of surveys these are being conducted to the dredging areas separately i.e. pre and post work surveys. The main purposes of these surveys are to determine the volume of earth to be dredged as well as monitor progress of works. Lot 2 & Lot 3 contractor mobilized survey teams for BM fly and Hydrographic Survey during this.

Figure 9: Sample Installed RCC Pillar @1 km interval along the river Old Brahmaputra

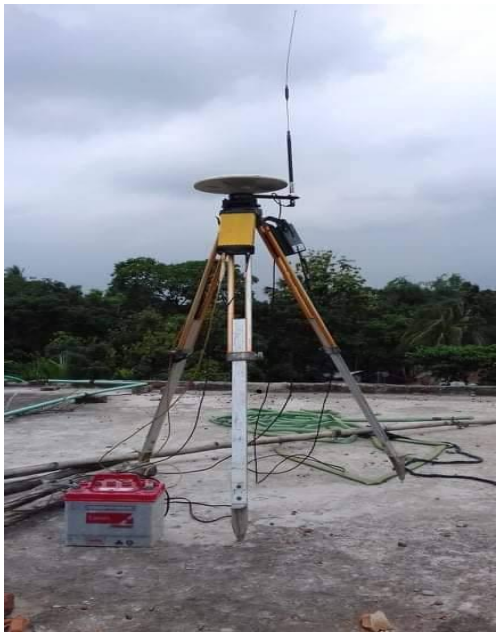


Figure 10: Mohosin Manson Roof Top Secondary Base Station at Tangabo

The survey team delineated the dredge center line following the designed alignment. The team prepared survey transects @10m intervals for shoal length. The team carried out survey for establishing BM pillar, the BM fly done around the route length. The team is then installed RCC Pillar and marking chainage along the river bank as Secondary Horizontal and Vertical Datum with respect to SOB BM Pillars, the sample RCC pillar is shown in **Figure 9.** After that, the team established secondary Base Stations by RTK-GPS.

The Pre-dredge survey is being carried out @ 10m interval. The progress of pre-dredge hydrographic survey is tabulated in the following discussion-

2.5.2 Progress of Hydrograph Survey Work

Hydrographic survey/Post-work:

Location: Laharhat to Bheduria Route 21
Chainage: k8+500 to k7+500
Line survey done on dated 08.02.2023

2.5.3 Progress of Dredging Activities

Initially BIWTA invited the tender for the dredging of contract routes for contract amount of dredged materials has to be dredged and disposed of into the both river side flood plain and inner char land. Mainly hydraulic dredging (cutter suction) has been used for dredging activities. Factors in determining the proper equipment selection include the physical characteristics of proposed dredge material, quantity of material to be removed, dredge depth, proximity to disposal site, physical environment between the dredging and disposal site, method of disposal, production required, and the type of equipment available. Based on natural characteristics of the project area, the use of required method and equipment has been adopted in order to create the designed navigation channel. Hydraulic dredging is being executed to complete the works with the use of suitable pumps, a piping transportation line and some form of a suction head that extracts material from the bed surface. A floating dredge rig controlled the suction intake which positioned to remove material and ultimately created the designed channel. The suction system usually requires some process of agitating the bed to efficiently extract material which is often achieved with a cutter head hydraulic dredger. Hydraulic dredging systems will also be useful to handle a wide range of material for this project. After bed material sucked through the piping intake, high horsepower pumps move the slurry through from proposed dredge location towards the intended disposal sites are a specified distance from the dredge area and accessible by pipeline.

Figure 11: Dredging activities

Figure 12: Dredging Activities

The working principle of Cutter Suction Dredger mobilized, excavating the underwater soils through the rotation power of cutter which has been lowered underwater; then the dredged spoils, consist of soils and river water, will be sucked into centrifugal pump by vacuum, and will be disposed into designated area by pipelines. The dredger conducted dredging work through repeated circulation of four procedures: transverse dredging, cutter returning, spud shifting and anchor moving **(Figure 13)**

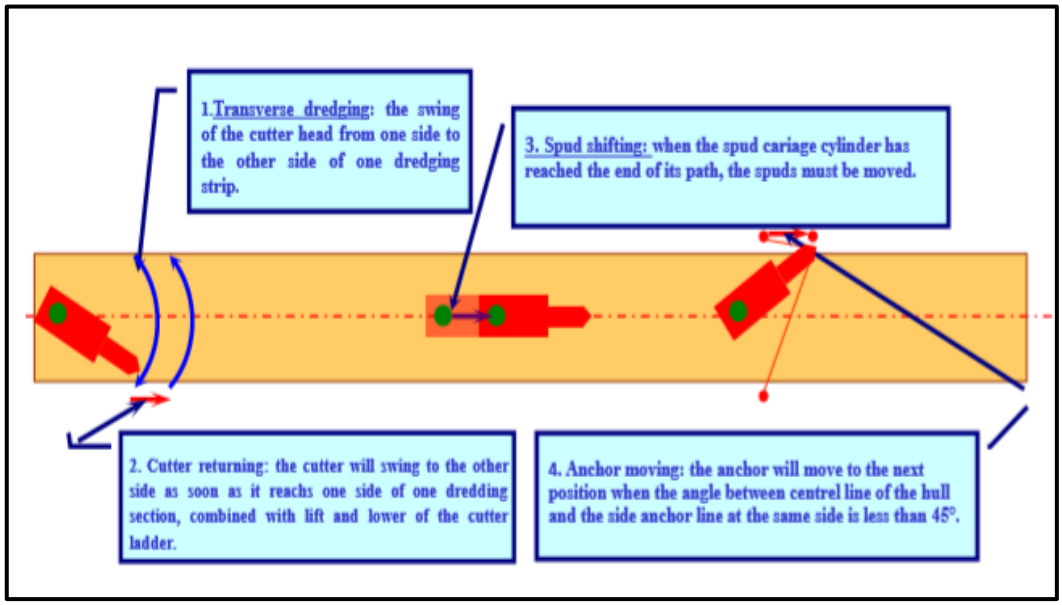


Figure 13: Transverse Dredging, Cutter Returning, Spud shifting and Anchor moving

Within the construction section, the dredging work will be conducted perpendicular to trench dredging alignment and was carried out layers by layers, sections by sections, stripes by stripes. The width of on strip is 35m-50m while the thickness of one layer is 1m-2m. The trench will be excavated from upper layer to lower layer. Firstly, the bulk dredging should be performed by the dredger, after that, the accurate profile dredging will be carried out.

2.5.4 Progress of Dredging work:

Location: Laharhat-Bheduria Route 21

Cut 1 completed (Left side) upto 28th February 2023:

Chainage: k7+500 to k6+950 & k6+625 to k6+675

Total Length: 600m

Width: 32.5m

CHAPTER 03:
PERFORMANCE SCHEDULE OF THE CONSULTANT FOR THE NEXT MONTH

OPBC DEVLOPMENT DREDGING PLAN (MARCH 2023)

Activities	Route	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23	D24	D25	D26	D27	D28	D29	D30	D31
Supervise Mobilization & Site Preparetion	Route 7 & 8																															
Dredging Wolrks																																
Check SOB Control Points	Route 7 & 8																															
Establishments of BM/TBM and WL Gauge	Route 7 & 8																															
Baseline Survey	Route 7 & 8																															
Identify shoal area	Route 7 & 8																															
Fixing Dredging alignment and Section Design	Route 9, Route 13 Route 9,13, 15 & 16																															
Pre Dredge Survey (In survey)	Route 7 & 8																															
Post Dredged Survey	Route 21																															
Commence Dredging Work	Route 9, 13,15 & 16																															
Dredging Work Supervision	Route 9, 13,15 & 16																															
Dredging Depth Monitoring	Route 9, 13,15 & 16																															
Dredged Material Management																																
Primary Disposal Land Slection & Consultation	Route 7, 9, 13,15 & 16																															
Good Faith Agreement	Route 7, 9, 13,15 & 16																															
Containment Dyke Construction																																
ESHS																																
Environmental Monitoring (polution, sample collection, testing, hazard precaution)	Route 7, 9, 13,15 & 16																															
Grievance Redress Mechanism (GRM)	Route 7, 9, 13,15 & 16																															
Health & Safty Monitoring (PPE, accomodation, HIV/AIDS, COVID	Route 7, 9, 13,15 & 16																															
Gander Issues	Route 7, 9, 13,15 & 16																															

Figure 14: OPBC development Dredging Plan (march 2023)

CHAPTER 04: OPPORTUNITIES, ISSUES AND SOLUTIONS

4.1 Convenience

The project is a team work between PIU, Consultant (S1A) and Contractor (Lot 2 & Lot 3) which is noticeable from the beginning. Employer is always cooperating with necessary instructions. Their constant support has created great opportunities for the smooth implementation of this project. Easy coordination among all concerned parties has simplified the implementation of project activities. All relevant parties are sincere in discussing and assisting each other to find ways to improve and solve out the outstanding clauses.

4.2 Difficulties

Difficulties faced during the monitoring and supervision period of the month February 2023 are listed down as following-

1. Contractor do not provide any work plan or notification before starting any new work.
2. Contractor's site engineer never follows the design and specifications for dyke/disposal area construction.
3. Contractor's site engineer does not provide daily progress report to the consultant supervision team.
4. Contractor do not concern about lacked and spillage from the pipelines.
5. Contractor do not maintain record properly of all sand or sediment extraction.
6. Contractor do not concern to identify the channel using navigation aids such as buoys, beacon, lights signal and sign board etc.
7. It is observed that sometimes contractor disposes dredge material outside of disposal area or on shore.
8. Health and safety issue such as PPE, vest, helmet, hand gloves, safety shoes and life savings equipment are not maintained properly.
9. The contractor is not controlling the discharge of site runoff including excess dredge water by the installation and correct use of containment walls, bunds and weirs.
10. Lack of proper drainage for rain water/liquid waste and solid waste management system.
11. Contractor environmental action plan (CEAP) is not maintained properly.
12. Environmental monitoring activities is not maintained regularly.

4.3 Solving out Difficulty

- The contractor should mobilize all qualified professional to the project site and take necessary measures in order to solved the above-mentioned issues.
- The Contractors Manager must be a person with enough experience, who can lead the team to carry out the work comprehensively
- To pay attention to perform the works according to the contract standards and specifications.

- Prior information and permission from S1A to commence any major activities is necessary.

CHAPTER 05:
CONCLUSION AND/OR RECOMMENDATIONS

Except few, most of the S1A professionals are in team and needs to expedite its procurement, particularly the office and field data collection equipment like environmental sampling equipment, speed boat, survey boat, survey instrument which are yet to be procured.

The field-level manpower particularly non-key surveyors, environmental staff should be mobilized ASAP. Documentation of the meetings held either with the contractor or PIU, in-house, or with any other stakeholder should be properly kept and circulated among the stakeholders/participants.

S1A to prepare a regular meeting schedule with the contractors and other stakeholders.

APPENDICES

Annex I: Dredging Summary Sheet:

Table 1: Monthly Progress Summary Sheet of Dredging

Lot No	Route Name	Chainage	Contractor	Dredger Name & Size	Type	Date of Mobilization	Progress to Date	Cumulative progress	Total cutting length (m)	1 cut dredged length(m)	2 cut dredged length (m)	length equivalent to full section (m)	Route wise total volume	Disposal point	Remarks
2	Route 3 & 4		Gulf Kobla-Karnafuli JV		CSD							0.00			
	Route 5				CSD										
	Route 6				CSD										
	Route 7 & 8				CSD										
	Route 9				CSD										
	Route 10				CSD										
	Route 11				CSD										
3	Route 12		Dharti-Banga JV		CSD										
	Route 13				CSD										
	Route 13a				CSD										
	Route 15 & 16				CSD										
	Route 17				CSD										
	Route 21				CSD										

Annex II: Progress Report February 2023 (Lot 3)

Table 2: Route Wise Monthly Development Dredging including ESHS Progress Report, February' 2023

Route no.	Scope of Works	Contractors' commencement date-Joint Survey-Dredging (ESHS)	Route Length (km)& shoal Chainage for Detail survey	Submission Date Proposed Report approval & ESHS Report	Dredger Name with Ancillary equipment	Type	Shoal area in chainage /km	Total cutting length (m)	No. of cutting	Disposal point	1 cut dredged length (m)	2 cut dredged length (m)	Total dredged length (m)	Total dredged /In Survey (Post Survey) Done in KM	Route wise total length equivalent to full section (km)	Remarks
Route-21 (Laharhat - Bheduria)	Joint Line Survey	25th – 26th November 2022	Ch 0+000 to 09+174 , Length : 9.174km		-	-	-	-	-	-	-	-	-	-	-	This joint line survey has been done for finding the shoals area over the length.
	Joint Detail Bathymetry survey	27th – 28th November 2022	Ch 6+400 to 08+750	30th November 2022												Joint Team 1. PIU-representative 2. Consultant - S1, Rep.,& 3. Dharti - Banga JV Rep.
	Dredging commencement in route 21	44907	Km 6+400 to km 8+500	30th November 2022	BangaJamuna	CSD	Km 6+400 to Km 8+500	2100 m	2 cut (W)	07 nos. [R 21-D1 to R21-D7]	2100m		2100 m	1.00 km	1.5	Joint In-Survey (Post Survey) completed for Km1.00 out of 2.100km on 8 Feb 23
					Banga Padma	CSD						1500m	1500m	1.00km		
	C-EAP	November, 2022	to	January `2023	0	0	0	0	0	0	0	0	0	0	0	Submitted for approval

	ESHS Monthly report	Desember, 2022 and January ,2023	Km 6+400 to km 8+500	February, 2023	0	0	0	0	0	0	0	0	0	0	0	ESHS progress Report of February,2023 is in process.
Route : 13 &13a (Alubazar to At Hazar and Batamara to Hizla)	Joint Line Survey	8th to 14th January, 2023	Ch 0+000 to 95+000, Length : 95km	0	0	0	0	0	0	0	0	0	0	0	0	This joint line survey conducted for findings the shoals area.
	Detail Bathymetry survey	16th – 17th January,2023	Ch: Km 22+000 to Km 24+000	18th January,2023												
	Dredging commencement in route 13 and 13A	0	0	Commence of dredginng after alignment.	Banga Sithlaykha	CSD	Km 22+600 to Km 23+400	800m	0	0	0	0	0	0	800m	Submitted
	CEAP (Contractors Environmental Action Plan)	November,2022	0	January,2023	0	0	0	0	0	0	0	0	0	0	0	Awaiting for approval by Consultant S1 as well as from PIU office.
	ESHS Monthly report	Desember,2022 & January ,2023	Ch 0+000 to 95+000, Length : 95km	February ,2023	0	0	0	0	0	0	0	0	0	0	0	ESHS progress Report of February ,2023 is in process.
Route-15 & 16 (Bheduria to Patherhat to towards	Joint Line Survey	19th to 24th January 2023	Ch 0+000 to 11+000, Length :11.00 km and 00.000 to 15+000,	0	0	0	0	0	0	0	0	0	0	0	0	This joint line survey has been conducted for findings the shoals area from

Elisah Ghat)			Length :15.00km													over the length.
	Detail Bathymetry survey	19th – 24th January,2023	Ch 0.000 to 1+850, Length:1.850km	Resend 16th February,2023	0	0	0	0	0	0	0	0	0	0	0	0
	Dredging commencement in route 15&16	0	0	Commence dredging after alignment	Banga Jamuna	CSD	Ch 0.000 to1+850 Length: 1.850 km	1.850 km							1.850km	Submitted
	C-EAP	November,2022	Ch 0+000 to 11+000, Length :11.00 km and 00.000 to 15+000, Length :15.00km	January,2023	0	0	0	0	0	0	0	0	0	0	0	Submitted for approval
Route-17 (At hazar to Bheduria)	Joint Line Survey	29th January ,2023	Ch 0+000 to 17+000, Length :117.00 km	0-Jan-00	0	0	0	0	0	0	0	0	0	0.00	0	This joint line survey conducted for findings the shoals area
	Detail Bathymetry survey	No Dredging is required														
	Dredging commencement in route 17	No Dredging is required in route 17 as per the line survey report.														
	C-EAP	November,2022	Ch 0+000 to 17+000, length :117.00 km	January,2023	0	0	0	0	0	0	0	0	0	0	0	Submitted for approval

Route:12 (Chandpur to R140 Bridge)	Joint Line Survey	Once received the instruction from Consultant &PIU we will plan to start Joint survey with along Dredging.													
	Dredging commencement	Awaiting for Base line survey by Consultant S1.													
	CEAP(Contractor Environmental Action Plan)	November,2022	0	January,2023	0	0	0	0	0	0	0	0	0	0	Submitted for approval

Annex III: Survey work:

Table 3: Survey Work

Sl. No	Survey Work	Location and Route no	Chainage	Date of Conduct
1	Baseline survey	Laharhat-Bheduria Route 21	K0+000 to K8+500	25-26 November, 2022 to 28 November, 2022
2	Hydrographic survey/Pre-work	Laharhat-Bheduria Route 21	K0+000 to K8+500	
3	Baseline survey	Laharhat-Bheduria Route 21	K0+000 to K8+500	
4	Hydrographic survey/Pre-work	Alur-bazar to At Hazar/ Route 13	K0+000 to K95+000	08 January, 2023 to 18 January, 2023
5	Baseline survey	Alur-bazar to At Hazar/ Route 13	K0+000 to K95+000	
6	Hydrographic survey/Pre-work	Patharhat to Bheduria/ Route 15 & 16	(Not given)	19 January, 2023 to 21 January, 2023
7	Baseline survey	Patharhat to Bheduria/ Route 15 & 16		
8	Baseline survey	Patharhat to Bheduria/ Route 15 & 16	(Not given)	22 January, 2023 to 24 January, 2023
9	Hydrographic survey/Pre-work	Bheduria to At Hazar(north)/ Route 17	k0+000 to k11+000	
10	Baseline survey	Bheduria to At Hazar(north)/ Route 17	k0+000 to k11+000	29 January, 2023
11	Hydrographic survey/post-work	Laharhat to Bheduria Route 21	k8+500 to k7+500	
12	Baseline survey	Laharhat to Bheduria Route 21	k8+500 to k7+500	08 February, 2023

Annex IV: Dredging work:

Table 3: Dredging Work

Sl no	Location **/Section**	**Chainage**	Total Length	Width	**Date and time**
1	Laharhat-Bheduria Route 21 Cut 2 (Full section cutting completed)	k8+500 to k7+500	1000m	65m	upto 31st January 2023
2	Laharhat-Bheduria Route 21 Cut 1 completed (Left side)	k7+500 to k6+950 & k6+625 to k6+675	600m	32.5m	upto 28th February 2023

Annex V: Dredge material disposal Area detail Report

LOT 3: Laharhat-Bheduria Route 21 under Contract No. BRWTP-W1A-03

1. Disposal Area: R21-D1

Area (approx.)	12729 m^2
Height (approx.)	1.5m
Contain Capacity	25000.0 m^3

This is the private land and name of owner is Md. Shahin Mia. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about 2.5m. This place is located in Mehandigonj Union under Mehandiganj Upazilla in Barisal district. This land is on the bank of Tentulia river and route number is Laharhat-Bheduria, route 21. This place is average 15m meter offset distance from the L/B bank of the river.
Discharge pipe Nozzle is situated on top of dyke boundary wall and at an elevation of 6.00msl. Two outlets were using made of 8 nos of pipe (dia 450mm) for drain water into the river.

Annex-Figure 1: Photo of dredge material disposal area (ID-R21-D1)

2. Disposal Area: R21-D2

Area (approx.)	4899 m2
Height (approx.)	0.974 m
Contain Capacity	4772.0 m3

This is the private land and name of owner is Salam fakir and Md. Tuhin. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about 2.5m. This place is located in Bheduria Union under Bheduria Upozilla in Bhola district. This land is on the bank of Tentulia river and route number is Laharhat-Bheduria, route 21. This place is average 10m meter offset distanc e from the L/B bank of the river.

Annex-Figure 2: Spoil Disposal plan for Block R21-D2

Discharge pipe Nozzle is situated on top of dyke boundary wall and at a elevation of 3.714msl. Two outlets were using made of 8 nos of pipe (dia 450mm) for drain water into the river.

3. Disposal Area: R21-D3

Area (approx.)	9069 m2
Height (approx.)	1.6 m
Contain Capacity	14692.0 m3

This is the private land and name of owner is Md. Salam fakir. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about 2.5m. This place is located in Mehandigonj Union under Mehandiganj Upozilla in Barisal district. This land is on the bank of Tatulia river and route number is Laharhat-Bheduria, route 21. This place is average 15m meter offset distance from the L/B bank of the river.

Discharge pipe Nozzle is situated on top of dyke boundary wall and at a elevation of 6.22msl. Two outlets were using made of 8 nos of pipe (dia 450mm) for drain water into the river.

Annex-Figure 3: Spoil Disposal plan for Block R21-D3

4. Disposal Area: R21-D4

Area (approx.)	3358 m2
Height (approx.)	1.1 m
Contain Capacity	3391.58 m3

This is the Public land and name of owner is Bangladesh Government. It is a non-cultivable fallow land. This was filled as re-settlement project named as Guchogram. Proposed and safe filling height is about 1.5m. This place is located in Sreepur Union under Mehandiganj Upozilla in Barisal district. This land is on the bank of Tatulia river and route number is Laharhat-Bheduria, route 21.

Annex-Figure 4: Spoil Disposal plan for Block R21-D4

place is average 200m meter offset distance from the R/B bank of the river. Discharge pipe Nozzle is situated on top of dyke boundary wall and at a elevation of 4.21msl. One outlet was using made of 4 nos of pipe (dia 450mm) for drain water into the river.

5. Disposal Area: R21-D6

Area (approx.)	18571.5 m2
Height (approx.)	1.5 m
Contain Capacity	27857.25 m3

This is the private land and name of owner is Md. Narunnabi Bhuiya. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about 2.5m. This place is located in Ghagoria Union under Mehandiganj Upozilla in Barisal district. This land is on the bank of Tatulia river and route number is Laharhat-Bheduria, route 21.

This place is average 20m meter offset distance from the L/B bank of the river.

Annex-Figure 5: Spoil Disposal plan for Block R21-D6

6. Disposal Area: R21-D7

Area (approx.)	7900m2
Height (approx.)	1.2 m
Contain Capacity	9480 m3

This is the private land and name of owner is Md. Narunnabi Bhuiya. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about 2.5m. This place is located in Ghagoria Union under Mehandiganj Upozilla in Barisal district. This land is on the bank of Tatulia river and route number is Laharhat-Bheduria, route 21.

This place is average 60m meter offset distance from the L/B bank of the river.Discharge pipe Nozzle is situated on top of dyke boundary wall and at a elevation of 2.80msl. One outlet was using made of 3 nos of pipe (dia 450mm) for drain water into the river.

Annex-Figure 6: Spoil Disposal plan for Block R21-D7

LOT2: Solimgonj Bridge to Homna loop Route09 Under Contract No.BRWTP-W1A-02

1. Disposal Area: R09-D1

Area (approx.) 2520 m2
Height (approx.) 3.5 m
Contain Capacity 8820 m3

Annex-Figure 7: Spoil Disposal plan for Block R09-D1

This is the Private land and name of owner is Md. Monir, Md. Nazrul Islam,Md. Awlad Hossain and Morjina Begum. It is a cultivable land and normally cultivated once a year. This was filled as rental basis. Proposed and safe filling height is about 3.7m. This place is located in Tejkhali Union under Bancharampur Upozilla in Brahmanbaria district. This land is on the bank of Titas river and route number is Solimgonj to Homna loop, route 09. This place is average 122-meter offset distance from the R/B bank of river.

2. Disposal Area: R09-D2

This is the Private land and name of owner is Shiblu Mia, Md. Manjur Mahmud and Shima Akter. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about m. This place is located in Tejkhali Union under Bancharampur Upozilla in Brahmanbaria district. This land is on the bank of Titas river and route number is Solimgonj to Homna loop, route 09. This place is average -meter offset distance from the R/B bank of river.

3. Disposal Area: R09-D3

This is the Private land and name of owner is Akanagar M.E Model High School .It is a non-cultivable land. This was filled as rental basis. Proposed and safe filling height is about m. This place is located in Tejkhali Union under Bancharampur Upozilla in Brahmanbaria district. This land is on the bank of Titas river and route number is Solimgonj to Homna loop, route 09. This

place is average -meter offset distance from the R/B bank of river.

4. Disposal Area: R09-D4

This is the Private land and name of owner is Md. Monjur Mahmud. It is a cultivable land and normally cultivated twice a year. This was filled as rental basis. Proposed and safe filling height is about m. This place is located in Tejkhali Union under Bancharampur Upozilla in Brahmanbaria district. This land is on the bank of Titas river and route number is Solimgonj to Homna loop, route 09. This place is average -meter offset distance from the R/B bank of river.

Annex VI: Establishment of Control Point and the water level gauging station:

Control Point Information:

Lot 02

Serial No.	BM Location Description	BM Co-ordinate	BM Elevation	Pictures
1	BM-01 The pillar is situated 100m north from house owned by Mr. Rubel Hossain, S/O Mr. Elias Hossain. Vill: Muktarampur, Union: Dorabanga, Upazila: Nabinagar, District:Brahmanbaria.	E-280094.710 N-2640369.069	4.083	
2	BM-02 The pillar is situated 30m S/W corner from River side Santipur Eid-gha math. Vill: Santipur, Union: Solimgonj, Upazila: Nabinagar, District:Brahmanbaria	E-280261.615 N-2636999.062	4.86	
3	BM-03 The pillar is situated S/W corner of land owned by Mr. Taher mia and 120 west from River side Kadur Graveyard Vill: Kadur, Union: Solimgonj, Upazila: Nabinagar, District: Brahmanbaria	E-282822.894 N-2637746.206	4.299	
4	TBM-01 TBM-01 kept on the N/E corner stair of Joykalipur Purbo-para, Eidgah. Vill: Joykalipur, Union: Tejkhali, Upazila: Bancharampur, District: Brahmanbaria	E-279736.12 N-2640359.82	5.819	

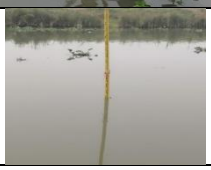
Lot 3

Serial No	BM Location Description	BM Co-ordinate	BM Elevation	Pictures
1	Laharhat Launch Ghat	E:242013 N:251123 0	4.738	
2	Bheduria Ferry Ghat	E: 249864 N: 2512925	4.179	
3	Char Ramdaspur	E: 253103 N: 2525798	4.724	
4	TBM 1 At Hazari to Alubazar, Route 13	E: 224442 N: 2517614	1.844	
5	TBM 2 At Hazari to Alubazar, Route 13	E: 228189 N: 2523723	2.611	
6	TBM 3 At Hazari to Alubazar, Route 13	E: 228281 N: 2534805	3.644	
7	TBM 4 At Hazari to Alubazar, Route 13	E: 220855 N: 2535713	2.430	
8	TBM Additional (In between TBM 4 & TBM 5) At Hazari to Alubazar, Route 13	E: 220828 N: 2535600	2.147	

9	TBM 5 At Hazari to Alubazar, Route 13	E: 223413 N: 2541910	1.813	
10	TBM 6 At Hazari to Alubazar, Route 13	E: 227607 N: 2544131	2.163	
11	TBM 7 At Hazari to Alubazar, Route 13	E: 230972 N: 2549020	2.905	
12	TBM 8 At Hazari to Alubazar, Route 13	E: 234162 N: 2546981	3.157	
13	TBM 9 At Hazari to Alubazar, Route 13	E: 241906 N: 2546209	2.693	
14	TBM 10 At Hazari to Alubazar, Route 13	E: 242791 N: 2551409	3.223	
15	TBM 11 At Hazari to Alubazar, Route 13	E: 248914 N: 2561404	3.128	
16	TBM 12 At Hazari to Alubazar, Route 13	E: 252348 N: 2565785	4.060	
17	BM At Hazari to Alubazar, Route 13	E: 252317 N: 2565805	4.206	

Water Gauge Information:

Lot2

Serial No.	Gauge Location Description	Gauge Co-ordinate	Pictures.
1	**Solimganj**	**E-280594 N-2639129**	
2	**Nilkhi**	**E-280315 N-2637123**	
3	**Kadur**	**E-283114 N-2637681**	
4	**Dharvanga**	**E-280057 N- 2640339**	

Lot 3

Sl.No.	Gauge Location description	Gauge Co-ordinate	Gauge installation pictures
1	Bheduria Ferry ghat	E: 249840 N: 2512945	
2	Laharhat LaunchGhat	E: 242013 N: 2511306	
3	Ramdaspur	E: 253705 N: 2526139	
4	Gauge 1 At Hazari to Alubazar, Route 13	E: 234473 N: 2617670	
5	Gauge 2 At Hazari to Alubazar, Route 13	E:228189 N:2523723	
6	Gauge 3 At Hazari to Alubazar, Route 13	E:228189 N:2523723	

7	Gauge 4 At Hazari to Alubazar, Route 13	E: 233390 N: 2541875	
8	Gauge 5 At Hazari to Alubazar Route 13	E: 233390 N: 2541875	
9	Gauge 6 At Hazari to Alubazar, Route 13	E: 227542 N: 2544139	
10	Gauge 7 At Hazari to Alubazar, Route 13	E: 230860 N: 2548832	
11	Gauge 8 At Hazari to Alubazar, Route 13	E: 234156 N: 2546951	
12	Gauge 9 At Hazari to Alubazar, Route 13	E: 241819 N: 2546236	
13	Gauge 10 At Hazari to Alubazar, Route 13	E: 242927 N: 2551645	
14	Gauge 11 At Hazari to Alubazar, Route 13	E: 248922 N: 2561377	
15	Gauge 12 At Hazari to Alubazar, Route 13	E: 252271 N: 2565857	