



Bangladesh Water Development Board (BWDB)



Kingdom of the Netherlands



Department of Agricultural Extension (DAE)



# Polder Development Plan (PDP) – DRAFT

## Polder 43/1A

### November, 2016



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# Issue and revision record

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# List of Abbreviations

BADC	Bangladesh Agricultural Development Corporation
BBS	Bangladesh Bureau of Statistics
BRRRI	Bangladesh Rice Research Institute
BWDB	Bangladesh Water Development Board
CAHW	Community Animal Health Worker
CBO	Community-Based Organisation
CDMP	Comprehensive Disaster Management Program
CO	Community Organizer
DAE	Department of Agricultural Extension
DLS	Department of Livestock Services
DOC	Day Old Chicks
DPP	Development Project Proforma
DoC	Department of Cooperatives
DoE	Department of Environment
DoF	Department of Fisheries
DP III	Director of Planning III of BWDB
DPHE	Department of Public Health Engineering
DRR	Disaster Risk Reduction
DTL	Deputy Team Leader
EIA	Environmental Impact Assessment
EKN	Embassy of the Kingdom of the Netherlands
FCD	Flood Control and Drainage
FCDI	Flood Control, Drainage and Irrigation
FFS	Farmers Field School
FGD	Focus Group Discussion
FO	FFS Organiser
FT	Farmer Trainers
GAP	Gender Action Plan
GIFT	Genetically Improved Farm Tilapia GIFT
GoB	Government of Bangladesh
GoN	Government of Netherlands
GPWM	Guidelines for Participatory Water Management
Ha	Hectare
HH	Household
HYV	High Yielding Variety
IGA	Income Generating Activity
IAPP	Integrated Agriculture Productivity Project
IPM	Integrated Pest Management
IPSWAM	Integrated Planning for Sustainable Water Management
IPSWARM	Integrated Planning for Sustainable Water Resources Management
IRRI	International Rice Research Institute
KII	Key Informant Interview
LCS	Landless/Labour Contracting Societies
LGED	Local Government Engineering Department
LGI	Local Government Institutions
M&E	Monitoring and Evaluation
MRL	Monitoring Reflection and Learning
MFI	Microfinance Institutions
MFS	Market Oriented Farmers Field School

NGO	Non-Governmental Organisation
O&M	Operation and Maintenance
PCD	Program/Project Coordinating Director
PD	Program/Project Director
PDP	Polder Development Plan
PSF	Pond Sand Filter
PWMR 2014	Participatory Water Management Rules 2014
SAAO	Sub-Assistant Agricultural Officer
SaFaL	Sustainable Agriculture, Food Security and Linkages
SMART	Specific Measurable Attainable Relevant Time Bound
SRDI	Soil Resources Development Institute
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TA	Technical Assistance
TL	Team Leader
TOT	Training of Trainers
UP	Union Parishad
VC	Value Chain
VCA	Value Chain Analysis
VCD	Value Chain Development
VCS	Value Chain Selection
WASH	Water Sanitation and Hygiene Education
WMA	Water Management Association
WAP	Water Management Group Action Plan
WMF	Water Management Federation
WMG	Water Management Group
WMO	Water Management Organisation
XEN	Executive Engineer
ZSE	Zonal Socio Economist



# Glossary

Arotdar	Service provider to Bepari and Pikers in wholesale markets. Facilitates the buy/sell process. May provide purchase negotiation assistance, storage space, selling space, short term and seasonal credit, and arrange truck transport of goods purchased by Bepari to markets.
Beel	Naturally depressed land inundated under water for at least one season
Bepari	Key wholesaler in the supply chain. Moves goods between markets buying in source markets and selling in destination markets. Exerts the main influence on price earned by farmers.
bKash	bKash Limited is a joint venture between BRAC Bank Limited, Bangladesh, and Money in Motion LLC, USA. Less than 15% of Bangladeshis are connected to the formal banking system whereas over 68% have mobile phones. bKash utilize these mobile devices and the omnipresent telecom networks to extend financial services to the under-served remote population of Bangladesh.
Business service	Service that is sustainable through private sector transactions and that improves the performance of the value chain, its access to markets, and its ability to compete.
Capture Fisheries	Capture fisheries refer to open water fisheries resources in both marine and freshwater environments. Capture fisheries is exploitation of aquatic organisms without stocking the seed. Recruitment of the species occurs naturally. This is carried out in the sea, rivers, reservoirs, khal, beel, floodplain etc.
Climate Change	Climate change refers to any change in climate (average weather) over time, whether due to natural variability or as a result of human activity. Average weather includes temperatures, wind patterns and precipitation.
Cross-cutting issues	Issues that affect all areas of concern within their context.
Culture Fisheries	Culture fisheries are the cultivation of selected fishes in confined areas with utmost care to get maximum yield. The seed is stocked, nursed and reared in confined waters, and then the crop is harvested. Culture takes place in ponds, ditches, rice fields which are fertilized and supplementary feeds are provided to fish to get maximum yield.
Disaster Risk Reduction (DRR)	DRR is a conceptual framework intended to systematically avoid (prevent) and limit (prepare/mitigate) disaster risks with regard to losses in lives and the social, economic and environmental assets of communities and countries.
Embankment	An embankment is a high earthen dike surrounding an area in order to protect it from external floods and salinity.
Enabling environment	Environment favourable to working, participating and demonstrating potentials.
Farmers Field School (FFS)	FFS is a participatory group based learning approach where farmers can learn by doing and share their experiences.

Governance	Description of the dynamic distribution of power, learning, and benefits among participants in a value chain
Inlet	Inlets are small structures across the embankment to take in fresh water for irrigating high lands along the periphery of the polder. Outlets are small structures across an embankment to drain out local pockets in the polder.
Landless/Labour Contracting Societies	It is an approach to engage local poor people/labourers as a group for construction of rural infrastructures. The group is treated by the development authorities/project as a contractor for the work allocated.
Local Governmental Institutions (LGIs)	The institutions formulated under different Acts/Ordinances to run the different administrative unites of Local Government system by the Government
Kharif-I	Pre-monsoon season, from March to July 15
Kharif-II	Monsoon and post-monsoon season, from July 15 to October
Khal	Excavated or natural routes across any land area for draining out excess water and flushing in required water.
Market Actor	Smallholder, input supplier and output market players directly participating the value chain
Market development based	Activities that try to make the interaction between demand and supply more effective
Market transaction	The exchange between demand and supply is at full market price (the price at which suppliers are prepared to sell and consumers are prepared to buy, in an unsubsidized situation
Market	A set of arrangements by which buyers and sellers are in contact to exchange goods or services—the interaction of demand and supply
Needs Assessment	It is an assessment of the needs and priorities of local population in a polder.
Piker	Buys directly from various farmers to ensure a bulk. Bulk is sold to Arotder or to destination market. Exerts the main influence on price earned by farmers.
Polder	A polder is an area protected by embankment all around, having necessary structures across the embankment to drain out excess rain water and flush in required fresh water for irrigation.
Rabi	Dry season, from November to March
Standing Committees of UP	Standing Committee means the Standing Committee formulated under the Local Government (Union Parishad) Act, 2009
Sluice	A sluice is a structure constructed across an embankment to drain out excess water from a polder and / or flush in required water in to the polder.

Union Parishad (UP)	Union Parishad means the Union Parishad formulated under section 10 of the Local Government (Union Parishad) Act, 2009.” It is the lowest tire of the Local Government system in Bangladesh
Value Chain	A ‘value chain’ can be defined as all the actors who buy and sell from each other in order to supply a particular set of products or services to final consumers.
Water Management Group Action Plan (WAP)	It is the plan and strategy of the WMG, to address issues and problems of their area at a given time as well as to implement their actions as part of the polder development planning.
Ward	Ward means the Ward of Union Parishad. Each Union Parishad consists of 9 Wards
Water Management Organisations (WMO)	It is a common name for all organizations formed for the purpose of water management in a polder, namely WMG, WMA and WMF.
Water Management Group (WMG)	Local people organized within a hydrological unit or at village level to manage water resources are collectively called Water Management Group.
Water Management Association (WMA)	It is a higher tier of water management organization formed by representatives of WMGs.
Water Management Committee (WMC)	It is a committee to initiate and coordinate operation and maintenance activities in a catchment area. It is formed by representatives of WMGs.
Water Management Federation (WMF)	This is the highest tier of water management organization in the polder. It is formed by representatives of all WMAs in a polder.
Zonal level	Blue Gold has three field offices in Patuakhali, Khulna and Satkhira to coordinate and manage the project interventions; these are sometimes called zonal offices.

# 1. Introduction

## 1.1 Blue Gold Program Context

The overall objective of the Blue Gold Program is to reduce poverty in the coastal area by enhancing the livelihood of the rural population, through more efficient water resources management and increase productivity of mainly crops, fishery and livestock in the polders and by empowering the communities to be the driving force.

The specific objectives of the Program are to:

- Increase sustainability of the development of the polders through effective community participation. The community organizations will become the driving force for the natural resources based development, whereby environment, gender and good governance are effectively addressed in their operations;
- Protect floods and use water resources effectively;
- Increase farmers' income and strength livelihood through improved productivity (For each Polder a Business Plan will be developed with the value chain analysis); and
- Improve environment, drinking water and sanitation. The living environment will be realised and sexual reproductive health rights (SRHR), balanced nutrition, and good governance issues are well understood and applied.

## 1.2 Definition and Objective of a Polder Development Plan

### *Definition of a Polder Development Plan*

A Polder Development Plan (PDP) contains an integrated analysis and planning for developing a polder in relation to community mobilization, water management, agriculture, business development, environment, gender, and institutions<sup>1</sup>.

### *Objectives of a Polder Development Plan*

1. The provision of an internal discussion document for the Blue Gold TA team and the implementing agencies (BWDB and DAE) to plan, design and implement at polder level in an integrated manner;
2. A clear outline for WMOs what type of activities Blue Gold is providing, which helps them to develop their own WMO Action Plans (WAP);
3. A starting point for BWDB to prepare detailed rehabilitation plans and for DAE to fine-tune the FFS modules and stimulate business activities as well as a strategy to strengthen institutions like Union Parishad (UP);
4. Linkages with Blue Gold's logical frameworks and M&E activities, to ensure that the proposed interventions at polder level are contributing to the overall program objectives and can be justified towards stakeholders and donors.

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<sup>1</sup>An important consideration is that a polder is a multi-dimensional geographical unit delineated by water in which various and continuously changing development processes take place. Polder boundaries do not always coincide with administrative boundaries. The PDPs developed by the Blue Gold Program therefore do not capture the full picture. They zoom in on specific water and production related features of polders and try to make a dynamic analysis of the water management organisations operating in that sphere, their resources, their activities and their needs. Other Local Government Institutions (LGIs), NGOs and donors are operating in the same polders and they have their own sphere of interest, scope, analysis, plans and programs within or even beyond the physical boundaries of these polders. A Blue Gold PDP is thus not a substitute or umbrella plan for all types of activities and programs taking place in the polder.

## 2. Present Situation and its Challenges

### 2.1 Physical Features and Demography

Polder 43/1A is managed by the Bangladesh Water Development Board (BWDB) and was constructed during the Early Implementation Project from 1989-1990. The characteristics of the polder can be found in Table 1 and the location map of the polder with respect to Upazilla and Union headquarters is shown in Figure 1.

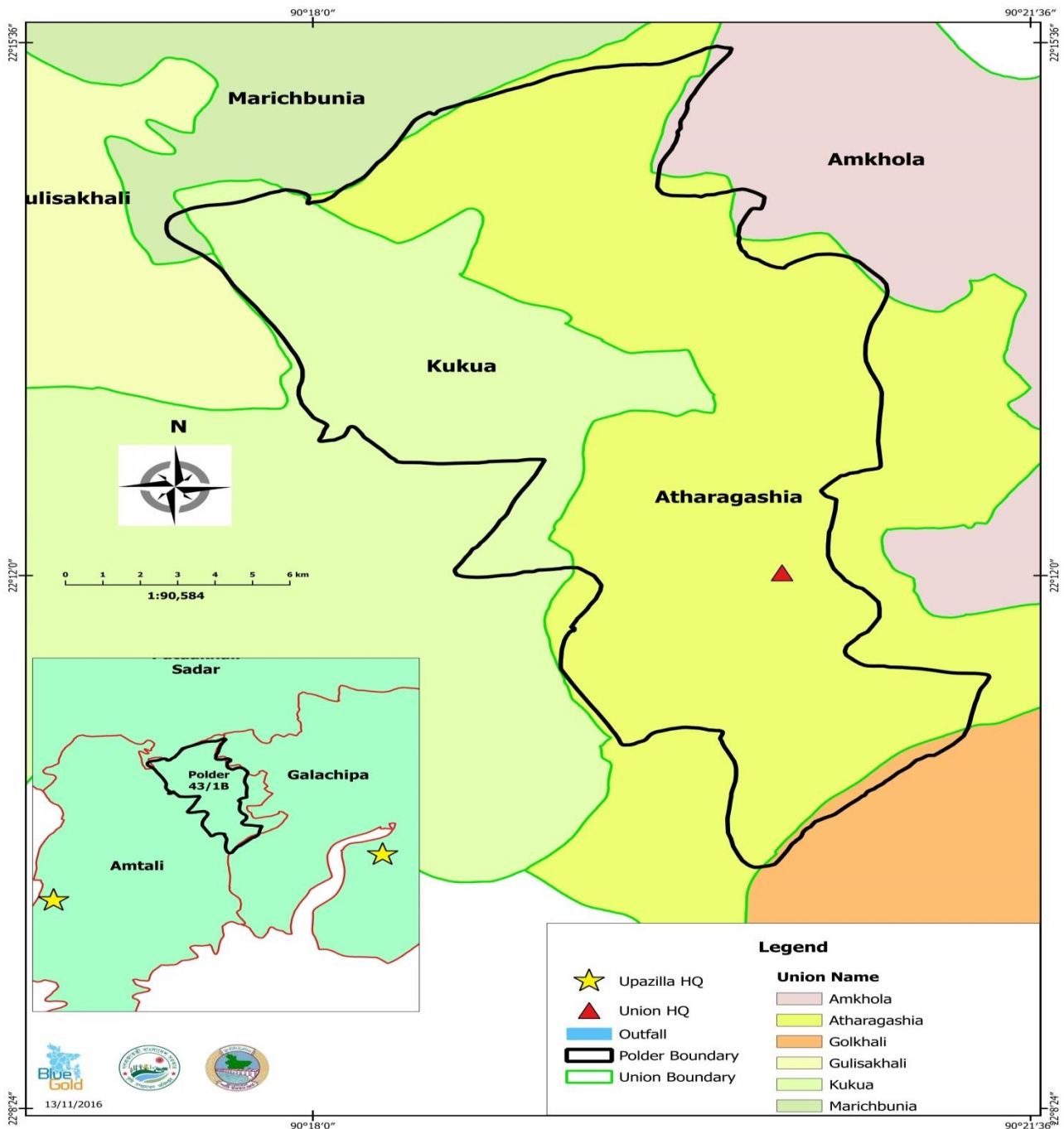


Figure1: Location of polder 43/1A in Amtoli Upazilla

**Table 1: Main Physical and Demographic Characteristics of polder 43/1A**

Characteristics			
Included Upazila(s)	Amtali (Barguna)		
Included Unions	Major part of Kukua union and Atharagashia union		
Polder boundary (in km)	27.10		
Total number of Mouzas	7		
Total polder area (in ha)	2,675		
Total number of households in the polder	5129		
Total number of catchments	5		
Total cultivable land (in ha)	2,200	High land:25% Medium-high land:55%	Low land:20%
Population	29,510		
Literacy rate	46.6%	Male: 50.35 %	Female: 43.2%
Major occupations	Agriculture	Agricultural labour	Business
Economic condition	Rich: 10%	Middle class: 20%	Poor: 70%
Status of seasonal labour migration	Seasonal labour migration is very frequent phenomena under males in the months there is no work as agricultural day labourer. The majority of those who temporarily migrate for work go to Dhaka; other places that they temporarily migrate to include Patuakhali, Barisal and Chittagong. The activities they engage in are rickshaw-pulling, selling fruit, carpentry, road construction, brick-making, pottering in launch terminals or steel rod and cement shops, building construction, and hawking in towns.		
Status of internal road communication	The greatest part of the internal road network is <i>kaacha</i> (earth made) road. During monsoon it is difficult to communicate through earthen roads inside the polder due to heavy mud formation.		

## 2.2 Water Resource Management and Infrastructure

In Table 2 the main characteristics of the water resource management and infrastructure of polder 43/1A are highlighted and Figure 2 shows the existing infrastructure and khals in polder 43/1A. Further details can be found in Appendix 1.

**Table 2: Main Water Resource Management and Infrastructure characteristics of polder 43/1A**

Characteristics			
Length of embankment (in km)	27.00		
No of drainage/flushing sluices	5	Repair work is going on	
No of inlets	17	11 Repair work is on going	1 Re-construction
No of (drainage) outlets	5	Repair work is going on	
No of canals	58		
Length of canals (in km)	52.3		
Main outfall rivers and khals	Neuli River, Kukua River & Gazipur Khal.		
Situation of tidal and river flooding	There is no tidal flooding in polder 43/1A. River flooding takes place in monsoon. Expected depth of inundation is about 0.60m to 0.75m in monsoon. The duration of inundation about 2 months.		
Locations with water logging and siltation.	The drainage congestion in Amtola, Purbo Sonakhali, Hazar Takar Bundh, Kewabunia, Shakharia and Godangais slightly higher than other areas. In the mentioned areas, drainage congestion affects the transplantation period of the Aman season. Some signs of water stress/ scarcity in Khagdon, Chawla, Atharagachia, Purbo Shakharia, Paschim Kewabunia and Golbunia. In the dry season, scarcity of irrigation water effects Rabi crop cultivation.		
Most river erosion prone area	Budhbaria Bazar.		

Other relevant water issues	Polder 43/1A falls in the wind risk zone which possesses some vulnerability to strong winds and surge heights associated with cyclones. Three major cyclones have hit this polder during the recent years; Sidr in 2007, Aila in 2009 and Mohasen in 2013.
Key challenges in effective water management	<ul style="list-style-type: none"> <li>- 5 nos. of sluices, 5 nos. outlets and irrigation inlets have been damaged to a minor extent. This leads drainage congestion of 20% areas in Amtola, Purbo Sonakhali, Hazar Takar Bundh, Kewabunia Shakharia &amp; Godanga areas and water stress/scarcity in Khagdon, Chawla, Atharagachia, Purbo Shakharia, Paschim Kewabunia&amp;Golbunia area;</li> <li>- Poor operation and maintenance (O&amp;M) of structures. Not much maintenance of structures except routine maintenance though Sidr and Aila, damaged water management infrastructures to a certain extent.</li> <li>- Extensive presence of water hyacinths in many water bodies.</li> </ul>
Challenges in planning construction of water infrastructures within polder area	<ul style="list-style-type: none"> <li>- Most of the Khals are obstructed by cross dams and other informally created structures to cultivate fish or retain water for other productive uses. These obstructions are illegally created by influential people without taking any permission from proper authorities.</li> <li>- Unplanned road networks are also obstructing waterflow. This results in water logging and poor drainage in some areas and is causing water scarcity in other areas.</li> </ul>
Current internal polder water management practices	From June 2016, there are two Community led Agricultural Water Management (CAWM) under Dakshin Atharagashia and Dakshin Sonakhali WMGs.
Overall condition of internal polder water management	Moderate
Opportunities for internal polder water management	At least 12 WMGs representatives may visit to CAWM under Dakshin Atharagashia and Dakshin Sonakhali WMG for horizontal learning who are interested to implement CAWM in their WMG areas.



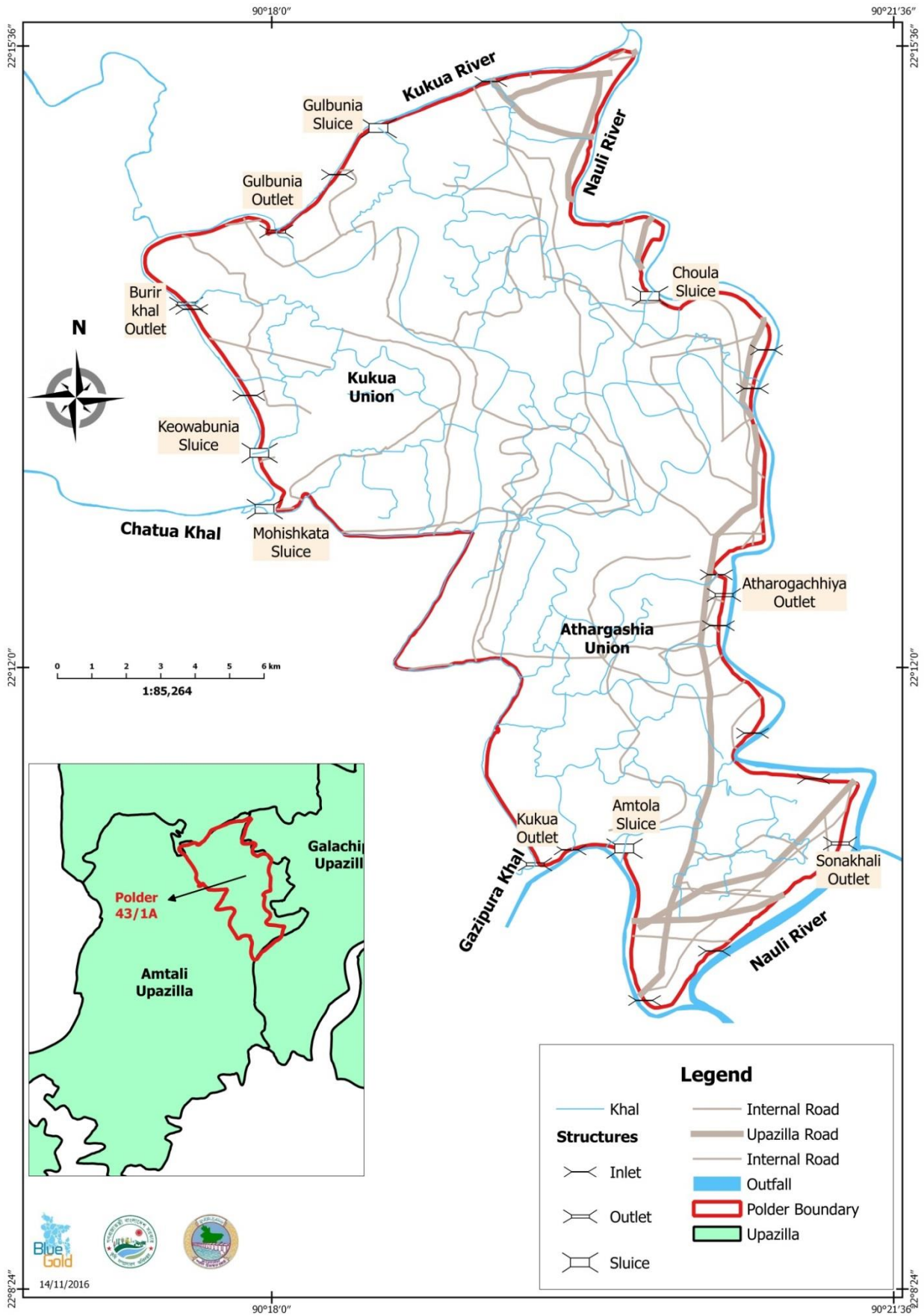


Figure 2: Map of Polder 43/1A showing the existing khals and Water Management Infrastructure

## 2.3 Institutional Framework for Participatory Water Management

The main institutional actors in polder 43/1A are Union Parishad (UP), its 9 Wards, various Local GO/NGOs, Micro-finance Institutions, Market Committees, Water Management Groups (WMGs), Water Management Associations (WMAs) and Union Disaster Management Committees (UDMCs). Main characteristics of the WMGs and WMAs and other institutional actors are highlighted in the Table 3. The boundaries and names of the WMGs and WMAs are shown in

Figure 3.

**Table 3: Main characteristics of the Institutional Framework of PWM in polder 43/1A**

Characteristic			
Number of WMGs	14	Registered 13	Non-registered 1
Members of WMGs	3,812	Female 1,563	Male 2,249
HHs being part of WMGs	3,519		
Number of WMAs	2	Registered 1	Non-registered 1
Female representation in WMGs	41%		
Total deposited fund (BDT)	14,41,669.00		
Total savings of WMGs (BDT)	5,76,517.00		
Total number of WMGs with O&M fund	0		
Names of projects and organisations with similar / related activities	<ol style="list-style-type: none"> <li>1. Integrated Farm Management Component (IFMC) – DAE (DANIDA funded)</li> <li>2. Integrated Agriculture Productivity Project (IAPP) – MoA</li> <li>3. Agricultural Technology Transfer Project – DAE</li> <li>4. Quality Seeds Production at Farm Level-DAE (2 projects)</li> <li>5. South-West Region Small Holder Farmers Assistance Project-DAE</li> <li>6. Safe crop production (IPM) project- DAE</li> </ol>		
Existing WMOs linkages with other stakeholders	Generally strong linkage with UPs, however linkages with other service providers like DAE, BWDB, LGED and NGOs and private sector actors could still be further strengthened.		
Number of WMGs member including in UP standing committee	0		
O&M agreement signed with BWDB	No		
Current participation of WMOs in O&M	Moderate		
Existing conflicts on water management	No major conflicts		
Key challenges in strengthening PWM	<ol style="list-style-type: none"> <li>1. Adopt Collective Action</li> <li>2. Financially strengthening</li> <li>3. Keep continue liaison with UP, BWDB, DAE</li> <li>4. Good Leadership</li> <li>5. Regular O&amp;M activity</li> <li>6. O&amp;M fund collection</li> <li>7. Regular Record keeping</li> <li>8. Involvement of rich farmer in WMGs</li> </ol>		
Key challenges in relation to women participation	A general rather 'conservative' view on women participation in marketing activities, including participation in WMGs		
Key opportunities in PWM	<ol style="list-style-type: none"> <li>1. Linkages with UP, BWDB, DAE and other institutional actors could further be strengthened.</li> <li>2. Percentage of women participating in WMGs is above 40%, BGP has created more active roles for women in decision-making</li> </ol>		

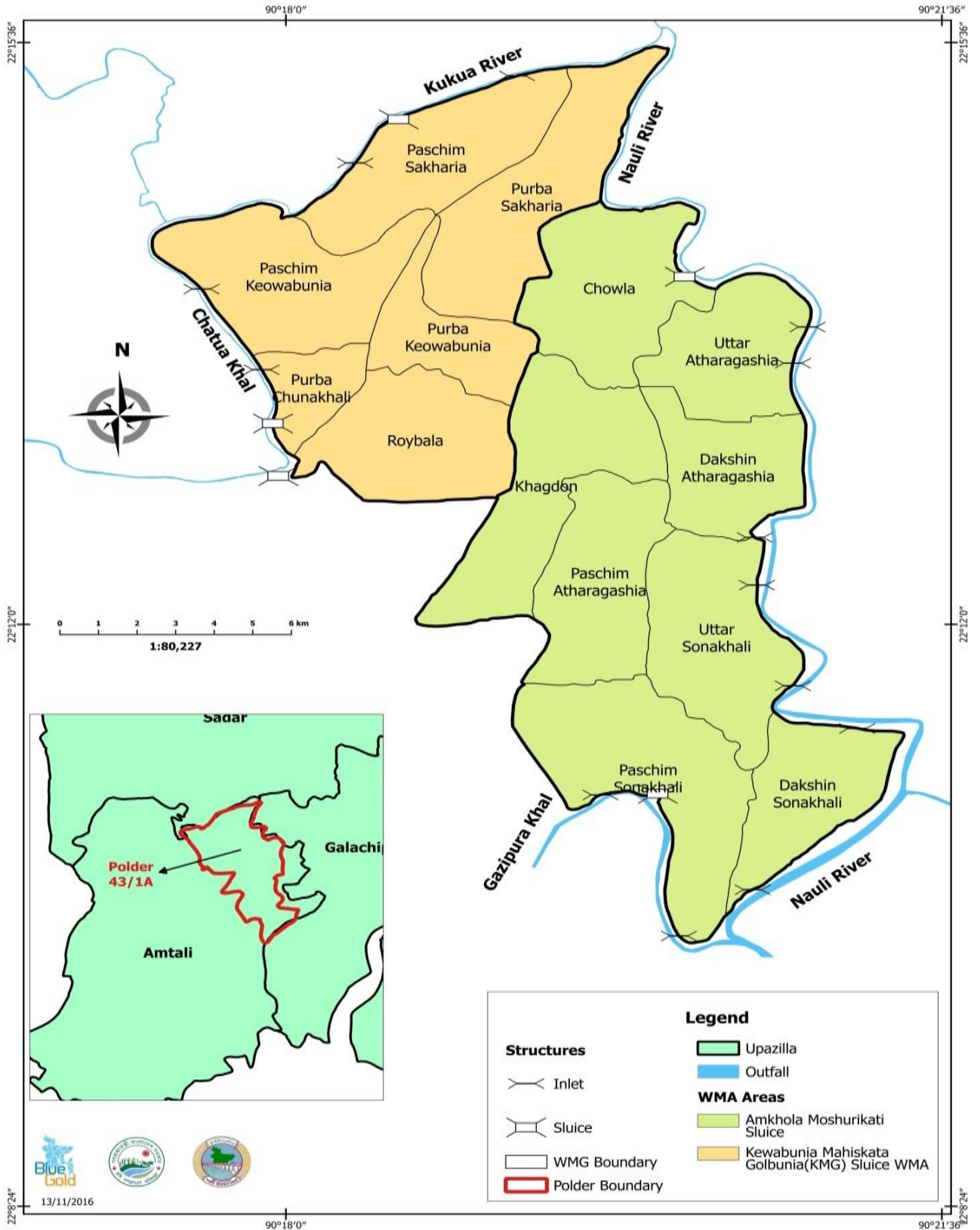


Figure 3: Name of WMG and WMA areas in polder 43/1A

## 2.4 Agricultural and Marketing Services

In polder 43/1A most polder dwellers are involved in crop production and fish culture. Livestock keeping is to a certain extent important. The most important characteristics and challenges of agricultural production and marketing services can be found in Table 4. The main markets of polder 43/1A are shown in Figure 4.

**Table 4: Main characteristics of Agricultural and Marketing Services in polder 43/1A**

Characteristic			
Main crops (top three)	1. Water Melon/Mungbean	2. Aus	3. T. Aman
Current most common cropping calendar(s)	Fallow –Fallow –T. Aman Mungbean–Aus –T. Aman Grass Pea/Felon–Aus–T. Aman Mungbean- Fallow—T. Aman		
Current cropping intensity	203%		
Main vegetables	Sweet gourd, Bottle gourd, Snake gourd, White gourd, Ridge gourd, Bitter gourd, Spinach, Yard-long bean, Country bean, Cucumber, Chilli, Brinjal, Red amaranth		
Main fruits	Water Melon, Guava, Coconut, , Betel nut, lemon, Banana and Hug pulm etc.		
Available agricultural machinery	Agri-machineries are used for tillage, threshing, spray of pesticide etc. FAO supplied 55 agricultural machineries to the 14 existing WMGs {22 power tillers, 22 Low Lift Pumps (LLPs) and 11 power threshers}.		
Present irrigation practices	About 5-10% land has been brought under irrigation facilities. The LLP is the main machine and surface water is the main source of irrigation.		
Availability of inputs	<ul style="list-style-type: none"> <li>- The availability and quality of inputs is low, as the polder mainly consist of small-scale farmers renowned input companies are not interested to sell high quality inputs. 90% of the farmers use their own preserved seeds (local and HYV) for rice production. The rest from BADC or private companies.</li> <li>- Most of the vegetables produced at homestead level are mainly hybrid. Hybrid vegetable seeds are collected from different seed company agents/local shops and from the local weekly market. LalTeer, ACI and Metal seeds are the hybrid seed suppliers.</li> </ul>		
Current knowledge on proper input use	A big portion of crop producing farmers have a lack of understanding on optimal fertilizer dose and quality seeds. In homestead gardens and also field crops farmers are using a low dose or no fertilizer.		
Important business trend in crop production	Mungbean, Water Melon, Vegetable and Fruit production are rapidly increasing. Farmers sell about 90% of their produced Water Melom and Mungbean. Road communication is improving, services and modern technologies are becoming relatively better available and the knowledge of farmers is increasing. Moreover, high market demand is making the farmers interested in producing market-based product (crop) production. In the recent years cropping intensity and per unit production volume has been increased.		
Key challenges in agriculture	<ul style="list-style-type: none"> <li>• The polder has a substantial number of fallow lands during the Kharif season. There are also some unused BWDB acquired lands along the embankment;</li> <li>• General lack of knowledge on improved agricultural production technology, and mechanization in combination with a lack of extension service;</li> <li>• Not much vegetable production in summer due to scarcity of high land and waterlogging in low land areas. However, some high land pockets nearby sluices gates could be used and irrigated.</li> </ul>		
Percentage of HH owning livestock	Cattle 70%	Goats 22%	Poultry 90-95%
Availability of inputs for livestock	No formal livestock market chains exist in the polder, which causes a large fodder and feed unavailability. Some input traders sell loose feed, like till oil cake, rice bran and low quality veterinary medicines, but for commercial feeds one needs to travel to Patuakhali and Amtoli bazar. Even in the urban areas of Patuakhali the quality, number and timely supply of for example 'Day Old Chick' (DOC) is found to be difficult.		
Important business trend in livestock	<ul style="list-style-type: none"> <li>• An interesting business trend is the demand of native poultry. It is gradually augmenting and the market price is about double compared to commercial birds. The surrounding industrial setup is still moderate, but quality services are gradually coming closer to the farmers and farmers slowly get more</li> </ul>		



	<p>skilful in poultry rearing.</p> <ul style="list-style-type: none"> <li>• Duck rearing also has potential due to the easy access to water bodies, but duckling hatcheries are still absence in the district</li> </ul>
Key challenges in livestock	<ul style="list-style-type: none"> <li>• Low production of livestock</li> <li>• A lack of vaccines and medicines</li> </ul>
Percentage of HH involved in fish culture	More than 70% of the households (HH) have culture ponds
Types of fish	There are more than 40 species of fresh water fish, and four species of exotic carp, one species of cat fish and two species of tilapia. Shell fish is represented by several species of fresh water prawns, including Golda. The common open water resident fishes are Bele, Chanda, Mola, Boal, Sing, Magur, Koi, Puti, Taki, small Chingri, Baim and Kholisha fish.
Availability of inputs	<ul style="list-style-type: none"> <li>• Fry Hawkers collect fingerlings from Jessore area and surrounding hatcheries of the polder within the Patuakhali and Barguna districts and sell them. Sometimes they create temporary nurseries inside the polder area for Genetically Improved Farm Tilapia (GIFT) production. There are a lot of small nurseries for rearing Indian major carps to fulfil the local demand of the polder.</li> <li>• Many renowned fish feed sellers' products (e.g. C.P. Bangladesh Ltd, Nourish, Paragon, Quality, and Godrej Agro vet Pvt. Lt. and Aftab) are readily available in polder area. Fish feed is available on a credit basis, in some cases also for fingerlings. Fish medicines are available in Patuakhali sadar.</li> </ul>
Important business trend in fisheries	As a secondary source of income fish cultivation in ponds and ditches has recently gained popularity in the polder, because of the DANIDA's Fishery Extension Program. Tilapia and Pangush culture are increasing, while at the same time the utilization of quality inputs and number of nurseries is growing.
Key challenges in fisheries	Low fish production per hectare. This is caused, among other problems, by a lack of quality hatcheries and supply of quality fingerlings as well as a lack of knowledge on proper management.
Existing Extension Services	DAE has assigned 5 Sub Assistant Agriculture Officers (SAAOs) in this Polder. Some of the NGOs and different Companies are also providing extension services. There are 2 Community Livestock Workers (CLW) at polder level. One CLW is found very active. DoF has one Upazila Fishery Officer and one or two field staff to assist in fisheries extension services by providing new technologies. Overall, their services are not sufficient due to lack of manpower and funds, also the services mostly address big and medium sized farming households.
Name and location of markets	Chunakhali bazar, Mohishkata bazar, Hazartaker bazar, Fatullah bazar
Products provided	Water Melon, Mung bean, Groundnut, Felon, Cowpea are the main market products. Besides, different vegetables and fruits are sold.
Surplus destination of products outside polder	The Polder is mainly surplus for mungbean and paddy, betel leaf, native poultry and captured fish. The primary destination of products is Amtoli Bazar but it differs from product to product. Paddy goes to northern part directly or via to Patuakhali. Mung bean goes to Barisal or Rajshahi. Betel leaf goes to different districts. Vegetable trade is usually restricted to this district. Most produced fishes are consumed by polder dwellers, but large producers can reach Amtoli, Patuakhali market.
Main value chain actors	There are about 10-12 permanent input traders located at different markets. 10-15 local Bepari or Paiker covers polder 43/1A areas and most of them are seasonal. Besides, there are about 6-8 fish pikerin this polder; they have a permanent setup.
Key challenges in marketing	<ul style="list-style-type: none"> <li>• Income generating activities hampered due to capital, in combination with high interest rates for loans. Most farmers depend on informal circuits to get a loan, which account for interest rates around 20%. Loans (with favourable terms) could be used to invest in crops, livestock or fisheries, and could create more income generation.</li> <li>• Lack of collective action among farmers/WMG members. The WMGs are not yet acquainted with collective action for productive purposes and evaluation of loan options is a new to them. It will take a while to change their mind-sets.</li> <li>• Farmers pay high prices for low quality inputs and get low prices for their products, as they mostly sell at farm gate and syndicates control the market. Also market distortion by other projects/NGOs and donors form a threat.</li> </ul>

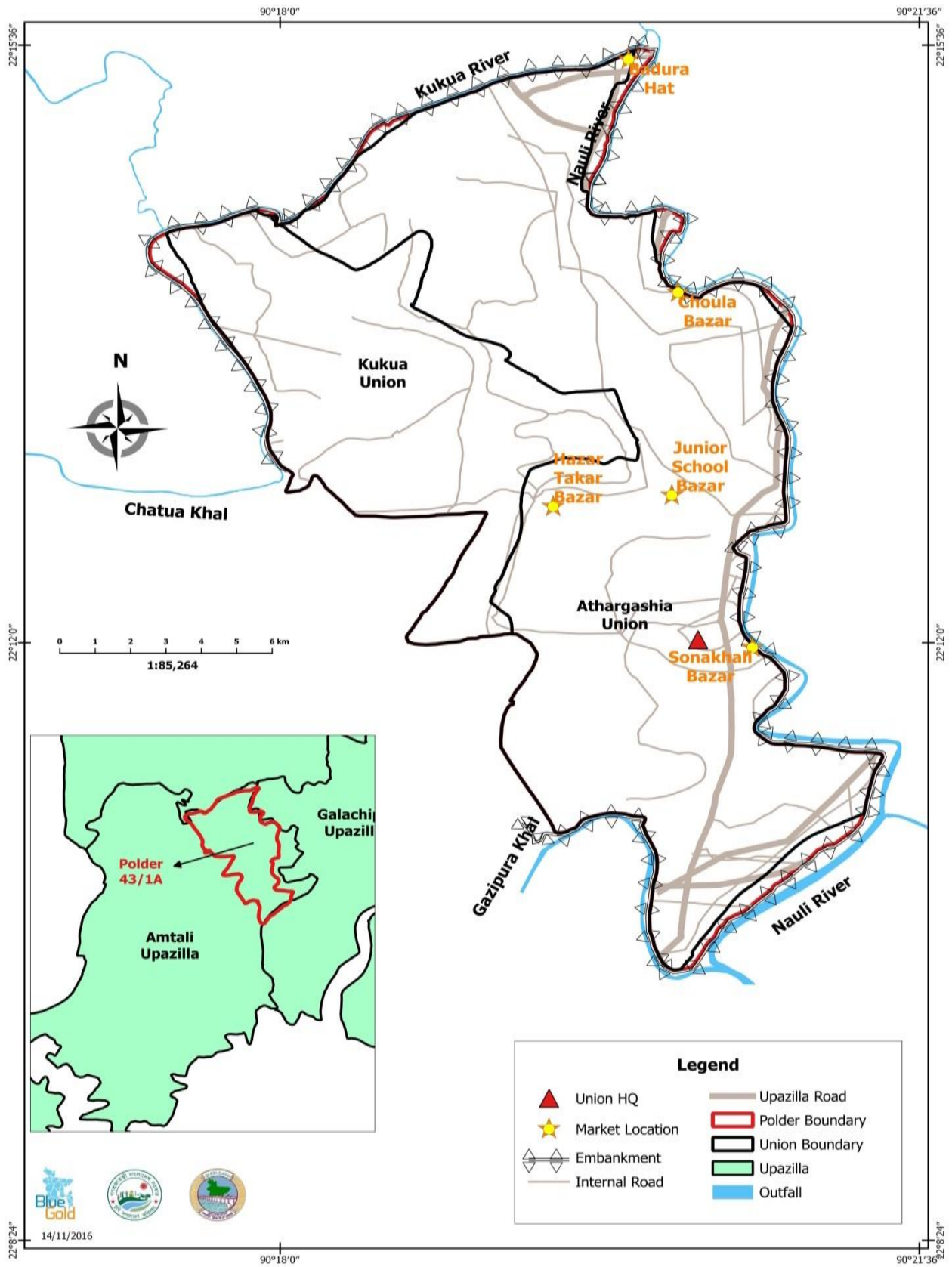


Figure 4: Markets and Union headquarters in polder 43/1A

## 2.5 Environmental Sustainability and Disaster Risk Reduction

**Table 5: Main environment and DRR characteristics of polder 43/1A**

Characteristics			
Existing Environmental problems		<ol style="list-style-type: none"> <li>1. The natural flow at Chawla and Mohiskata is hampering due to congestion of debris as well as water hyacinths. The local fishermen fixed fishing nets on a permanent basis along the openings of some sluice gates (Sonakhali), which prevents the regular flow of khals.</li> <li>2. During February-March, the surface water system becomes slightly saline, however, this does not cause much trouble towards their living and occupational settings.</li> <li>3. In regards to production system, the main constraint in the polder area is the scarcity of irrigation water in Rabi season, siltation and, drainage congestion.</li> <li>4. Farmers are using different types of pesticides such as Basudin, Furatar, Fighter, Rovral, Ridomil gold etc. Both liquid and granular pesticides are being used to prevent pest infestation in rice, watermelon and chilli cultivation.</li> <li>5. The migration of fish hatchling especially carp fry migration and other fishes during pre-monsoon season hinder due to the excessive siltation and mal-functioning of water control structures.</li> </ol>	
Common hazards		The country's southward portion has been classified into three risk zones namely high risk zone, risk zone, and wind risk zone. Polder 43/1A falls in the wind risk zone which has some vulnerability due to strong winds and surge heights associated with cyclones. Other than cyclone the common hazards includes tidal and river flooding, water logging and salinity intrusion.	
Cyclone shelters		There are 4 Cyclone shelters, among them one is under construction	
Obtained Environmental Clearance Certificate (ECC)		Yes	
Formulated environmental and social management plan (ESMP)		Yes	
Formulated Community based disaster risk reduction (CBDRR) plan		Yes	
Recruited WMG environment and DRR counselor		Counselors 28	Env. Counselors (F) 14 DRR Counselors (M) 14
Members of WMOs included in UDMC		0	
Opportunities for environmental and DRR activities		<ol style="list-style-type: none"> <li>1. The flood control embankments have created possibilities for plantation and thus various species of wood and fruit trees have been planted intensively in the project area, especially along the embankment. The species which were not grown before polder construction include <i>Babla</i>, <i>Nim</i>, <i>Koroi</i>, <i>Sishu</i>, <i>Mahogany</i>, <i>Jilapi</i>, <i>coconut</i>, <i>Betel- nut</i>, <i>Sofeda</i>, <i>Mango</i>, <i>Jackfruit</i> ect.</li> <li>2. Assist and empower WMG's counselors for initiating a strong platform in community level that will ensure strong linkage and joint collaboration with existing UDMCs and counsellors to overcome natural disasters.</li> <li>3. Awareness raising and encouragement of balanced fertilizer use, and the use of alternatives to chemical fertilizers (i.e. organic)</li> </ol>	



### 3. Activities as of October 2016

The activities which achieved as of October 2016 on the area of Water Resources Management and Infrastructure, Institutional Framework for Participatory Water Management, Agricultural and Marketing Services, Environmental Sustainability and Disaster Risk Reduction is summarized in the following table.

Sl. No.	Activities	Time Frame	Present Status	Remarks
<b>A. Water Resources Management and Infrastructure</b>				
A-1	Embankment re-sectioning	2014-2016	18.42 km	
A-2	Embankment retired			Nil
A-3	Khal re-excavation			Nil
A-4	Infrastructures rehabilitation (Sluice/Inlets/Outlets etc.)			Nil
A-5	Formation of Labour Contracting Societies (LCS):	2014-2016	16 nos.	LCS formation and training is continuous process
5.1	Formation and Training of LCS			
5.2	Mobilize LCS for earthwork			
5.3	Stimulate women participation			
<b>B. Institutional Framework for Participatory Water Management</b>				
B1	WMO (WMG & WMA) formation & strengthening activities. Arrange registration with BWDB and conduct new elections:	2014-2016	22 WMGs were re-formed and registered 19  2 WMAs were formed and registered 1	Continuous process
1.1	Form Ad Hoc Committees			
1.2	Review and update/amend by-laws in accordance with Participatory Water Management Rules 2014			
1.3	Update records/books/ ledgers			
1.4	Firming-up membership list and membership enrolment with at least 55% households represented and increase female membership to at least 40%			
1.5	Prepare and conduct new elections for Executive Committee			
1.6	Registration of WMGs & WMAs with BWDB			
B-2	Organize various training for WMO Strengthening: Organizational Management and Leadership, AKAS, Savings & Credit, MAM training completed. Ensure the formation of sub-committees after training: O&M Audit.	2014-2016	OM, AKAS, Savings & Credit, MAM training	O&M and GLD training yet to be done
B-3	Stimulate women participation in elections of WMA and WMG committees and increase their membership to at least 40% of which at least one in key-position through Gender & Leadership training for males and females	2014-2016		GLD training yet to be done
B-4	Organize orientation training for UP and stimulate WMG members to participate in various UP committees to advocate for financial and in kind support:	2014-2016		Is in progress
4.1	Union Development and Coordination Committee			
4.2	UP Standing Committees			
4.3	Ward Shova (contribute in planning and budgeting)			
4.4	Union Disaster Management Committee			
4.5	Stimulate UP members to participate in WMO meeting			
B-5	Support WMGs with WMG Action Plans (WAPs) formulation and implementation:	2014-2016 onwards	Done	To be reviewed in every year
5.1	Formulation of WAPs			
5.2	Ensure incorporation of WMG strengthening plan, O&M plan, Gender action plan, Business development plan,			
5.3	Organizes regular meetings with WMGs to update WAPs.			
5.4	Invite UP members to attend meetings.			
B-6	Stimulate as much as possible participation of WMG members in Farmer Field Schools (DAE-FFS), especially females and vulnerable members, ask regular feedback on preferred (DAE-FFS).	2013-2017	Done	Continuous process

<b>C. Agricultural and Marketing Services</b>				
C-1	Fruit tree plantation at homestead garden for utilization of homestead area through farmers field school	2014-2015	Done	
C-2	Activities to improve crop production:	2013-2016		Continuous process
2.1	FFS on crops (Rice and other field crops by DAE), homestead garden (vegetables) and nutrition, dyke vegetable production			
2.2	Women focused FFS			
2.3	Nursery management training			
2.4	Demonstrations / trials on summer vegetables			
2.5	Demonstration and trial on potential crops and bles			
2.6	Field day and farmers rally as follow-up of FFS and trials			
2.7	Participatory action research on underutilized and potential vegetable and fruit cultivation at homestead level			
C-3	Activities to improve livestock production:	2014-2016	Done	
3.1	Poultry and nutrition FFS			
3.2	Livestock vaccine cold chain at WMG/WMA level			
3.3	Community Animal Health Worker training			
3.4	Polder level fodder trial			
3.5	Polder level beef fattening			
3.6	Field day on livestock activities			
C-4	Select or prioritize value chains for analysis (VCA) and consult the actors for VCA	2013-2016	Is in progress	Plan to analysis another 2 VC
C-5	Disseminate knowledge about alternative sources of finance and evaluation of loan product (BCUP product) in MFS session	2014-2015	Is in progress	
C-6	Business related capacity building for TA- Staff and extension staff	2013-2016	Done	Continuous process
C-7	Management of Agriculture Machinery (MAM) training for WMG members	2014-2015	Done	Outsourcing Training
C-8	Training on Savings and Credits management	2015-2016	Done	Outsourcing Training
<b>D. Environmental Sustainability and Disaster Risk Reduction</b>				
D-1	Obtained Environmental Clearance Certificate from DoE	2015-2016	Done	Through outsourcing
D-2	Recruit WMG's Environment and DRR Counselors	2016-2017	Done	
D-3	Orientation to LCS Leaders, contractors & WMA leaders regarding Env. Safeguards & Conditions of Env. Clearance certificates.	2015-2016	Done	
D-4	Formulation of Community Based Disaster Risk Reduction (CBDRR) plan	2014-2015	Done	
D-5	Formulation of Environmental and Social Management Plan (ESMP)	2014- 2015	Done	

## 4. Development Action Plan

On the basis of the present situation and its key challenges as presented in chapter 2, the following Development Action Plan has been prepared by the Blue Gold program.

### 4.1 Water Resources Management and Infrastructure

A general meeting of the WMA of polder 43/1A was held on 23 October 2014 Paschim Kewabunia Primary School. The representatives of 14 WMGs and UP representatives were present in that meeting. Blue Gold TA Team including BWDB officials from Dhaka and Patuakhali actively participated in the water management related need assessment in the polder. After thorough discussion and arguments with the local stakeholders the following infrastructures were identified and validated for inclusion in the Blue Gold implementation program as priority -1 & 2 basis<sup>2</sup>.

Parties directly involved in implementation will be BWDB, LCSs, Contractors and Blue Gold staffs and WMOs. LGs/WMOs will be involved in conflict resolution in water management, and facilitating land availability for implementation of rehabilitation activities.

#### 4.1.1 Summary of Rehabilitation Works

SL.	Name of Work	Units	Quantity	Estimated Total Cost, BDT
<b>Priority 1</b>				
1	Embankment re-sectioning	Km	18.42	25944,409
2	Repair of Sluices	Nos.	03	4795,517
3	Repair of Drainage Outlets	Nos.	05	1117562
4	Repair of Irrigation Inlets	Nos.	11	816000
5	Re-excavation of Khals	Km	15.20	10580,000
6	Re construction of Inlet	Nos.	03	10500000
<b>Total cost for Priority 1</b>				<b>53,753,488</b>
<b>Priority 2</b>				
7	Construction of Drainage Outlets	Nos.	01	6,000,000
8	Re-excavation of Khals	km	3.80	4500,000
<b>Total cost for Priority 2</b>				<b>10,500,000</b>
<b>Total cost for Rehabilitation Works in Polder 43/1A</b>				<b>64,253,488</b>

- A map showing proposed rehabilitation plan is given in Figure 5

<sup>2</sup> Actually all works are needed for efficient water management and to reduce health and environmental hazards in the polder. However, since fund is limited, prioritization will give a scope for phasing out the work depending on DPP provision and availability of fund. Priority-1 works include activities that are related to the safety/ immediate problem solution of the polder. Priority-2 works include activities that are required for proper functioning of the polder. If DPP allows and fund is available all works will be done.

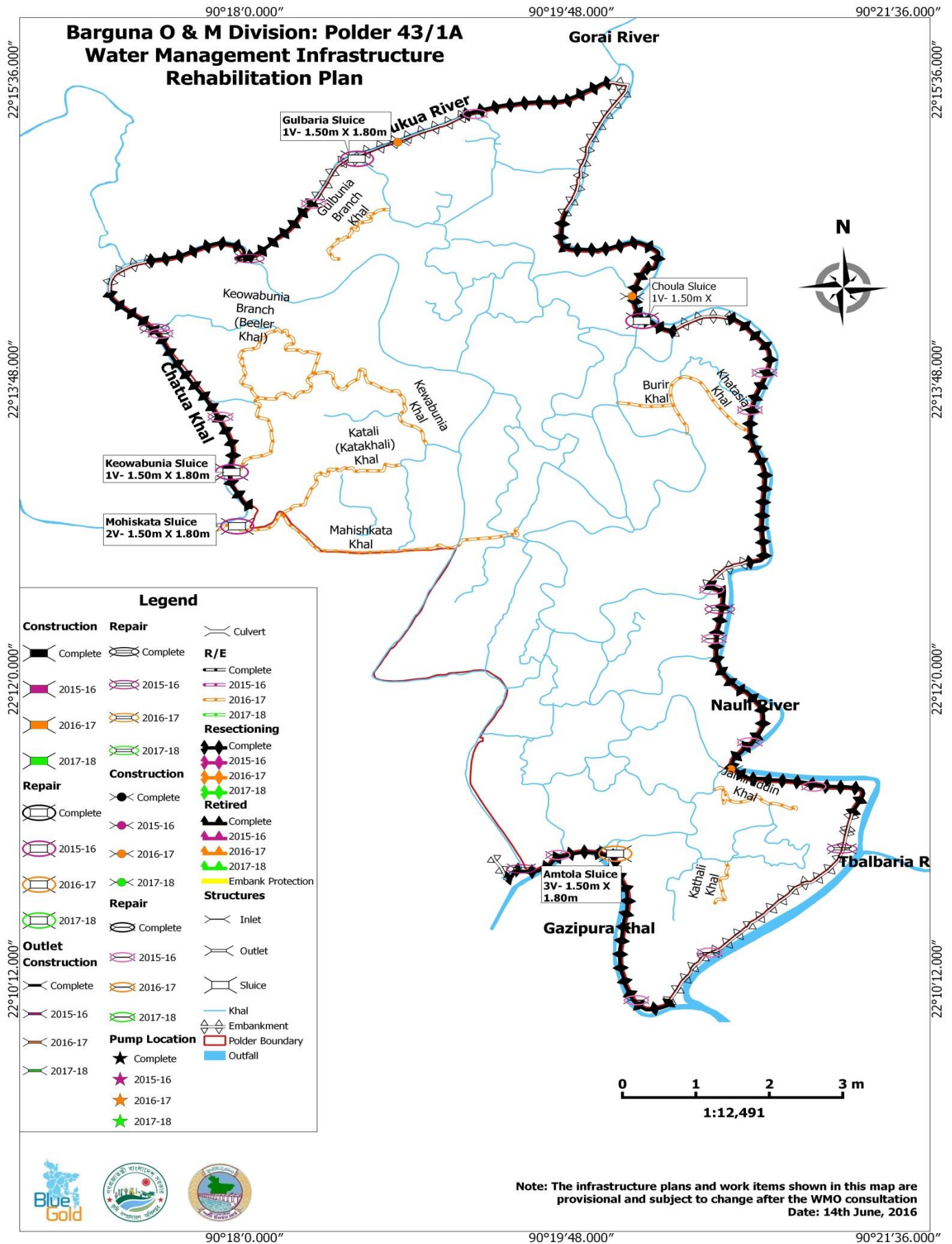


Figure 5: Proposed rehabilitation plan in Polder 43/1A

#### 4.1.2 Operation and Maintenance and Internal Polder Water Management

After rehabilitation the Water Management Association (WMA) will play an important role in operation and maintenance, on the basis of an agreement between the WMA and the concerned BWDB Executive Engineer, to be finalised before the execution of the rehabilitation works. The O&M agreement will identify all operation and maintenance activities in the polder and delineate sharing of the responsibilities between BWDB and WMA. Small routine maintenance works will be implemented by WMA; and larger routine and periodic maintenance works implemented by BWDB. However, the real sharing can be anything according to the terms of agreement and mutual concurrence. The O&M agreement may also identify BWDB resources in the polder that can be used by WMA to partly or wholly mobilize resources for operation and maintenance. Technical knowledge will be provided by Blue Gold through training.

Based on this, in the first year after completion of rehabilitation, WMA's along with BWDB and TA Team will make operation and maintenance plans, implementation budget and resource mobilization plan. The WMGs will develop Internal Polder Water Management plans as part of their WMG Action Plans. All plans will be implemented by WMOs and BWDB with direct assistance from TA Team. In the second year after completion, as part of the exit strategy, WMOs and BWDB will make their plans as usual, but TA team will provide only backstopping support as and when required. At the end of the second year, there will only be TA support for monitoring of O&M and internal polder water management, and WMO's along with BWDB will continue the O&M activities in line with the agreement.

In the meantime, the TA team will continue to work with the BWDB at different levels to find an institution basis which will encourage effective commitment to and action for fulfilling the BWDB commitments under the O&M agreement with the WMA.

Sl. No.	Activity	Time Frame	Responsible Actors	People to involve
1.0	Formation of Labour Contracting Society (LCS):	2013-2018	OCWM, Socio-Economists and COs	WMO members and vulnerable groups including women willing to do earthwork
1.1	Formation and Training of LCS			
1.2	Mobilize LCS for earthwork			
1.3	Stimulate women participation			
2.0	Implementation works like Embankment Re-sectioning/Construction, Khal Re-excavation and Repair/Construction of Structures	2013-2018	BWDB, TA-Engineering staff	LCS, WMA Monitoring Committee, WMA and WMG Executive Committee, BWDB
3.0	Support the monitoring of implementation works by LCS/Contractor and issue Satisfactory Completion Certificate after completion of the works.	2013-2018	TA- Engineering Staff, Socio-Economists, COs	WMA Monitoring Committee
4.0	Participation in routine O&M:	Before implementation of O&M works	BWDB, TA-Socio-Economists, COs and Engineering staff	WMA and WMG Executive Committee, BWDB
4.1	Signing of O&M agreement			
4.2	Follow O&M training by Blue Gold			
4.3	Polder inspection and identification of O&M requirements			
4.4	Plan O&M activities			
4.5	Resource Mobilization for O&M			
5.0	Internal Polder Water Management:	After main WRM infra is implemented: 2016-2018	SAAOs, XOs, TA-Socio-Economists, Engrs.CO and PFs	WMA and WMG Executive Committee
5.1	Identify WMGs interested to work along CAWM model			
5.2	CAWM planning			
5.3	CAWM implementation			
5.4	Monitoring of CAWM			
6.0	Back-up support in the yearly joint polder inspection and assessment of O&M requirements, CAWM by BWDB and WMA	2016-2018	BWDB, Socio-Economists, COs and Engineering Staff	WMA and WMG Executive Committee, BWDB

#### 4.2 Institutional Framework for Participatory Water Management

Activities to strengthen the Institutional Framework for PWM have been planned with multi-fold objectives: (i) to help the WMOs to become active and sustainable organizations, and able to participate responsibly in polder development activities



- (ii) to stimulate effective women's participation and  
 (iii) to orient Union Parishads and other relevant stakeholders to support planned activities effectively.

Sl. No.	Activity	Time Frame	Responsible Actors	People to involve
1.0	WMO (WMG & WMA) formation & strengthening activities. Arrange registration with BWDB and conduct new elections:	Jun-Dec 2014 onwards	OCWM, TA-COs, ZSEs	WMOs, BWDB
1.1	Form Ad-hoc Committees			
1.2	Review and update/amend by-laws in accordance with Participatory Water Management Rules 2014			
1.3	Update records/books/ ledgers			
1.4	Firming-up membership list and membership enrolment with at least 55% households represented and increase female membership to at least 40%			
1.5	Prepare and conduct new elections for Executive Committee			
1.6	Register WMGs & WMAs with BWDB			
2.0	Organize various training for WMO Strengthening: Organizational Management and Leadership, Financial management, O&M, Ensure the formation of sub-committees after training: O&M, Business, Audit.	2014-2018	COs, ZSEs. Training Team Engg. Staff	WMOs, BWDB,
3.0	Stimulate WMOs to identify BWDB unutilized land and water bodies and to apply to XEN for obtaining use-right of those resources for income generation	2015-2018	WMOs, BWDB	WMOs, BWDB,
4.0	Stimulate women participation in elections of WMA and WMG committees and increase their membership to at least 33% of which at least one in key-position through Gender & Leadership training for males and females	Next elections, regular follow-up	TA-COs, Gender Expert and Training Team	WMOs, OCWM
5.0	Actively share PDP with Union Parishad (UP), organize orientation training for UP and stimulate WMG members to participate in various UP committees to advocate for financial and in kind support:	Jul-Aug 15, with regular follow-ups	TA-ZSE&COs, Institutional Expert and Training Team	UP and WMG EC members, UZ officers
5.1	Union Development and Coordination Committee			
5.2	UP Standing Committees			
5.3	Ward Sabhas (to contribute in planning, budgeting of UP)			
5.4	Union Disaster Management Committee			
5.5	Stimulate UP members to participate in WMO meetings			
6.0	Support WMGs with WMG Action Plans (WAPs) formulation and implementation:	Jan-Jun 2015 onwards	OCWM, TA-COs and ZSEs Gender expert	WMGs, UP, BWDB
6.1	Formulation of WAPs			
6.2	Ensure incorporation of WMG strengthening plan, O&M plan, Gender action plan, Business dev. plan,			
6.3	Organize meetings with WMGs to update WAPs.			
6.4	Also invite UP members to attend meetings.			
7.0	Stimulate as much as possible participation of WMG members in Farmers Field School (FFS), especially females and vulnerable members, ask regular feedback on preferred FFSs.	2014-2018	DAE, TA-COs and FOS	WMGs, DAE
8.0	Organise regular discussion / coordination meetings with other organisations working in polder area	2014-2018	TA-Zonal team	WMOs, UP, BWDB, DAE

### 4.3 Agricultural and Marketing Services

The agricultural production and business development aspects of the Development Action Plan focus on the development potentials and required actions in relation to crops, fisheries and livestock while taking into account development potentials of specific value chains.

Sl. No.	Activities	Time frame	Responsible actors	People to involve
1.0	Activities to improve crop production:	2014-2018	DAE, TA-FOs, Master Trainers, Bangladesh Agricultural University (BAU)	WMG and WMA members
1.1	FFS on crops (Rice and other field crops by DAE), homestead garden (vegetables) and nutrition, dyke vegetable production			
1.2	Women focused FFS			
1.3	Seed production and multiplication activity			
1.4	Nursery management training			
1.5	Demonstrations / trials on summer vegetables			
1.6	Demonstration and trial on potential crops and vegetables			
1.7	Field day and farmers rally as follow-up of FFS and trials			
1.8	Participatory action research on underutilized and potential vegetable and fruit cultivation at homestead level			
2.0	Activities to increase fish production	2014-2018	DoF, TA-FOs, Master Trainers, Fishery Experts	WMG and WMA members
2.1	Community based fish culture			
2.2	Fingerling production			
2.3	Refresher training for contact farmers			
2.4	Motivational tour for skill farmers			
3.0	Activities to improve livestock production:	2014-2018	DLS, TA-FOs, Master Trainers, Livestock Experts	WMG and WMA members
3.1	Community Animal Health Worker training sharing			
3.2	Motivational tour for good knowledge			
4.0	Select or prioritize value chains for analysis (VCA) and consult the actors for VCA	2014-2015	TA-Project Value Chain Staff	Relevant Stakeholders
5.0	Economic development of WMG members through support service and market linkages for Mung bean and Rice VC.	2014-2018	TA-PFs, BDCs, Project Extension staff	WMGs, DAE, DLS, DoF
6.0	Disseminate knowledge about alternative sources of finance and evaluation of loan product (BCUP product) in WMG	2014-2018	TA-PFs, BDCs	BCUP, other MFI
7.0	Promote proper record keeping by producer farmers	2014-2018	TA-PFs, BDCs	WMGs
8.0	Promote Gender equality in market access and all steps in production	2014-2018	TA-Gender experts, PFs, BDCs	WMGs
9.0	Promote collective actions by WMG members to overcome problems related with low quality inputs (fingerling/seed etc.), high price of input and low price of produce	2014-2018	TA-PFs, BDCs	WMG, private company
10.0	PF & FO Skills Development	2014-2017	Value Chain Staff	CO and XO, DAE, DLS, DoF
11.0	Small Business Planning for promoting income generating activities at WMG member level (particularly for women)	2015-2018	Outsourcing Training Unit, TA-COs & BDCs	WMGs
12.0	Follow-up agricultural and business activities on the basis of farmer's needs	2017-2018	DAE, TA-Project Project VC staff	WMG and FFS members
13.0	Capacity building support to Market Actors	2017-2018	DAE, TA- Ext Staff, Value Chain staff	WMG and FFS members

#### 4.4 Environmental Sustainability and Disaster Risk Reduction

The environmental sustainability and DRR aspects of the Development Action Plan focus on: i) compliance with social and environmental management regulations; and ii) strengthening DRR activities.

Sl.	Activities	Time frame	Responsible actors	People to involve
1.0	Environmental compliance monitoring and quarterly reporting to DoE	3 months interval	TA- polder team and Env. Expert	TA_CE/Sr. QCE/QCE and XEN/ SDE, BWDB
2.0	Reconstitution of UDMCs and provide	Jan-Feb,	Hired SPs	TA- Env. Expert, ZSEs



	them capacity building support on disaster management	2017		
3.0	Installation of deep tube-wells and technical solutions such as PSF, or rainwater harvesting techniques to ensure clean drinking water	2014-2018	DPHE, BRAC-WASH, UP	Contractors, Blue Gold - Environmental expert
4.0	Intergrade CBDRR and ESMP with the WAP	2014-2018	DRR and Env. Counselors, WMG, WMA	Polder Team, Socio-economists and Env. Expert
5.0	Training to Env. and DRR Counselors and UDMCs on Env Safeguard and Dis.Mgt.	June 2016 to June 2018	Hired SPs	Polder Team, Engineer team and Env. Expert
6.0	Organize manual removal of Water hyacinth by villagers (through WMA/WMGs) where there is large scale water hyacinth issue.	July 2016 to June 2018 (during dry months)	WMA/ WMG, Upazilla, UP	Polder Team, Engineer team and Env. Expert
7.0	Awareness on disaster preparedness and WatSan	Up to June 2018	Env. and DRR Counselors, WMA/WMG President, BWDB, UP	TA-Polder Team
8.0	Awareness raising program	March 2016 to June 2018	Env. and DRR Counselors, TA-Polder Team	Env. Expert, Zonal Socio-Economists
8.1	Discussion on using fertilizer and pesticide use, and reducing indiscriminate fishing practices from the natural wetlands at WMG meeting, FFS & MFS session and FFD			
8.2	National and International Day observance related to environment and DRR (i.e. World Environment Day, National Disaster Preparedness Day, International Day for Disaster Reduction etc.)			
8.3	Discussion on use of clean drinking water (arsenic free tube-well water, treated/filtered pond/canal/river water and rain water tanks or sand filtered water) and the prevention of water borne diseases			

# 5. Planing Timeline

**Blue Gold Program, BWDB  
Polder Completion Timeline for 43/1A**

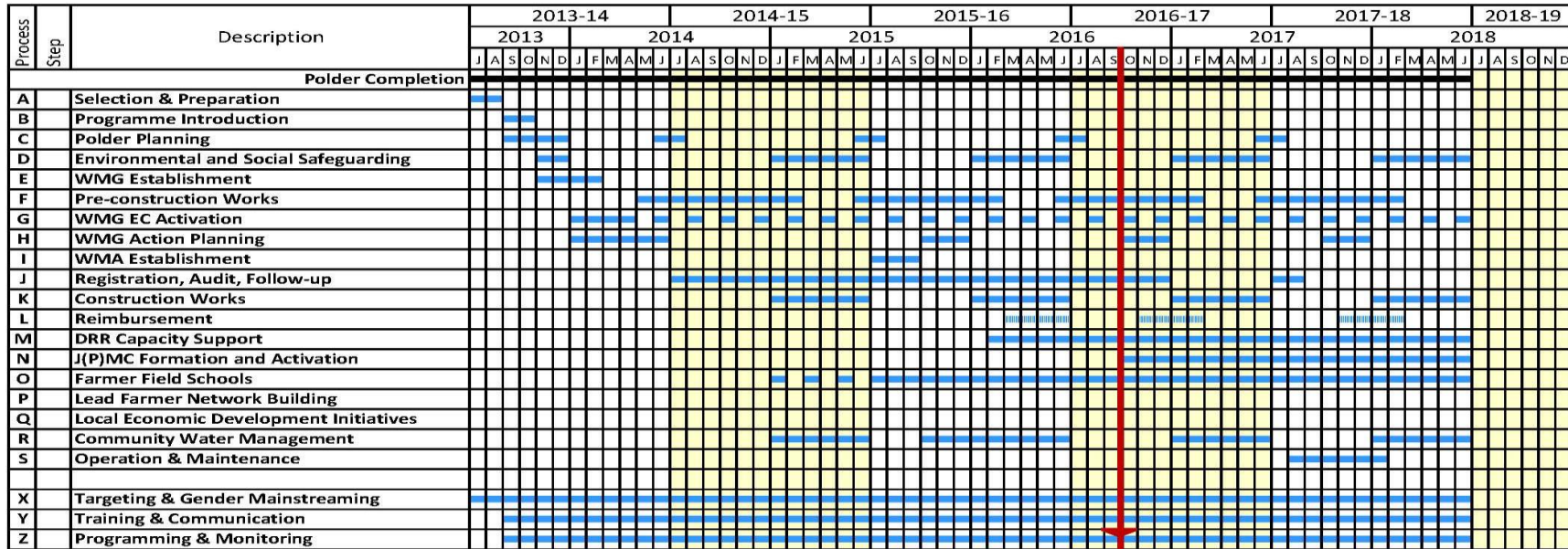


Figure 6: Planning Timeline

## 6. Polder Budget

The following Table 6 presented the overview of the estimated allocated budget for the polder activities in polder 43/1A:

**Table 6: Budget for Polder 43/1A**

Sl. No.	Task Name	Total Amount	
		BDT*x100000	EUR**x1000
1	Institutional Framework for Participatory Water Management	1.9	2.15
2	Main Infrastructure	642.53	730.15
3	Internal Water Management <i>(Polder-wise budgets are based on an average amount per CAWM-site. In reality budgets will vary per CAWM-site)</i>	9.00	10.23
4	Agriculture & Marketing Services <i>(Actual polder-wise budgets will be higher as exact #FFS per polder will be determined later, estimated DAE contributions have been included in these estimations)</i>	29.63	33.67
5	Environmental & Social Management / Disaster Risk Reduction (DRR)	26.00	29.55
6	Training	34.12	38.77
	<b>Total:</b>	<b>743.18</b>	<b>844.52</b>

Note: Exchange rate is 1 EURO=88 BDT

## Appendix 1.PDP Formulation Process<sup>3</sup>

The Blue Gold Program makes use of the 6-step planning approach described in the Guidelines for Integrated Planning for Sustainable Water Resources Management (IPSWARM) that was adopted by the BWDB in 2008 for its medium sized existing Flood Control and Drainage schemes. Polder Development Plans are the 4<sup>th</sup> step which follows after the participatory data collection and needs assessment (step 2) and the formation of WMOs (step 3).

In the PDP Formulation Process one can distinguish the following activities/tasks and their outputs (see Figure 6)

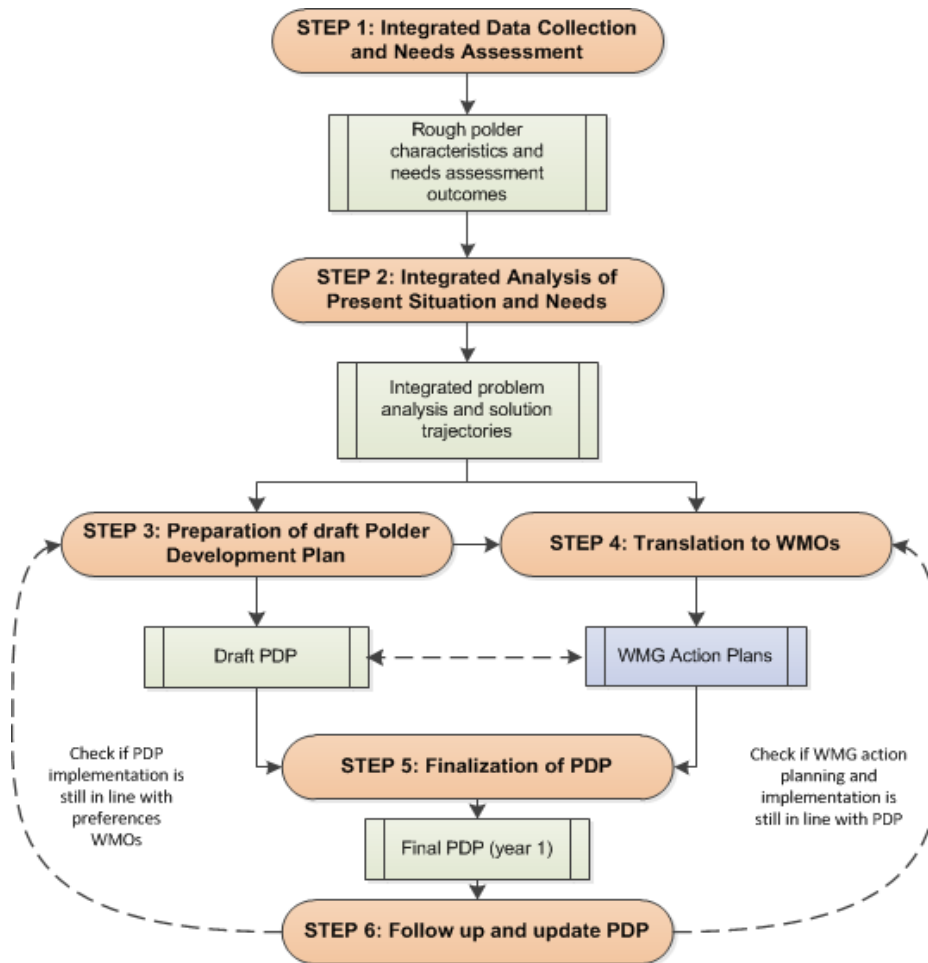


Figure 7: The steps of the PDP Formulation Process

### Explanation of the different steps:

**STEP 1: Integrated Data Collection and Needs Assessment:** For the purpose of planning, data is collected through various methods: collection of existing information from governmental departments, observations in the field, informal interviews with people living in the polder area and key stakeholders, focus group discussions, consultation meetings, engineering surveys, agricultural surveys and value chain mapping and analysis. The various components do their field data collection individually, but coordinate their work to avoid overlap, gaps and misunderstanding among WMOs. The results and outcomes of each field visit, meeting, interview or focus group discussion are recorded. Data among others includes the Integrated Needs Assessment executed by component 1 and 2 (WMO strengthening); engineering survey

<sup>3</sup> This is the PDP formulation process as used in the former IPSWAM polders and polders 55/2A, 55/2C, 2, 26 and 31-part. For the polders later on selected within the BGP and after the TA team reorganisation, the process as described in Unified Working Processes is applied.

details collected by component 2 and data collected by component 4 in relation to the value chain selection and analysis. The rough data are managed by the GIS specialist and used to generate specific geo-information maps or figures, which are published on an open source website (Lizard Portal)<sup>4</sup>.

**Outputs:**

- Rough data of polder characteristics
- Needs assessment report

**STEP 2: Integrated Analysis of Present Situation and Needs:** The integrated data collection and needs assessment is used to describe the present situation of the polder by summarizing the collected info in tables, figures, pie charts and maps with supporting text, as one of the core chapters of a PDP. The present situation in combination with the Needs Assessment is an input for a joint SWOT (strengths, weaknesses, opportunities, threats) analysis workshop within the Blue Gold Team. The outcomes of this SWOT exercise are used in a second workshop at polder level to formulate solution trajectories and activities for polder development. Extra attention is paid to address the severity of problems and the potential of opportunities while selecting activities. The fact that Blue Gold has a limited scope and budget, and cannot address all needs, only those connecting to program objectives and those financially feasible are taken in consideration.

**Output:**

- An integrated problem analysis and solution trajectories

**STEP 3: Preparation of draft Polder Development Plan:** After the integrated analysis, a draft Development Action Plan (including actions related to strengthening WMOs; water resources management; agricultural production; business development; sustainable environmental management; community based disaster risk management; gender and institutional strengthening) is developed. The Blue Gold Team organises an internal meeting to make sure the planned activities across components are coherent and support each other and cross-cutting issues are integrated well (avoid overlaps and gaps). The draft Development Action Plan is integrated with the present situation and the integrated problem analysis and solution trajectories to result in a draft PDP.

**Output:**

- Draft PDP

**STEP 4: Translation to WMOs:** While the draft PDP is being developed, WMG Action Plan (WAP) meetings are organised for all WMGs. The proposed PDP activities of Blue Gold are presented and the potential actions for the community are discussed. The Blue Gold staff support the WMG to prepare a WAP on the basis of their preferred actions and the draft PDP.

**Output:**

- WMG Action Plans (WAPs)

**STEP 5: Finalization of PDP:** On the basis of feedback provided by the WMA and possibly other stakeholders like UP, the Blue Gold Team finalises the PDP. The PDP is forwarded to interested stakeholders and a limited campaign for awareness creation at local level is planned and carried out.<sup>5</sup>

**Outputs:**

- Final PDP

**STEP 6: Follow-up and update of PDP:** Field staff of Blue Gold initiates the implementation of activities with WMOs. Regular follow-up meetings are held, participatory monitoring to keep track of implementation is stimulated and the WAPs are regularly updated by the WMGs. Furthermore the developments of specific value chains, gender issues, disaster risk reduction and environment actions, which are to be incorporated in the WAPs, are discussed. If required, PDPs are updated after 1 or 2 years.

<sup>4</sup> For the preparation of this PDP, no specific data sharing and internet platform was available yet. A so-called Master file has been developed to integrate data from different sectors for the development of value chain mapping and analysis. This has been used together with data collected by other components. By now, a part of the data has been uploaded on the internet platform.

<sup>5</sup> In the case of polder 43/1A, no special meeting has been organised for the WMAs and UPs to react on the draft PDP. At the time the PDP was compiled, already 60% of the selected activities were under implementation

## Apendix 2. Water Management Infrastructure of Polder 43/1A

### Embankment

Total length of the embankment around polder 43/1A is about 27.10 km. The entire embankment is an interior embankment with a crest width of 4.30 m and crest level of 4.27 m PWD.

### Sluices

There are 05 drainage/ flushing sluices in this polder:

Sl. No.	Name of Sluices	Number of Vents	Size, (mxm)	Location, km
1.	Kewabunia Sluice	1 -V	1.5x1.8	00+440
2.	Golbunia Sluice	1-V	1.5x1.8	06+155
3.	Chawla Sluice	1 -V	1.5x1.8	12+588
4.	Amtola Sluice	3 -V	1.5x1.8	25+860
5.	Mohishkata Sluice	2 -V	1.5x1.8	

### Drainage Outlets

There are five outlets in this polder:

Sl. No.	Name of Outlet	Size, mm	Location, km
1.	BurirKhal Outlet	900	02+270
2.	Gulbunia Outlet	900	04+450
3.	Atharogachia Outlet	900	17+220
4.	Sonakhali Outlet	900	21+170
5.	Kukua Outlet	900	26+571

### Irrigation Inlets

There are seventeen inlets in this polder:

Sl. No.	Name of Inlet	Size, mm	Location, km
1.	Kewabunia	450	00+260
2.	Kewabunia	450	01+050
3.	Paschim Kewabunia	450	02+140
4.	Gulbunia	450	05+360
5.	Gulbunia	450	07+243
6.	Shakharia	450	08+800
7.	Chowla	450	10+238
8.	Sonakhali	450	17+570
9.	Dakhin Sonakhali	450	20+082
10.	Gazipur	450	23+942
11.	Kukua	450	25+382
12.	Badura	450	10+550
13.	Chowla	450	14+176
14.	Athragachia	450	14+590

Note: 15-17 are totally damaged.

### Khals

There are about 58 recognizable khals with 1 or more branches and having a total length of about 53.30 km, which are shown in Figure 2.