

বিদেশী সংস্থা জড়িত বিষয়ে ইংরেজীতে লেখা হলো

Government of the Peoples Republic of Bangladesh
Local Government Engineering Department
Integrated Water Resources Management Unit
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উন্নয়নের গণতন্ত্র
শেখ হাসিনার মূলমন্ত্র।

Date: 13 May 2018

To

Mr. Akihiro SHOJI
Project Coordinator
JICA-LGED Technical Cooperation project

Subject: Environmental Monitoring Report

Dear Sir

This is to inform that a combined Environmental Monitoring Report of three (3) pilot subprojects under "Capacity Development Project for Participatory Water Resources Management through Integrated Rural Development (JICA-LGED Technical Cooperation Project)" has been prepared as per monitoring the form provided by the project.

So, you are requested to take necessary steps in this regard.

Encl.

1. Combined Environmental Monitoring Report


(Md. Shomser Ali)

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CC for kind information and necessary action:

1. Additional Chief Engineer (IWRM), LGED, Head Quarters, Dhaka
2. Superintending Engineer, O&M/P&D, IWRMU, LGED, Head Quarters, Dhaka.
3. Ryuich Katsuki, Program Adviser, JICA Bangladesh.

MONITORING FORM

As of 14 May, 2018

1. Response/Actions to Comments and Guidance from Government Authorities and Public

Monitoring Item	Monitoring Results during Report Period
(1) Comments from Local Stakeholders about the Pilot Projects	The pilot subprojects will be beneficial for the concerned areas for increasing of agricultural production (removal of drainage congestion and flood and making surface water availability in the khal for irrigation) as well as improvement of socio-economic condition of the people due to improvement of road and market.
(2) Reflection of the comments from Local Stakeholders to the Pilot Project Design	Public consultations, with the government officials, elected public representatives and members of the local community of different professionals in each of the subproject area were held at feasibility study stage. The interventions proposed were elaborated with drawings by study team and comments and suggestions were invited. Finally the recommendations of meetings were recorded. In consideration of feasibility study findings the detail design and drawings were prepared. The specific issues of design and drawing were placed at design and disclosure meeting and comments and suggestions taken before finalization the design.
(3) Examination of Alternatives	Numbers of options were considered for the pilot subprojects and best option supported by local public was adopted (Appendix-1)

2. Mitigation Measures

Monitoring Item	Monitoring Results during Report Period
The contents of Environment Mitigation Plan based on the results of Initial Environmental Examination <ul style="list-style-type: none"> - Water Quality - Waste - Soil Contamination - Odor - Ecosystem - Downstream Fisheries and Water uses - Impacts During construction (noise, vibrations, turbid water, dust, exhaust, gases and wastes) 	Enclosed as Appendix-2



3. Social Environment

- Working Conditions

Monitoring Item	Monitoring Results during Report Period
Contract documents include the articles regarding - Not violating any laws and ordinances associated with the working conditions of Bangladesh	Yes
- Tangible safety consideration (ex. installation of safety equipment)	Yes
- Safety of other individuals or local residents	Yes

4. Others

- monitoring

Monitoring Item	Monitoring Results during Report Period
(1) Develop and implement a monitoring plan for the environmental issues	Enclosed as Appendix-3
(2) The monitoring plan (items, methods and frequency)	Enclosed as Appendix-3
(3) Monitoring system/framework (organization, personnel, equipment and adequate budget to sustain the monitoring framework)	Enclosed as Appendix-3



Examination of Alternatives

A. Bajail Borochala Subproject

Main objectives of the sub project are:

1. Conservation of water in Bajail Borochala Khal by constructing water retention structures at five places to augment supply of surface water to supplement irrigation need of Boro crops and T Aman.
2. Increasing storage capacity and improving drainage of the SP by re-excavation of Bajail Borochala Khal.
3. Improving marketing facility for agricultural produces by improving road and developing two bazars (Rajabari Bazar and Bajail Bazar).
4. Reducing Poverty

Three options were considered and the best option supported by local public was adopted.

Option 1	Option 2	Option 3
Construction of a water retention structure (WRS) at 0.240 km from outfall	Construction of a water control structure (regulator) at 0.300 km from outfall	Construction of a regulator at 0.240 km from outfall
Construction of a second WRS at 1.75 km from outfall to retain more water	Modification of a Culvert at 2.455 km from outfall	Modification of a Culvert at 2.455 km from outfall
Construction of a third WRS at 4.24 km from outfall with spoil bank road with drainage outlet/inlet pipes.	Modification of a bridge at 4.763 km from outfall with no alternative for culvert removed.	Modification of a bridge at 4.763 km from outfall with one additional culvert
Construction of a weir at 6.500 km from outfall with bridge facility to support existing timber bridge	Construction of a weir at 6.80 km from outfall	Construction of a weir at 6.80 km from outfall
Re-excavating 8.3 km khal	Re-excavating 9.25 km Khal	Re-excavating 9.25 km Khal
Development of two bazars	Development of two bazars	Development of two bazars
Carpeting of road, 5 km	Carpeting of road, 5 km	Carpeting of road, 5 km

Option 1 is considered to be the best as it would retain more water and provide alternative communication for two culverts to be removed by khal re-excavation. As this would conserve more water for irrigation and provides better communication facility this option was adopted in the design.



B. Korial Beel Sub project

Main objectives of the subproject are:

1. Removing drainage congestion to allow timely plantation of Boro crop to prevent damage to crop.
2. Preventing occasional damage to crops by occasional flooding by overtopping of the existing rural road
3. Improving marketing facility for agricultural produces by improving road and developing one bazar (Merigacha Bazar) and one approach road.
4. Reducing poverty

Numbers of options were considered and the best option supported by local public was adopted.

Option 1	Option 2	Option 3
Construction of a regulator at 0.0 km from outfall	Construction of a regulator at 0.0 km from outfall	Construction of a regulator at 0.0 km from outfall
Re-excavation of Korial Beel khal and Gaokumra khal 2.05 Km	Re-excavation of Korial Beel khal and Gaokumra khal 2.05 Km	Re-excavation of only Korial khal 2.05 Km
Reshaping of a rural road as a flood embankment 0.8 km	Reshaping of a rural road as a flood embankment 1.0 km	Reshaping of a rural road as a flood embankment 1.0 km
Development of Merigacha bazaar	Development of Merigacha bazaar	No bazar development
Construction of a culvert in Korial Beel	No culvert	No culvert
Carpeting of road 1.2 km	Carpeting of road 1.2 km	No road development

The Construction of regulator, re-excavation of khal and upgrading of existing rural road to prevent occasional flood is same in all options. Local people demanded construction of a market infrastructure in addition to the approach road to market. Option 3 did not consider market development.

Option 1 is considered to be the best as it would meet people's demand and improve marketing facility, in addition to conservation of water.



C. Chamta Drainage Subproject

Main objectives of the sub-project are


1. Mitigating drainage congestion induced by rainfall
2. Increasing the depth of khals to allow tidal sweet water to flow into the tail reach of khals for use in dry season irrigation (Boro paddy)
3. Increasing agricultural production;
4. Reducing poverty in the subproject area.

A number of options were considered and the best option supported by local public was adopted.

Option 1	Option 2	Option 3
Re-excavation of 13. 125 km khal with a fish shelter	Re-excavation of 13. 125 km khal with a fish shelter	Re-excavation of 13. 125 km khal with a fish shelter
Providing lined RCC U shaped canal in 900 m stretch of two khals	No RCC U shaped khal, only khal re-excavation	No RCC U shaped khal, only khal re-excavation
Construction of a new bridge	Construction of a new bridge	No new bridge
Construction of a WMCA Building	Construction of a WMCA Building	Construction of a WMCA Building

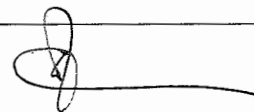
The re-excavation of khal is common in all options. The U shaped concrete lining is used to prevent excessive cutting of bank at one portion of each of two khals to save agricultural land from cutting. The third option did not consider construction of a bridge.

The local people liked Option 1, which is the preferred option.



Mitigation Measures

Monitoring Item	Based on IEE Report	Monitoring Results during Report Period	Possible Mitigation Measures
Water Quality	Water is sweet. There is no source of chemical or industrial pollution.	The subproject interventions have not induced any water pollution.	Not Applicable
Waste	Not mentioned	None of the subprojects have any source of industrial or commercial waste. Labour camp wastes were negligible.	Not Applicable
Soil Contamination	Not mentioned	Soil contamination has not occurred due to construction activity	Not Applicable
Odor	Not mentioned	No bad odor producing ingredients were used.	Not Applicable
Ecosystem	Terrestrial habitat No adverse impact on threatened or endangered species due to SP implementation	Some common floral species (herbs & shrubs) that had cleared due to construction work are reported to be re-grown.	Not Applicable
	Wetland and Aquatic Habitat No adverse impact on existing wetland and aquatic habitat due to SP implementation.	No adverse impact has occurred due to SP implementation.	Not Applicable
	Natural Fisheries In Korial Beel SP, some reduction of F2 and F1 will take place but the fish production is only 5 kg/ha.	No adverse impact is assessed until now since the SP just completed the civil works in March 2018.	The bed level of the structures are set at lower elevation will allow migration of fish during hatching and breeding offsetting the loss of production. The production is expected to be 20 kg/ha. To mitigate the impact the local people will be given training on cultural fishing so that the loss of natural fishing will be compensated.



Monitoring Item	Based on IEE Report	Monitoring Results during Report Period	Possible Mitigation Measures
	Wildlife and Bio-diversity No impact on wildlife and biodiversity is expected due to the subproject.	No adverse impact has occurred due to SP implementation.	Not Applicable
Downstream Fisheries and water use	Not mentioned	No adverse impact is assessed until now since the SP just completed the civil works in March 2018.	Downstream adverse impact is not anticipated.
Impacts During construction			
Noise & Vibration	-	The vibrators, mixture machines, rollers were operated during day time only and away from households. The noise level was not reported by local people to be harsh.	N/A
Turbid water	-	It was reported that turbidity of khal water didn't exceed pre-project level during re-excavation of Khal and construction of regulators/weirs.	N/A
Dust	-	Road construction works didn't generate significant dust as occasional rainfall occurred.	No dust mitigation measure needed
Exhaust & gases	-	Construction works carried out by both labour and equipment. Equipments included mixture machine, vibrators, roller water pumps that were not operated continuously for long time. The machines were in good condition and didn't generate black smoke as reported by the local people. Also melting of asphalts was done in open spaces.	
Waste	-	No solid waste disposal from construction site, office and camps to open space and water bodies was reported.	N/A



Environmental Monitoring Plan

The construction activities included works at both construction and post construction stages. The post construction activities will include operation of gates of WRS /WCS, maintenance of khal and embankment, observation of socio-economic condition etc. following mitigation/ and enhancement plans.

Environmental monitoring is an essential tool in relation to environmental management as it provides the basic information for rational management decisions. The prime objectives of monitoring are:

- To check on whether mitigation and benefit enhancement measures are actually being adopted and are effective in practice;
- To provide a means, whereby impacts, which were subject to uncertainty at the time of preparation of EIA, or which were unforeseen, can be identified, and steps to be taken to adopt appropriate control measures;
- To provide information on the actual nature and extent of key impacts and the effectiveness of the mitigation measures which, through a feedback mechanism, can be taken into account in the planning and execution of similar projects in future.

There are two basic forms of monitoring:

- Visual observation or checking, coupled with inquiries;
- Physical measurement of selected parameters.

LGED is committed to provide all necessary resources and facilities required for implementation of all the elements of the Environmental Monitoring Plan (EMP) including performance/environmental monitoring and reporting to DOE and will bear all expenses incurred for this purpose.

The pre and post construction stages are over and no significant adverse impact was occurred. The subprojects have undergone one year joint operation and maintenance (post construction stage) from dated below:

1. Korial Beel Subproject:
2. Bajail Borochnla Subproject:
3. Chamta Drainage Subproject:

This EMP has been prepared for Post Construction Stage of the subprojects.

Impact	Mitigation	Responsibility	Monitoring Agency
Labour camp closing	Ensure proper removal of sanitary latrines. Spraying disinfectants over the camp, as required. Bricks etc are to be removed to bring the land to previous position.	Contractor/ /SAE	UE, LGED



Impact	Mitigation	Responsibility	Monitoring Agency
Latrine closing at work reaches	Ensure proper cleaning of latrines. Spraying disinfectants over the camp, as required.	Contractor/ /SAE	UE,LGED
Morphological monitoring	Recording sliding of bank erosion of section and sedimentation compared to the lined reference sections.	SAE/WMCA	UE,LGED
Operation of gates of WRS/WCS	Mechanical maintenance will include the greasing of gears and cable and painting of gate Fishery management: Gates will be operated by WMCA according to the operation plan for assisting fish migration	SAE/WMCA	UE,LGED
Operation and maintenance of fish Shelter & Sanctuary	The sanctuaries or shelters will not be used for fishing Water will not be pumped out of the fish shelters	SAE/WMCA	UE/LGED and Upazila Fishery Officer
Condition of embankment	Record sliding of slope and take action under O&M	SAE/WMCA	UE,LGED
Condition of carpeted road	Record rain cut at slopes of embankments of carpeted road and water accumulation in the shoulder and top of the carpet or creation of pothole	SAE/WMCA	UE,LGED
Market place maintenance	Keeping the markets clean and disposal of waste properly	MMC/SAE	UZ Engr /LGED

EMP Implementation

a) Institutional Framework

The above table indicates that inter departmental management and cooperation is needed. So, institutional frame works need action and co-operation of all organizations concerned. LGED is in the driving seat as it is the implementation organization.

b) People's Participation

The subprojects were initiated by local people and they were consulted during, PRA, feasibility study and detailed design. The subprojects operate by the WMCA and markets by Market management Committees (MMCs). Thus people have been involved from the beginning and will be involved in future operation and maintenance. LGED has the experience of working in such situation and is currently involved in similar projects. Training has been organized for capacity development of the peoples organizations e.g. WMCA.



c) Cost of Environmental Mitigation Measures

The cost of environmental management is ingrained in the estimates for work components. For example, the cost of earth work includes the provision of safe working environment of the workers and provision of latrines for males and females separately for each of LCS groups. The provision of cost for operation and management that includes monitoring has been made.

d) Cost of Environmental Management and Monitoring

There is no significant adverse impact. The work is not confined any area and water quality has not been interfered with. No biological resources will be harmed. There was no significant interaction of outsiders with the community. The O&M include environmental management also.

Each of the subprojects has provision for operation and management (O&M). The allocation of O&M money for each subproject is shown at Table below:

A handwritten signature in black ink, consisting of a stylized initial 'A' followed by a long horizontal stroke.

Table: Provision for O&M and Environmental Management Fund

Name of Subproject	Total O&M Fund Allocated (as per feasibility study report)	Fund Allocated for Environmental Management and Monitoring
Bajail Borochala	817,763	189,736
Korial Beel	399,339	107,174
Chamta Drainage	702,967	142,107
Pilot Project (total)	1,920,069	439,017

Monitoring Format for Post Construction Stage

Issues	Observation	Note
Khal Section (Annual after monsoon)	Observed jointly by WMCA and LGED	Sliding at (Note chainage) Sedimentation with ref to lined section (Note chainage)
Embankment (Annual after monsoon)	Rain cut, top soil removed, turf destroyed etc	Note chainages
WRS/WCS (mechanical. Annual)	Needs greasing and painting	(yes/No)
WRS/WCS (for fisheries) Quarterly	Up to what date the gate is kept open pre-monsoon Up to which date or week the gate is kept closed in the post monsoon.	Note date or week Note date and week
Maintenance of Fish shelters/ Sanctuaries (quarterly)	Are the fish shelters not used for fishing Is water pumped out of the shelters/Sanctuary	(yes/No) (yes/No)
Water quality monitoring (annual)	Water sample taken and sealed and sent to LGED testing lab Does test result desires any action	(yes/No) (yes/No)
Market (Quarterly)	Drains are clean Wastes are deposited at a safe distance or used in making biogas Internal Roads are maintained properly	(yes/No) (yes/No) (yes/No)
Carpeted road (quarterly)	Rain cuts Damaged shoulders Pot holes	(yes/No) (yes/No) (yes/No)
WMCA	Furniture is good condition (annual) If no, what action is needed Computer and internet support available (quarterly) Training organized (quarterly)	(yes/No) State (yes/No) (yes/No)
Production of open water fish	Indigenous fish Fish Production Fish diversity	Increased/decreased/ Unchanged(I/D/U) (I/D/U) (I/D/U)