GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF LOCAL GOVERNMENT, RURAL DEVELOPMENT AND CO-OPERATIVES

Local Government Engineering Department (LGED)

Agargaon, Sher-E-Bangla Nagar, Dhaka-1207

Final Report on Study–03
'My Village -My Town' -Technical Assistance Project

"Feasibility Study for Rural Connectivity including Multi-Modal Transport System in Char and Haor Areas"

Chauhali, Sirajganj

Data Experts (Pvt.) Limited

Delight Engineers & Consultants Ltd.

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GLOSSARY

Hard-to-reach Villages mean in the Study those villages that are not connected by any paved road with the respective Upazila HQ and/or Union Parishad, and to the nearest economic activity hub and social service centres. The following explanations is important for the concept of hard-to-reach villages.

- In haor areas, Village connected with submersible roads dry season and connected with riverine/haor routes in monsoon season has been considered as accessible and excluded from hard-to-reach villages.
- Within Upazila, Villages that needs a bridge to connect has not considered as hard-to-reach villages.
- In case of island Upazilas, villages that are accessible with paved roads from Upazila HQ has been considered as accessible and excluded from hard-to-reach villages.
- In case of villages that are connected with HBB (Herring-Bone-Bond) or Brick flat soling routes has been considered as hard-to-reach villages

Mauza is normally the geographical expression of a unit of landmass for revenue settlement and revenue collection, whereas, the village is a human settlement within a Mauza with strong social bond. Within a Mauza there could be more than one village.

Union Bangladesh has 3-tiers local government system: District, Upazila and Union. Union is the lowest level of local government below Upazila Parishad

Upazila Sub-District; the third level of government administration below division and District.

Hat Synonym of bazar or market

Walking Trail mean in the Study the village pathway or access used for walking by commuters, in the most cases do not have gazetted or established or commonly used alignment, and to the most, passable by bi-cycle or motor bike. These village trails are not passable by motorized jeep or mini truck or emergency service vehicle or not even by any three wheelers.

Unpaved Roads have no pavement or surface material. They are usually the earthen roads.

Vulnerability is the human dimension of risk that is defined as conditions determined by physical, social, economic, environmental, political, cultural and institutional factors or processes which increases the likelihood of an individual or a community to the impacts of shocks and hazards.

Climate-Resilience is expressed as the ability of a community to resist, absorb, adapt to and recover better from the impacts of disaster like flood and landslides in a sustainable way.

ABBREVIATION

ADB – Asian Development Bank
BBS – Bangladesh Bureau of Statistics
BC – Bitumen Carpeting
DatEx – Data Expert (Pvt.) Limited
DECL – Delight Engineers and Construction Ltd.
DoE – Department of Environment
DPHE – Department of Public Health Engineering
DPP – Development Project Proposal
FGD – Focus Group Discussion
GIS – Geographic Information System
GOB – Government of Bangladesh
HBB – Herring-Bone-Bond
HQ – Headquarter
HTRV – Hard-to-Reach Village
JV – Joint Venture
KII – Key Informant Interview
LGD – Local Government Division
LGED – Local Government Engineering Department
LGI – Local Government Institute
MVMT – My Village My Town
NGO – Non-Government Organization
PD – Project Director
PMO – Project Management Office
RCC – Reinforced Concrete
RHD – Roads & Highways Department
SDGs – Sustainable Development Goals
TA –Technical Assistance Project
UE – Upazila Engineer
UNDP – United Nations Development Programme
UNO – Upazila Nirbahi Officer
UNR –Union Road
UP – Union Parishad
UPZ – Upazila Road
VRA – Village Road A
VRB – Village Road B

BACKGROUND

Context of the Project

The Government of Bangladesh made massive plans to ensure equitable development around the country. Under this development philosophy, the GoB requirements are to reduce rural-urban divide to foster developmental benefits for all citizens. As part of this, the government declared an election manifesto on the eve of the national parliament election 2018 uniting the theme **Bangladesh on the March Towards Prosperity** aiming at transforming Bangladesh into a developed nation by 2041. Under this, villages have been considered the basic unit of prosperity for building a developed nation.

This firm commitment was declared following the light of the philosophy of the Father of Nation Bangabandhu Sheikh Mujibur Rahman to build 'Sonar Bangla' (Golden Bangla) through inclusiveness, balanced and development for all.

Following the philosophy of the Father of the Nation, the government declared election manifesto 2018 titled 'My Village-My Town'- Extension of Modern Civic Amenities in Every Villages. The Local Government Division under the Ministry of Local Government, Rural Development and Cooperatives has prepared a comprehensive work plan to make this election commitment a reality. The Local Government Division with its two agencies, Local Government Engineering Department (LGED) and Department of Public Health Engineering (DPHE) has undertaken a technical assistance project named 'My Village-My Town'-Technical Assistance Project. Under this project, 36 studies and 30 guidelines are being developed on eight thematic components related to mandate of Local Government Division. The eight thematic components are Rural Communications, Growth Centre and Hat bazar, Rural Water Supply and Sanitation, Rural Waste Management, Community Space and Recreation Facilities, Upazila Masterplan, Rural Housing and Capacity building of Upazila and Union Parishad. Besides this, a coordination framework is being developed among the other ministries involved in implementation of My Village-My Town election manifesto. It is notable to mention that a coordination committee has been formed comprising 21 ministries to implement the program in a coordinated way under the leadership of the Minster of Local Government, Rural Development and Co-operatives.

Context of the Report

This report is a part of study of the component 'Rural Connectivity'. Rural connectivity is the basic of all amenities in the villages. Rural connectivity works as the conduit that can supply a number of bare necessities such as access to market, health, education, employment etc. In general Bangladesh has remarkable progress in rural connectivity. Instead of this, a number of regions of the country are geographically sensitive where rural connectivity is not easy and has lot of challenges. These regions are -Haor, Beel, Hills, Chars, Islands etc. The people residing in these regions has considerably low access to civic amenities compared to other villages of the country. Therefore, study and plan development of improvement of rural connectivity is one of the important assignments of the technical assistance project. The project undertook Upazila based special study on the villages of these geographically sensitive regions that are mentioned before.

This report contains rural connectivity status and priority plan of the **Chauhali** Upazila of **Sirajganj** District.

1 DESCRIPTION OF THE UPAZILA

1.1 GEOGRAPHY AND DEMOGRAPHY

The geographical area of Chauhali Upazila is 210.39 square kilometers and has 7 Unions, 90 mouzas and 102 villages. The Upazila is 110 km away from the district headquarters of Sirajganj. There exist 2 major rivers flowing over the Upazila, Jamuna & Dhaleshwari. The total population of the Upazila is 1,60,000 of which half are male and half female, total number of households are 39,832 and average household size is 4.01 with a population density of 761 *(as per BBS, population census 2011).*

1.2 EDUCATION FEATURES

According to the information of the relevant local government offices there are 60 govt. primary, 63 registered primary, 4 non-government primary, 8 NGO schools & 12 kindergarten schools. On the other hand, Chauhali has 23 non-government high schools with 5 private colleges and 68 madrashas. The literacy rate for the Upazila is 36.5% as per BBS 2011.

1.3 RURAL ROAD COMMUNICATIONS

Bangladesh scored in the rural accessibility index at around 87 per cent among South Asian and some other Africa countries. Generally, the people of Bangladesh get all weather within 2 kilometers adjacent to their living places. But the feature of rural roads communications in Chauhali Upazila is contrasted. There are many villages, disconnected from the developed paved road network that brings huge sufferings for the people of the villages. The total rural road network of Chauhali is 73.49 km and out of which, 35.58 km paved and 37.91 km earthen.

1.4 AGRICULTURE, FOOD PRODUCTION AND FISHERIES

Agriculture has a major importance for the economy of the people of Chauhali. There are 38,672 acres of arable land in the Upazila. In the fiscal year 2010-11 the Rice production was 207, 2866 & 15237 metric tons for Aus, Aman & Boro seasons respectively. The Upazila also produced 396 metric tons of Wheat, 485 metric tons of Jute, 485 metric tons of Sugarcane, 3025 metric tons of Potato and 936 metric tons of Oilseed in the same fiscal year 2010-11. There also exists only 65 poultry & 186 dairy farms.

1.5 GROWTH CENTRE AND HATBAZAR

Growth Centre and Rural Hatbazar is one of the main centres of the rural economy. Hatbazar is like the heart for the development of the rural economy. Rural hatbazar plays a role in increasing production and creating employment impacting on the supply chain of agriculture and non-agriculture products. There are 25 hatbazar and 4 growth centers in the Upazila. The structural development of hatbazar and growth is pivotal to boosting up the rural economy. A details of the growth center & hatbazar of the Upazila has been attached in the ***Annexure-1***.

2 LOCATION OF THE UPAZILA

Chauhali Upazila is located in the Northern Bangladesh under Sirajganj District in Rajshahi Division. The district is known as the gateway to North Bengal. The location of the Upazila has been shown in the map. It is surrounded by Belkuchi Upazila on the north, Bera and Daulatpur (Manikganj) Upazilas on the south, Tangail Sadar and Nagarpur Upazilas on the east, Shahjadpur and Bera Upazilas on the west. The Upazila is located within the ***Brahmaputra River Basin***. The river, Brahmaputra is a trans-boundary river which flows through Tibet (mountains), India (Arunachal Pradesh & Assam), and Bangladesh and is the 9th largest river in the world by discharge. The river is prone to catastrophic flooding in the summer & monsoon (March – October) when the Himalayan snow melts along with the heavy rainfall in Meghalaya, India. During monsoon, the Brahmaputra discharges a large volume of water coming from upstream and at the same time brings in huge amounts of sediments. The entire lower Brahmaputra *(i.e., the part inside Bangladesh, known as **Jamuna River**)* consists of a vast network of channels, that are dry in the pre & post monsoon but are submerged during the monsoon. It has numerous islands due to the heavy sedimentation that are locally known as chars and the 'Chauhali' is a Upazila with plenty of such chars. The huge amount of water Jamuna River carries during monsoon, overflows it carrying capacity and inundates the northern part of the country within its basin as well as the Upazila. The effects of flooding can be devastating and cause significant damage to crops and households, serious bank erosion with consequent loss of structures, land, and loss of many lives and livestock.

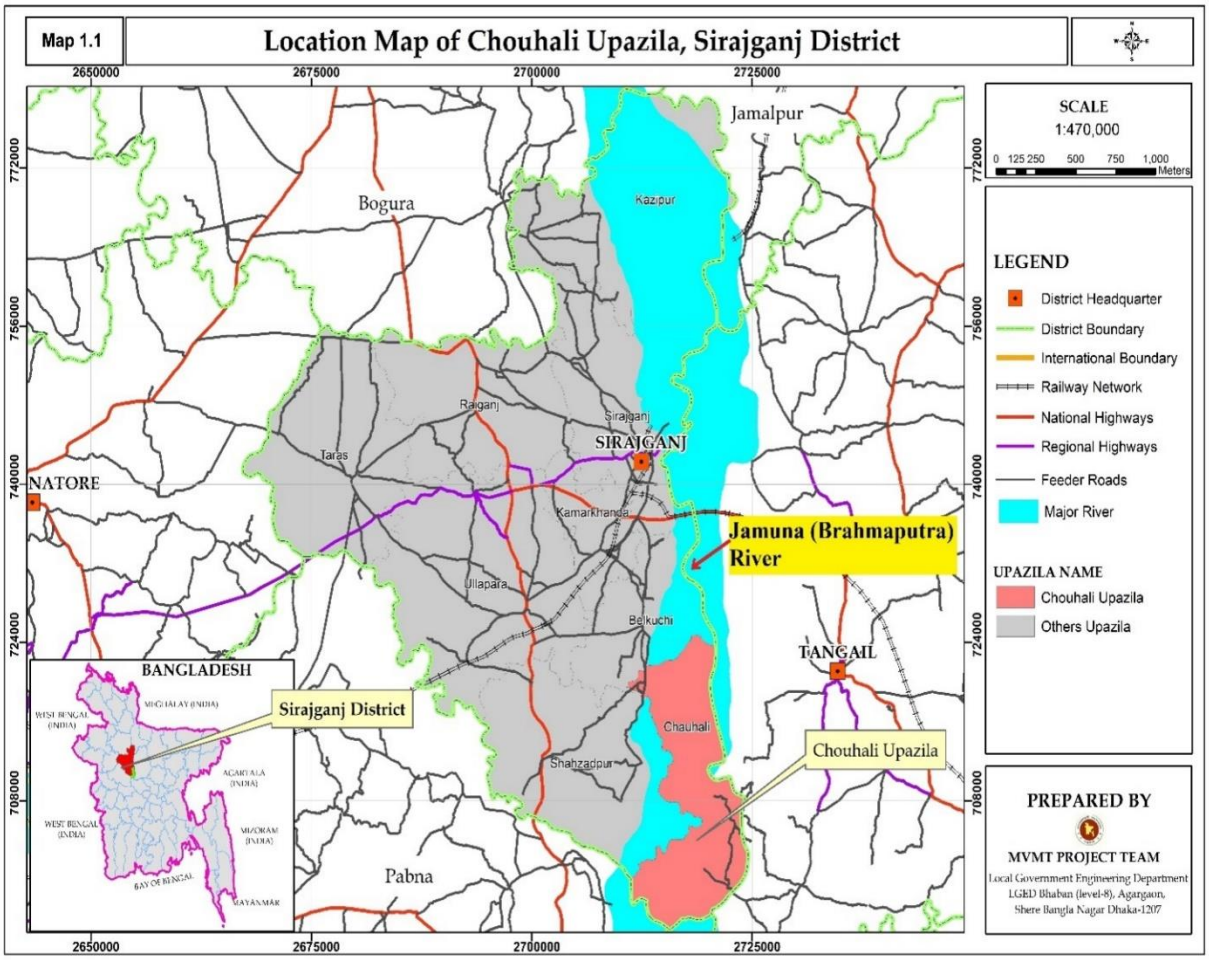

Figure 1: *Location Map of the Upazila*

3 APPROACH & METHODOLOGY

3.1 STUDY TEAM COMPOSITION

A team consisting of Senior Rural Road Infrastructure Specialist, Associate Rural Infrastructure Specialist, Assistant Engineer engaged by Project Management Office (PMO) conducted the study. On the other hand, A team consisting of Deputy Team Leader cum Rural Infrastructure Engineer, Junior GIS expert and Junior Engineer engaged by consulting firm (datEx & DECL JV) conducted the study. Participatory approach to review the database and identify priority transport infrastructure needs ('sub-projects') was instrumental. At the stakeholder consultation meeting held in each District, the database was reviewed, priority needs identified and mapped working together with the LGI representatives and LGED technical team. LGED and LGI representatives were surveyed each Upazila for collection of detailed observations and validations of the proposed priority needs.

Stakeholder Consultation Meeting

- Hard-to-reach Village Database and database of sub-projects reviewed
- Prioritization of sub-projects for each Upazila with LGI and LGED representatives
- Hard-to-reach villages and priority sub-projects mapped in the LGED GIS Map

3.2 STUDY AREA

The Study was conducted in 72 Upazilas of haor areas, 3 Upazilas of Beel areas, 8 Upazilas of Char areas, and 4 Upazilas of Island areas during the period from December 2021 to June 2022. Apart from this, PMO team conducted the study in 50 Upazilas of Haor areas and rest of the Upazilas of Haor, Beel, Char and Island areas are conducted by consulting firm team. The Upazila technical staff of LGED supported in organizing stakeholder consultation meetings and in database review and mapping the Hard-to-reach villages and population during this study period. They also supported in the field work and authentication check by visits to the sub-projects in their respective Upazila, and looking at the feasibility of some proposed sub-projects from technical, social and environmental perspectives.

3.3 DATABASE REVIEW AND ANALYSIS

The Study applied both qualitative (e.g., focused group discussions and in-depth case study field work) and quantitative (structured and semi structured interviews) approach and methods in reviewing and conducting field work in all the haor areas to understand the need and impact of rural accessibility in remote village contexts. The most applied methods in the reviewing and conducting field work were:

- Key Informants Interview (KII)
- Focus Group Discussion (FGD)
- Case Study for authentication check and individual sub-project feasibility study.

- ❖ Review Hard-to-reach village database at the 'Stakeholder consultation meeting' participating by local government representatives such as UP chairman and members, Upazila chairman, vice-chairman, and UNO.
- ❖ FGD and KII were conducted using a checklist. Composition in the FGD included local community people: male and female, teacher, local farmer, trader, and student depending on the availability.
- ❖ KIIs of Union Chairman, Upazila chairman, UNO male and female, and teacher depending on availability.
- ❖ Authentication and feasibility check by visits to the sub-projects reviewed and listed for the 40 selected case study Unions under MVMT project.
- ❖ Survey with GPS machine and Google apps in collecting Hard-to-reach village location, landmark, chainage at gaps, village road at section vulnerable to land erosion damage, narrow existing width or sharp slope location.

3.4 PRIORITIZATION CRITERIA OF SUB-PROJECTS

Prepare a priority list of sub-projects by Upazilas that includes gazette ID roads and non-gazette roads (No ID) with attributes like name and number of villages and population. The criteria used in the prioritization are described below.

- Population, travel time needed from the remotest villages to the Upazila HQ, road type and cost per km per 1000 population are the indicators weighted giving a value in a formula.
- Priority is given to single connection with no alternative transport road and multi-modal transport route to connecting the villages with Upazila HQ and Union Parishad, growth centre and important markets and social service centres; villages with higher number of population and travel time get higher weightage;
- Priority is given to roads, ghats and collection points that will facilitate agricultural diversification, reduce transportation cost, ensure fair price and create farm and non-farm employment and income;
- Priority is given to roads' development and inland waterways dredging that will enable year-round mobility of general public and villagers in particular, health workers, teachers and students, and tourists to facilitate tourism development, quality education and better health service in the district and region;
- Special priority is given to sub-projects of roads, riverine routes/inland waterways that will mainstream deprived communities living in the hard-to-reach villages;
- Identified sub-projects more cost-effectiveness than others using per km per 1000 population cost for each sub-project;
- Every sub-project(s) is to be climate-resilient, sustainable and cost-effective.

3.5 WEIGHTAGE DISTRIBUTION FOR PRIORITIZATION

The approaches and methodologies of the Study for reviewing database and prioritization are synthesized in the diagrams below, noting that the proposed sub-projects of roads in the databases are prioritized based on weightage calculated on the set criteria (as shown in the diagram). People's demand and local need are reflected in the prioritization which were

determined by the Study, working together with LGI representatives and LGED field level technical staff at the stakeholder consultation meetings held in each Upazila.

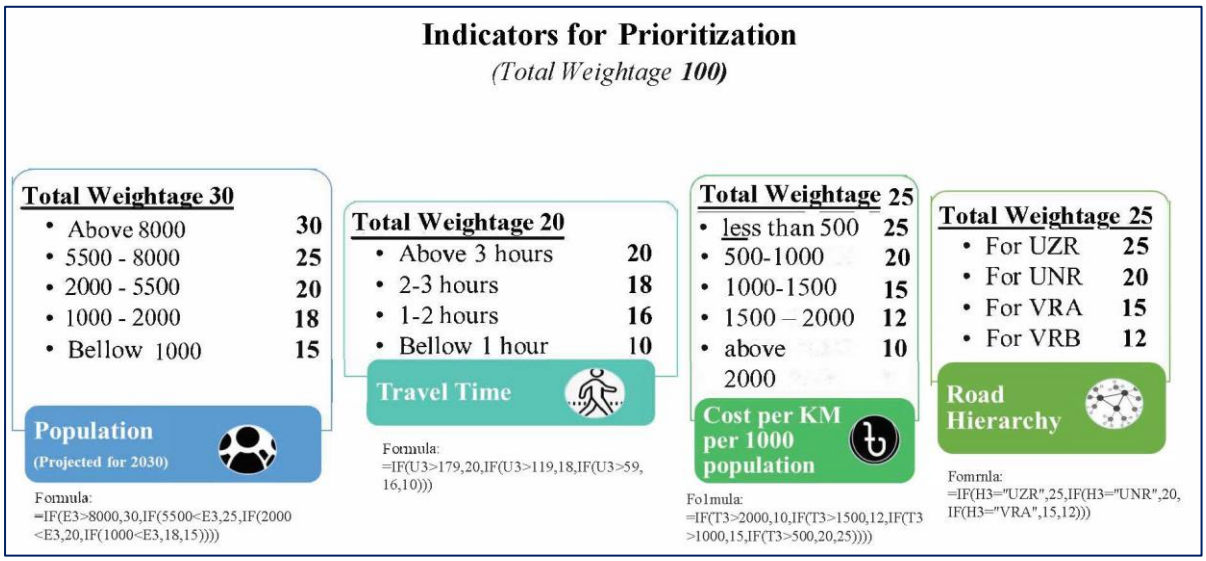

Figure 2: *Prioritization indicators & their weightage values*

3.6 Mapping Hard-to-reach Villages & Population

- With the active support of LGED technical staff, first, draw every priority listed MVMT roads and Hard-to-reach villages on the LGED GIS map in presence of Union Chairman and members who knows the sub-project and area the best. This was not in scale but approximation was reached by triangulation. Then digitized on screen using GIS, and validate with Google map and checked with data and information on important features and points collected using GPS during field visits.
- There were challenges in deciding on starting node and/or zero chainage of the non-gazette (No ID) road, because not all non-gazette sub-projects were visited and surveyed by the Study team.

3.7 Wrap Up Meeting

Wrap up the field work progress at each District holding a meeting chaired by the Executive Engineer, LGED and participated by all Upazila engineers of the respective District. On completion of the fieldwork, this was conducted to share issues and updates to the District Executive Engineer for feedback and action, as necessary.

3.8 Validation Workshop

On completion of data analysis and drafting of the database and mapping, the Study outputs were shared with the respective Districts and Upazilas for final review. Later validation workshop was held at the respective District on the Draft Report to share and validate the findings. This was participated by the LGED Division, District and Upazila officials and technical staffs.

3.9 NATIONAL WORKSHOP

The Draft Report is finalized, incorporating comments received from the validation workshop, LGED head office staff and PMO office. A National Level workshop was held at LGED HQ for sharing and disseminating the results of the Study.

4 RURAL ROAD CONNECTIVITY TO THE VILLAGES

4.1 SUMMARY OF THE VILLAGE CONNECTIVITY

Chauhali is an Upazila with numerous char areas. The rural road communication is quite poor here. Out of 108 villages, 37 are disconnected from the developed paved road network that brings huge sufferings for the people of those villages. The total rural road network of Chauhali is 73.49 km and out of which, 35.58 km paved and 37.91 km earthen.

Table 1: *Total villages in the Unions and their connectivity*

SL No	Union	No of Villages	Connected Villages	Hard-to-Reach Villages
1	Bagudia	5	0	5
2	Gharjan	18	10	8
3	Khas Pukuria	3	0	3
4	Khash Kawlia	12	0	12
5	Omarpur	23	23	0
6	Sadia Chandpur	20	14	6
7	Sthal	25	24	1
	Total =	**106**	**71**	**35**

4.2 VILLAGES AND THEIR CONNECTIVITY – UNION LEVEL

The consultant arranged a meeting at Upazila conference room with and all the UP Chairman & their secretaries. The team interviewed representative of each the Union and collected data about the HTRV.

Table 2: *Union wise connected & Hard-to-Reach Villages and their population*

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
Bagudia (5)	1			Rehai Pukuria	2427
	2			Char Nakalia Purbapara	
	3			Char Binanoi Purba Para	
	4			Moddho Binanoi	395
	5			Purba Binanoi	777
	Sub Total=		**0**		**3599**
Gharjan (18)	1	Baliakandi	1054	Baro Garjan	1210
	2	Barupakhia	160	Kanda Garjan	
	3	Bocharganti	104	Char Jujaria	2226
	4	Char Dhitpur	1184	Dakshin Barangail	1850
	5	Char Janjira	2232	Dakshin Teghari	5718
	6	Karuazani	567	Gharjan	3555

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	7	Katarbari	166	Khasdalai	1072
	8	Phulhara	1515	Muradpur	3837
	9	Rehai Kaulia	1515		
	10	Uttar Barangali	590		
	Sub Total=		**9087**		**19468**
Khas Pukuria (3)	1			Bonya	522
	2			Purba Kodalia	777
	3			Paschim Kodalia	749
	Sub Total=		**0**		**2048**
Khash Kawlia (12)	1			Dakkhin Jotpara	395
	2			Miapara	446
	3			Moddho Jot para	420
	4			Paschim Jot Para	14
	5			Paschim Khaskawlia Uttar	2076
	6			Paschim Khaskawlia Dhakhin	
	7			Uttar Khaskawlia purbo	
	8			Purba Khaskawlia	349
	9			Purbo Kurki	777
	10			Dhakhin Kurki	
	11			Maddo Kurki	
	12			Uttar Khashkawlia	522
	Sub Total=		**0**		**4999**
Omarpur (23)	1	Agben (Agbenpur)	0		
	2	Atia Dhubalia	0		
	3	Atia Salangi	1382		
	4	Bausa	2222		
	5	Bil Jahar	0		
	6	Bunar Para Salangi	872		
	7	Chandair	1657		
	8	Char Pachuria	0		
	9	Dattakandi	968		
	10	Dhubalia	0		
	11	Dhupghati	479		
	12	Goynakandi	0		
	13	Hapania	1278		
	14	Isupsahi Salangi	1342		

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	15	Kathalia	2281		
	16	Minadiha	3794		
	17	Omarpur	5927		
	18	Pachh Shimulia	0		
	19	Pathrail	10685		
	20	Payla	0		
	21	Sailjana	3904		
	22	Singuli	0		
	23	Sura	0		
	Sub Total=		**36791**		**0**
Sadia Chandpur (20)	1	Bindaha	1012	Betil	2501
	2	Boalkandi	3271	Chandpur	2389
	3	Dakshin Barbayla	943	Elangiata	543
	4	Dewantala	864	Enayetpur	6998
	5	Dhuliabari	456	Machhgaon	528
	6	Gaber Para	0	Sadia	571
	7	Khamargaon	6541		
	8	Konabari	0		
	9	Mouhali	965		
	10	Rehai Mousa	294		
	11	Sahajada Para	559		
	12	Sankarhati	490		
	13	Ullahpara	322		
	14	Urapara	697		
	Sub Total=		**16414**		**13530**
Sthal (25)	1	Bairabari	471	Sthal Naohata	2957
	2	Basantapur	0		
	3	Chaluhara	1727		
	4	Chauhali	1143		
	5	Dakshin Hatibari	0		
	6	Dighalkandi	0		
	7	Hatbaira	0		
	8	Khas Dash Sika	674		
	9	Khas Mandalbhog	566		
	10	Khas Payelsatia	417		
	11	Kochgram	1627		
	12	Kuragachha	839		
	13	Langalmura	1402		
	14	Mali Para	0		
	15	Misriganti	1187		
	16	Misriganti	0		
	17	Naya Para	0		
	18	Rehai Das Sika	0		
	19	Rehai Mandalbhog	650		
	20	Santosha	78		

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	21	Sekh Chandra Para	160		
	22	sthal	445		
	23	Sthal Char	2416		
	24	Uttar Teghari	879		
	Sub Total=		**14681**		**2957**

4.3 MAP OF HARD-TO-REACH VILLAGES & PROPOSED ROADS

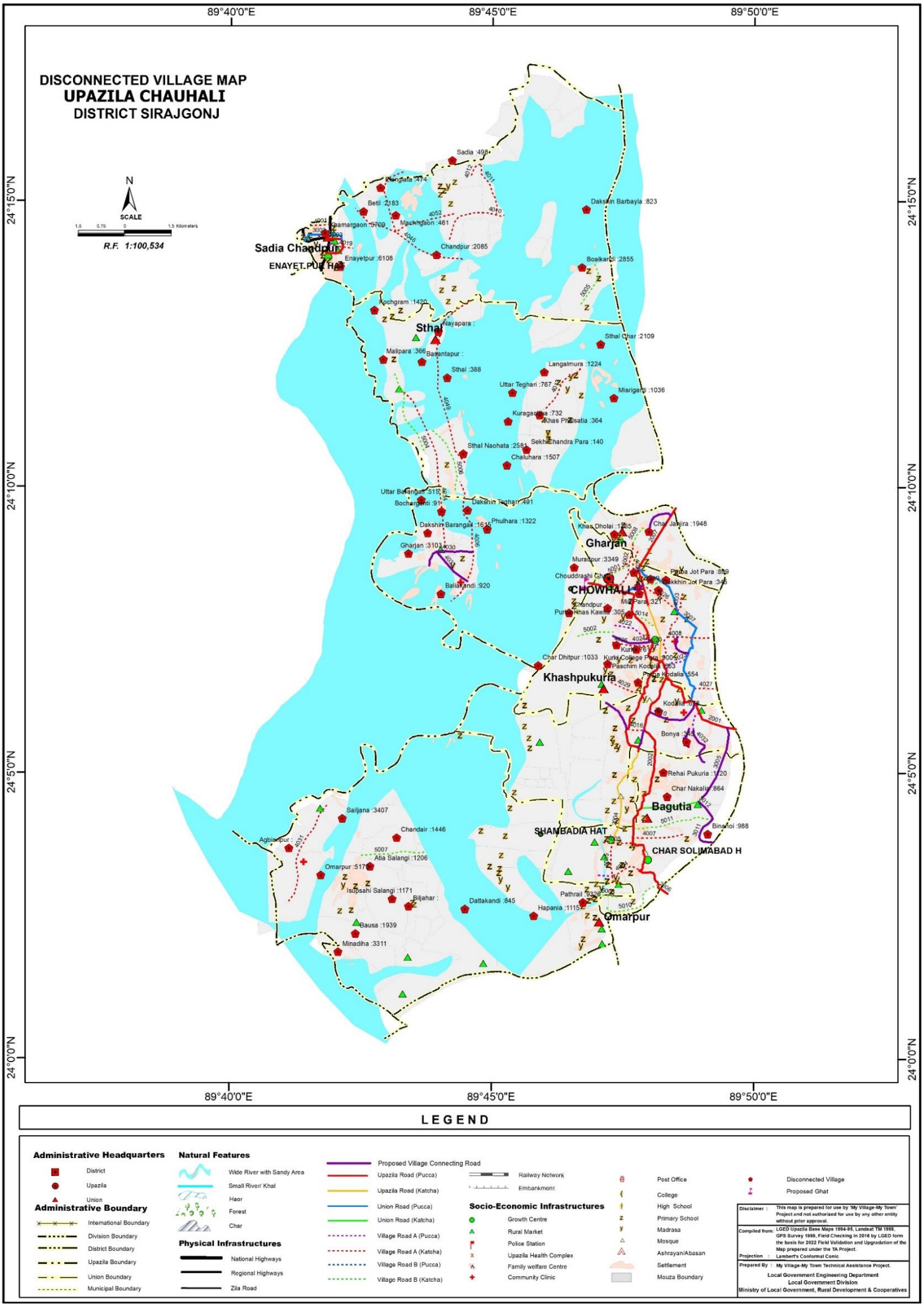

Figure 3: *The Upazila Map*

5 CONSULTATION MEETING & FIELD VISIT

5.1 UPAZILA LEVEL MEETING

The consultant arranged a meeting at Upazila conference room with the support of the UE office, Chauhali that was participated by UNO, UE and all the UP Chairmen & their secretaries.

Figure 4: *Upazila level Consultation Meeting*

During the meeting, consultant team briefly discussed about the project and instructed the UP Chairmen and UE office for the database correction along with mapping procedure. The team worked on both the database and Upazila map and obtained the necessary outputs subsequently.

5.2 VISIT TO CASE STUDY UNION

The team visited 'Khas Kaulia', the case study Union of Chauhali Upazila through "Chauhali Upazila H/Q-Khashkawlia UP H/Q road" having the Road ID: 188273009. The road was selected for the site visit considering the beneficiary population, educational institutes along the road and the recommendations of the UE Office as the road has a priority within the Union.

Figure 5: *Condition of the visited road alignment at Muksudpur Union*

The consultant observed and collected necessary information for the study discussing inhabitants and UE office. Team recorded GPS data, interviewed road users and took photos of the alignment condition.

The length of this submersible road is 1.27 km, that is completely earthen. During monsoon this alignment becomes submerged and the inhabitant's sufferings get know no bounds. The road connects 2 major villages of the Union named Miapara, Moddho Jot para having the total population of approx. 1000. People living here doesn't have any good road network with the Upazila HQ due to having unpaved road communication.

6 DATA COLLECTION & ANALYSIS

The consultant collected data from the field on hard to reach/ Hard-to-Reach Villages. Data were collected of those villages including population, road alignment information *(type, length, condition)*, travel time, structure required on the alignment, potential riverine routes that can be used for multi-modal transport system etc. The data then analyzed, categorized and finally used to obtain a priority list along with a map *(Figure:3)* showing prioritized roads and Hard-to-Reach Villages. The proposed riverine & road connectivity by the UE office have been discussed in this section

6.1 PROPOSED RIVERINE ROUTES

Chauhali Upazila is located within the *Brahmaputra River Basin* that has plenty of chars. As per actual field visit and data analysis, obtained from the UE office, Chauhali; about 70-80% of the total area of Chauhali are char, topographically low land in the dry season but submerged during monsoon. Waterway becomes the only mood of transport during monsoon. According to the UE, Chauhali there exists 8 riverine route that can be used throughout the year and connects the chars with the Upazila HQ. Generally Small Boat, Engine Boat, Cargo Ships are used to transport community & commodity.

The name of the riverine route & the associated streams with types of water vehicle are as follows;

Table 3: *Proposed riverine routes of the Upazila*

Sl. No	Name of the Riverine Route	Name of the Stream	Type of the Stream	Types of Water Vehicle	Need of excavation
1	Upazila H/Q, Jotpara-Enayetpur, SodiaChadpur Union	Jumuna	Perennial	Small Boat, Engine Boat, Cargo (Caring Sand)	No
2	Upazila H/Q, Jotpara-Muradpur, Fulhara Village, Muradpur Union	Jumuna	Perennial	Small Boat, Engine Boat, Cargo (Caring Sand)	No
3	Upazila H/Q, Jotpara-Sthal Union	Jumuna	Perennial	Small Boat, Engine Boat, Cargo (Caring Sand)	No
4	Upazila H/Q, Jotpara-Dak Banglar Ghat, Bera Upazila, Pabna	Jumuna	Perennial	Small Boat, Engine Boat, Cargo (Caring Sand)	No
5	Upazila H/Q, Jotpara-Chantara Village, Shahazadpur	Jumuna	Perennial	Small Boat, Engine Boat, Cargo (Caring Sand)	No
6	Upazila H/Q-Koijuri GC, Shahazadpur	Jumuna	Perennial	Small Boat, Engine Boat.	No
7	Vuter Mor, Char Solimabad-Hatail Village, Umarpur Union	Jumuna	Perennial	Small Boat, Engine Boat.	No
8	Vuter Mor, Char Solimabad-Hapania Village, Umarpur Union	Jumuna	Perennial	Small Boat, Engine Boat.	No

6.2 PROPOSED ROADWAY FOR HARD-TO-REACH VILLAGES:

At present, roads are the most dominant mode of transportation. As for the Upazilas geographical condition, constructing bridges at chars are not feasible.

Table 4: *Summary of the rural roads in the Upazila*

Total Road Length of the Upazila (KM)	Paved Length (KM)	Unpaved Length (KM)	Length of unpaved roads of Hard-to-Reach Villages (KM)
73.49	35.58	37.91	40.6

6.2.1 PROPOSED ALL WEATHER ROUTES:

There are only 3 all weather roads proposed to connect the HTRV within the Upazila. The road name, ID, road condition and the length of the unpaved roads are as bellow;

Table 5: *Proposed all weather roads in the Upazila*

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
1	Jotpar GC-D.Jotpara Paschim Sima	188274024	All Weather	
2	Muradpur bazar River Ghat-Hat ghorjan Souharda bazar.	188274033	All Weather	2.5
3	H/O Khorshed Shikder - Jamuna River Ghat	No ID	All Weather	0.5

6.2.2 PROPOSED SUBMERSIBLE ROUTES:

There are 27 submersible roads proposed to connect the HTRV within the Upazila. The road name, ID, road condition and the length of the unpaved roads are as bellow;

Table 6: *Proposed submersible roads in the Upazila*

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
1	Kashpukuria UP office-Shumbudia GC.	188273005	Submersible	0.6
2	Chauhali Upazila H/Q-Khashkawlia UP H/Q.	188273009	Submersible	1.27
3	Kodalia Hat-Khashpukuria UP H/O Via D.Kodalia P/School.	188273010	Submersible	1.65
4	Bagutia Up office-Nagorpur Goyhatta GC (Chauhali part).	188273011	Submersible	2.12
5	Bagutia Up office-Reahipukuria bazar.	188273012	Submersible	1.75
6	South Ghorzan- River ghat Road	188274030	Submersible	1.5
7	Upazila Road-Kashkawlia New hat.	188274032	Submersible	0.7
8	Hat Ghorjan Shohardo Bazar-Nawhata Bazar Road	188274034	Submersible	4

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
9	Khashpukuria UP Office rd. - Nagorpur Simana	188274035	Submersible	0.7
10	Chauhali Upazila Road - (Mozher House) Kodalia GPS	188274036	Submersible	1
11	Jotpara GC ROAD (Baparipara Jonota High School	188274040	Submersible	1.2
12	Khaspukuria UP Office Road (Bokkor House) - Commujnity Clinic	188274041	Submersible	0.45
13	Bagutia Up office - Paschim Benunoi GPS	188274042	Submersible	1
14	Chauhali Upazila Road (Hospital More) - Kashkawalia UP Offiec - Kodalia hat Via Azimuddin More Rd.	188274043	Submersible	0.5
15	Enayetpur Old Bazar - Enayetpur Shallow Ghat (Jute Godown) Road	188274044	Submersible	0.3
16	Ajogora kheya ghat-chandpurGPS via Alongiata GPS	188274046	Submersible	3.5
17	Khamargram wabdabadh - Soudia Chandpur UP Office Road Via Mannan Mollah House	188274047	Submersible	0.37
18	K.R. Pilot High School - Shajani GC (Chauhaliu Part)	188274048	Submersible	0.75
19	Naohata Bazar - Nayapara Kheya Ghat Via Teghore GPS	188274049	Submersible	6
20	Khaspukuria UP Office Road - Kodalia Fisheries Firm	188274050	Submersible	0.6
21	Betil Bazar ghat to Bindha GPS	188274052	Submersible	2.65
22	Soudia Chandpur up office rd. - Soudia Chandpur UP Office Road Sailen Master House	188275016	Submersible	0.45
23	Soudia Chandpur up office rd. Hazi Sejbar House - Soudia Chandpur UP Office Road Hazi Bellal House	188275018	Submersible	0.5
24	Char Jajuria H/O Nuru Mondol - Char jajira Dakhil Madrashaa	No ID	Submersible	1.25
25	H/O Fazlul Haque - KK Jodhpata GPS	No ID	Submersible	0.5
26	H/O Bablu Member - Darus Salam Madrasha	No ID	Submersible	0.8
27	Bonya Graveyard - H/O Azmesh Shikder House	No ID	Submersible	1.5

6.2.3 PROPOSED ROADS FOR HARD-TO-REACH VILLAGES HAVING NO ID:

There are 5 roads proposed to connect the HTRV within the Upazila that have no ID yet. The road name, ID and the length of the unpaved part are as bellow;

Table 7: *Proposed roads for Hard-to-Reach Villages having No ID*

Sl. No	Road Name	Road ID	Unpaved length (Km)
1	H/O Khorshed Shikder - Jamuna River Ghat	No ID	0.5
2	Char Jajuria H/O Nuru Mondol - Char jajira Dakhil Madrashaa	No ID	1.25
3	H/O Fazlul Haque - KK Jodhpata GPS	No ID	0.5
4	H/O Bablu Member - Darus Salam Madrasha	No ID	0.8
5	Bonya Graveyard - H/O Azmesh Shikder House	No ID	1.5

6.2.4 PRIORITY FOR ROAD DEVELOPMENT

Considering resources constraint, benefited group of people, time required to travel & road hierarchy, a priority list has been developed ***(Annexure-2)*** for the HTRV (Hard to Reach Villages). The priority score has been determined according to following

Table 8: *Considered weightage values for the prioritization*

Criteria	Weightage
Population	30
Travel Time	20
Cost per 1000 Population	25
Road Type	25
Total=	**100**

It has been observed that, there are a number of roads that bear same score. At these cases, the minimum budget required for providing connectivity to thousand people- will get more priority compared to more budget required roads. The roads bearing ID will have the higher priority than the roads without ID.

7 CONCLUSION & RECOMMENDATIONS

- Chauhali Upazila is located within the *Brahmaputra River Basin* that has plenty of chars, topographically low land in the dry season but submerged during monsoon. The Upazila has enormous agricultural potential due to highly fertile soil gains from heavy sedimentation. There exist 2 (two) major rivers that are Jamuna & Dhaleshwari, dominates the ecosystem & transport system of the Upazila. The riverine transport can be used throughout the year. Generally Small Boat, Engine Boat, Cargo Ships are used to transport community & commodity.
- The Upazila faces extensive flood and river erosion during monsoon, rural roads and structures are highly vulnerable in this Upazila.
- The Upazila has a total number of 37 Hard-to-Reach Villages. To develop rural connectivity, there are proposals for both all weather & submersible roads. This report contains a list of roads with their priority. The priority has been determined based on Population, Travel Time, Cost per KM/1000 people & Road Hierarchy.
- This Upazila is highly vulnerable to flood. Due to climate change, the vulnerability is getting intense.
- Case by case design of roads in this Upazila considering different aspects such as exposure to flood, erosion etc. is highly recommended. A special study regarding the road and structure design of the Upazila Chauhali in Sirajganj District is highly recommended.

ANNEXURE - 1

DETAILS OF GROWTH CENTER & HATBAZAR

Union	Market Name	Market Category (*GC=Growth Center, HB=Hat Bazar*)	Market Listed? (Yes/ No)	Market Category (General/ Special/ Collection center)	Market Category (Wholesale/ Retail/both)	Hat Day	Chandina Viti (Number)	Chandina Viti (Land)	Chandina Viti (Shop)	Land Area (Acre)			Lease/ Khas Collection BDT (2020)	Lease/ Khas Collection BDT (2019)
										Toha	Khas	Private		
Baghutia	Char salimabad hat	GC	No											
Baghutia	Hatail Hat	HB	No											
Baghutia	Kasemgonj Hat	HB	No											
Baghutia	Khaser Hat	HB	No											
Baghutia	Munshigonj Hat	HB	No											
Baghutia	Rehaipukuria Hat	HB	No											
Baghutia	Shambudia hat	GC	No											
Ghorjan	Dhalai Hat	HB	No											
Ghorjan	Ghorjan Bazar	HB	No											
Khashkawlia	Jotpara hat	HB	Yes	General Market	Both	2	0	0.00	0	0.00	0.94	0.27	1112000	706000
Khashkawlia	Khashkawlia Hat	GC	No											
Khashkawlia	Khashkawlia New Hat	HB	No											
Khashpukuria	Kadergonj Hat	HB	No											
Khashpukuria	Khaspukuria Hat	HB	No											
Khashpukuria	Kudalia Hat	HB	No											
Khashpukuria	Mituani Hat	HB	No											
Sadiachandpur	Betil Bazar	HB	Yes	General Market	Both	2	163	0.93	163	1.00	1.89	0.04	344000	227000
Sadiachandpur	Enayetpur old Bazar	HB	Yes	General Market	Wholesale	2	0	0.11	0	0.15	0.26	0.00	99800	95000
Sadiachandpur	Enayetpur hat	GC	No											
Sadiachandpur	Khamargaon Bazar	HB	No											
Sthal	Nayhata Hat	HB	No											
Sthal	Sthalchar Hat	HB	No											
Umarpur	Dattokandi Hat	HB	No											

Union	Market Name	Market Category (*GC=Growth Center, HB=Hat Bazar*)	Market Listed? (Yes/ No)	Market Category (General/ Special/ Collection center)	Market Category (Wholesale/ Retail/both)	Hat Day	Chandina Viti (Number)	Chandina Viti (Land)	Chandina Viti (Shop)	Land Area (Acre)			Lease/ Khas Collection BDT (2020)	Lease/ Khas Collection BDT (2019)
										Toha	Khas	Private		
Umarpur	Hapania Hat	HB	No											
Umarpur	Pachuria Hat	HB	No											
Umarpur	Patrail Hat	HB	No											
Umarpur	Payla Hat	HB	No											
Umarpur	Shoiljana Hat	HB	No											
Umarpur	Umarpur hat	HB	No											

ANNEXURE - 2

PRIORITY LIST FOR ROAD DEVELOPMENT

Priority	Connecting Union	Connecting Village	Population 2021 (Based on BBS 2011)	Road Name	Road ID	Road Type	Road Type by Surface Condition	Total Road Length (10+11+12)	Paved length (km)	HBB Length (km)	Unpaved length (km)	HBB + Unpaved (11+12) in (km)	Approx. Cost of Road (lac)	Structure/ Gap (meter)	Cost of Structure (in Lac)	Total Cost (in lac) (Roads + Structures)	Population /KM (4÷13)	Tentative Budget/1000 Population (in lac)	Travel Time (in min)	Weightage for Population	Weightage for Travel Time	Weightage for Cost per 1000 Population	Weightage for Road Type	Total Weightage (21+22+23+24)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	Gharjan	Dakshin Barangail, Dakshin Teghari, Gharjan	11124	Hat Ghorjan Shohardo Bazar-Nawhata Bazar Road	188274034	UNR	Submersible	4			4	4	720		0	720	2781	65	60	30	16	25	20	**91**
2	Sthal	Sthal naohata	2957	Naohata Bazar - Nayapara Kheya Ghat Via Teghore GPS	188274049	UNR	Submersible	6			6	6	1080		0	1080	493	365	90	20	16	25	20	**81**
3	Sadia Chandpur	Enayetpur	6998	Enayetpur Old Bazar - Enayetpur Shallow Ghat (Jute Godown) Road	188274044	UNR	Submersible	0.3			0.3	0.3	54		0	54	23328	8	5	25	10	25	20	**80**
4	Khash Kawlia	Paschim Khaskawlia Uttar, Paschim Khaskawlia Dhakhin , Uttar Khaskawlia purbo	2076	K.R. Pilot High School - Shajani GC (Chowhaliu Part)	188274048	UNR	Submersible	0.75			0.75	0.75	135		0	135	2768	65	11	20	10	25	20	**75**
5	Gharjan	Muradpur	3837	Muradpur bazar River Ghat-Hat ghorjan Souharda bazar.	188274033	UNR	All Weather	2.5			2.5	2.5	300		0	300	1535	78	38	20	10	25	20	**75**
6	Sadia Chandpur	Chandpur, Elangiata	2932	Ajogora kheya ghat-chandpurGPS via Alongiata GPS	188274046	UNR	Submersible	3.5			3.5	3.5	630		0	630	838	215	53	20	10	25	20	**75**
7	Bagudia	Rehai Pukuria, Char Nakalia, Char Binanoi	2427	Kashpukuria UP office-Shumbudia GC.	188273005	UNR	Submersible	3.46	1.7	1.16	0.6	1.76	316.8	45	405	721.8	1379	297	9	20	10	25	20	**75**
8	Sadia Chandpur	Betil, Machhgaon	3029	Betil Bazar ghat to Bindha GPS	188274052	UNR	Submersible	2.65			2.65	2.65	477	70	630	1107	1143	365	40	20	10	25	20	**75**
9	Khas Pukuria	Purba Kodalia, Paschim Kodalia	1526	Khaspukuria UP Office Road (Bokkor House) - Commujnity Clinic	188274041	UNR	Submersible	0.45			0.45	0.45	81		0	81	3391	53	7	18	10	25	20	**73**
10	Khas Pukuria	Kodalia, Bonya	1772	Kodalia Hat-Khashpukuria UP H/O Via D.Kodalia P/School.	188273010	UNR	Submersible	1.65			1.65	1.65	297		0	297	1074	168	25	18	10	25	20	**73**
11	Gharjan	Baro Garjan, Kanda Garjan	1210	South Ghorzan- River ghat Road	188274030	UNR	Submersible	1.5			1.5	1.5	270		0	270	807	223	23	18	10	25	20	**73**
12	Bagudia	Char Nakalia Purbapara, Char Binanoi Purba Para	1782	Bagutia Up office-Reahipukuria bazar.	188273012	UNR	Submersible	1.75			1.75	1.75	315	48	432	747	1018	419	26	18	10	25	20	**73**
13	Sadia Chandpur	Sadia	571	Khamargram wabdabadh - Soudia Chandpur UP Office Road Via Mannan Mollah House	188274047	UNR	Submersible	0.37			0.37	0.37	66.6		0	66.6	1542	117	6	15	10	25	20	**70**
14	Khas Pukuria	Kodalia	777	Khaspukuria UP Office Road - Kodalia Fisheries Firm	188274050	UNR	Submersible	0.6			0.6	0.6	108		0	108	1295	139	9	15	10	25	20	**70**
15	Khash Kawlia	Purba Khaskawlia, Uttar Khashkawlia	872	Upazila Road-Kashkawlia New hat.	188274032	UNR	Submersible	1		0.3	0.7	1	180		0	180	872	206	11	15	10	25	20	**70**
16	Khas Pukuria	Purba Kodalia	777	Chowhali Upazila Road - (Mozher House) Kodalia GPS	188274036	UNR	Submersible	1			1	1	180		0	180	777	232	15	15	10	25	20	**70**
17	Bagudia	Purba Binanoi	777	Bagutia Up office - Paschim Benunoi GPS	188274042	UNR	Submersible	1			1	1	180		0	180	777	232	15	15	10	25	20	**70**
18	Khas Pukuria	Bonya	522	Khashpukuria UP Office rd. - Nagorpur Simana	188274035	UNR	Submersible	0.7			0.7	0.7	126		0	126	746	241	11	15	10	25	20	**70**
19	Khash Kawlia	Purba Khaskawlia	349	Chowhali Upazila Road (Hospital More) - Kashkawalia UP Offiec - Kodalia hat Via Azimuddin More Rd.	188274043	UNR	Submersible	0.5			0.5	0.5	90		0	90	699	258	8	15	10	25	20	**70**
20	Khash Kawlia	Miapara, Moddho Jot para	866	Chowhali Upazila H/Q-Khashkawlia UP H/Q.	188273009	UNR	Submersible	1.27			1.27	1.27	228.6		0	228.6	682	264	19	15	10	25	20	**70**
21	Khash Kawlia	Dakkhin Jotpara	395	Jotpar GC-D.Jotpara Paschim Sima	188274024	UNR	All Weather	1.2		1.2		1.2	144		0	144	329	364	0	15	10	25	20	**70**
22	Khash Kawlia	Uttar Khashkawlia	522	Jotpara GC ROAD (Baparipara Jonota High School	188274040	UNR	Submersible	1.2			1.2	1.2	216		0	216	435	413	18	15	10	25	20	**70**
23	Sadia Chandpur	Sadia Chandpur	2389	Soudia Chandpur up office rd. - Soudia Chandpur UP Office Road Sailen Master House	188275016	VRB	Submersible	0.45			0.45	0.45	81		0	81	5309	34	7	20	10	25	12	**67**
24	Sadia Chandpur	Sadia Chandpur	2389	Soudia Chandpur up office rd. Hazi Sejbar House - Soudia Chandpur UP Office Road Hazi Bellal House	188275018	VRB	Submersible	0.5			0.5	0.5	90		0	90	4778	38	8	20	10	25	12	**67**
25	Bagudia	Moddho Binanoi	395	Bagutia Up office-Nagorpur Goyhatta GC (Chowhali part).	188273011	UNR	Submersible	2.12			2.12	2.12	381.6		0	381.6	186	965	32	15	10	20	20	**65**
26	Gharjan	Char Jujaria, Kash Dolai	3304	Char Jajuria H/O Nuru Mondol - Char jajira Dakhil Madrashaa	No ID	VRA	Submersible	1.25			1.25	1.25	225		0	225	2644	68	19	20	10	25	15	**70**
27	Khash Kawlia	Paschim Jot Para, Dakkhin Jotpara	536	H/O Khorshed Shikder - Jamuna River Ghat	No ID	VRB	All Weather	0.5			0.5	0.5	60		0	60	1072	112	8	15	10	25	12	**62**
28	Khash Kawlia	Purbo kurki, Maddo Kurki, Dhakhin Kurki	777	H/O Bablu Member - Darus Salam Madrasha	No ID	VRB	Submersible	0.8			0.8	0.8	144		0	144	971	185	12	15	10	25	12	**62**
29	Khash Kawlia	Moddho Jot para	420	H/O Fazlul Haque - KK Jodhpata GPS	No ID	VRB	Submersible	0.5			0.5	0.5	90		0	90	841	214	8	15	10	25	12	**62**
30	Khas Pukuria	Bonya	395	Bonya Graveyard - H/O Azmesh Shikder House	No ID	VRB	Submersible	1.5			1.5	1.5	270		0	270	264	683	23	15	10	20	12	**57**

**** Cost for Roads & Structures; (All Weather Rd= 120 lac/km, Submersible= 180 lac/km, Structure= 9 lac/m)*
**** Weightage Values; (Population = 30, Travel Time= 20, Cost per1000 people= 25, Road Hierarchy= 25)*