



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”

Nasirnagar, Brahmanbaria



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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 Minister 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 **Nasirnagar** Upazila of **Brahmanbaria** District.

1 DESCRIPTION OF THE UPAZILA

1.1 GEOGRAPHY AND DEMOGRAPHY

The geographical area of Nasirnagar upazila is 294.36 square kilometers and has 13 unions, 96 mouzas and 128 villages. The upazila is 30 km away from district headquarters of Brahmanbaria. There exist 4 major haors and 6 rivers flowing over the upazila that are the major river Meghna along with Langan, Balvadra, Bomalia, Titash, Karoti, Khasti. The total population of the upazila is approximately 3,09,000 of which 1,51,000 are male and 1,58,000 female, total number of households are 59,024 and average household size is 5.23 with a population density of 1050 (as per population census 2011).

1.2 EDUCATION FEATURES

According to the information of the relevant local government offices there are 80 government, 35 registered, 5 non-government primary schools, 6 NGO schools & 5 kindergarten schools. On the other hand, Nasirnagar has only a government high school, 13 non-government high schools with 2 private colleges, and 18 madrashas. The literacy rate for the upazila is 34.9% 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 Nasirnagar 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 Nasirnagar is 423.03 km and out of which, 172.21 km paved and 250.82 km earthen.

1.4 AGRICULTURE, FOOD PRODUCTION AND FISHERIES

Both the Agriculture & Pisciculture have major importance for the economy of the people of Nasirnagar. There are 71,876 acres of arable land in the upazila. In the fiscal year 2010-11 the Rice production was 1239, 10950 & 27209 metric tons for Aus, Aman & Boro seasons respectively. The upazila also produced 2548 metric tons of Wheat, 680 metric tons of Jute, 1134 metric tons of Potato and 1936 metric tons of Oilseed in the same fiscal year 2010-11. A notable quantity of vegetable is also produced here in this upazila.

According to the BBS (2010-11) data Nasirnagar has 4,426 acres of pond, dhighee & other wetlands that produced 10,700 metric tons of fishes. There also exists 150 poultry & 18 dairy farms.

All the agricultural products are adequate to meet the demand of the upazila and surpluses are sold to outside of Nasirnagar.

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 12 hatbazar and 5 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

Nasirnagar upazila is in the Eastern part of the country under Brahmanbaria district of Chattogram division. The location has been shown in the map. It is surrounded by Lakhai and Austagram upazilas on the north, Sarail and Brahmanbaria Sadar upazilas on the south, Madhabpur upazila on the east, Bajitpur and Austagram upazilas on the west. The upazila is within Middle Meghna Flood Plain zone. During monsoon the river Meghna carries a large volume of flood water coming from upstream, while the upstream is typically flood plain zone of Sylhet, Sunamganj, Habiganj, Moulvibazar, Kishoreganj & Netrokona districts. The hilly rivers coming down from the ‘Khasi and Jaintia hills’ in Meghalaya, India carry particularly high volumes of water during monsoon as they come from some of the rainiest (Cherrapunji) places in the world, resulting flash flood in these mentioned districts inside Bangladesh. Being the downstream, the river Meghna thus receives enormous water from the surface runoff and the stream overflows due to the channel runoff exceeds its carrying capacity. As a result, it inundates a large area of Meghna Flood Plain zone as well as the Nasirnagar upazila. Floods induce severe impacts in both the built and the natural environment. The effects of flood can be catastrophic and show extensive diversity, ranging from damages in buildings and infrastructure to impacts on vegetation, human lives and livestock.

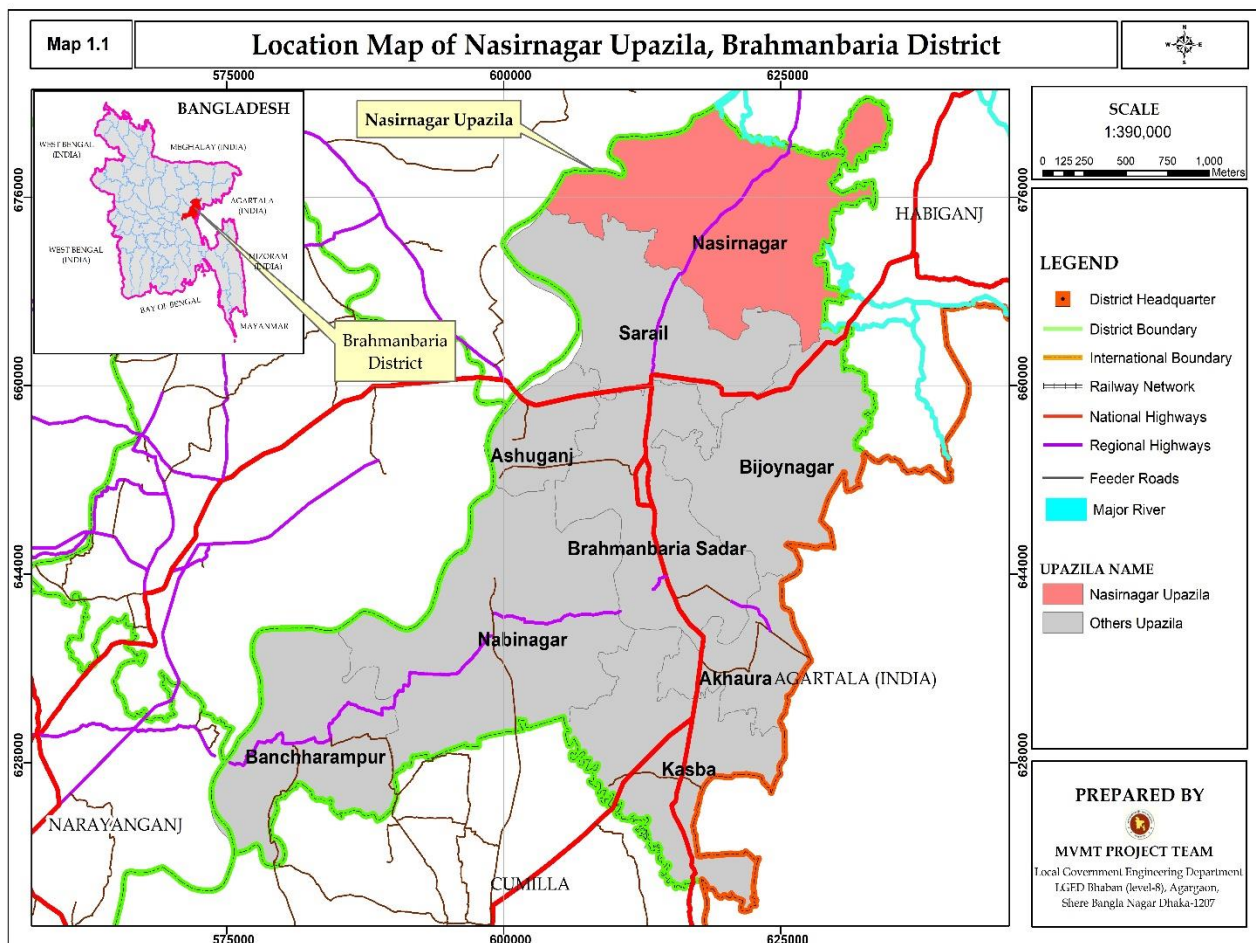


Figure 1: Upazila Location Map.

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.

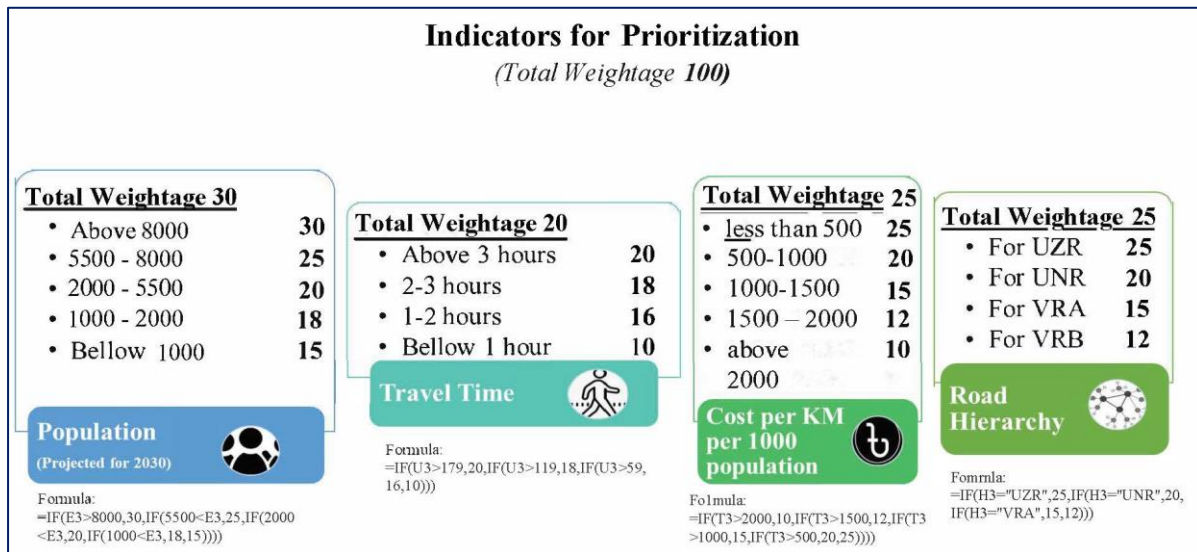


Figure 2: Prioritization indicators & their weightage values

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 DESCRIPTION OF WETLANDS

4.1 DISTRIBUTION OF THE HAORS/ WETLANDS

The upazila has a certain portion of flood plain zone that covers around 30% of its total area. The roads within the flood zone becomes inundated at monsoon, that requires an attention to take relevant measures during road construction and maintenance.

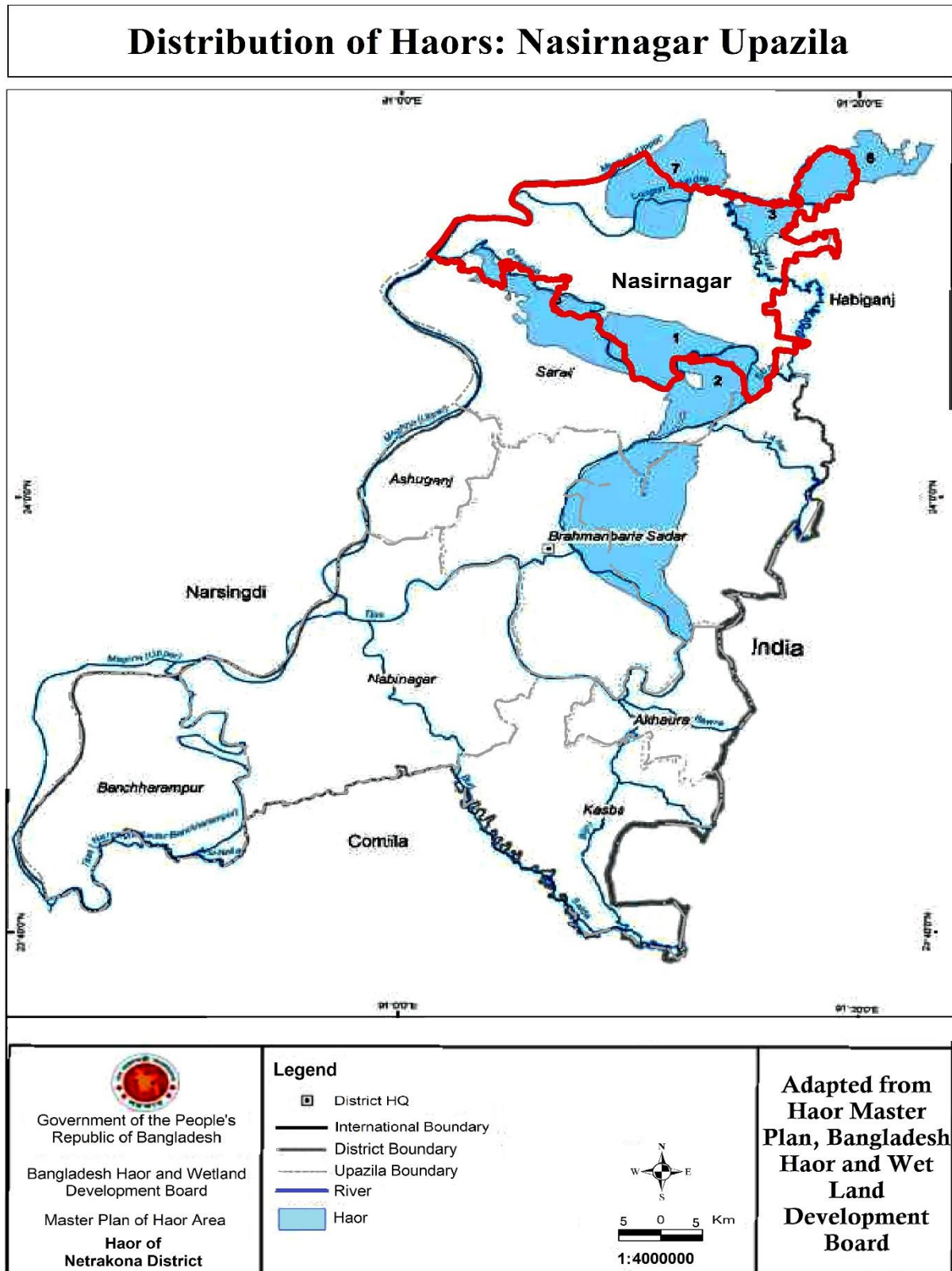


Figure 3: Haor Distribution Map

4.2 HAOR/ WETLAND CATEGORY

However, a little portion of the upazila is within deeply flooded zone. Therefore, road or other infrastructure development in this upazila does not have any major environmental consequences.

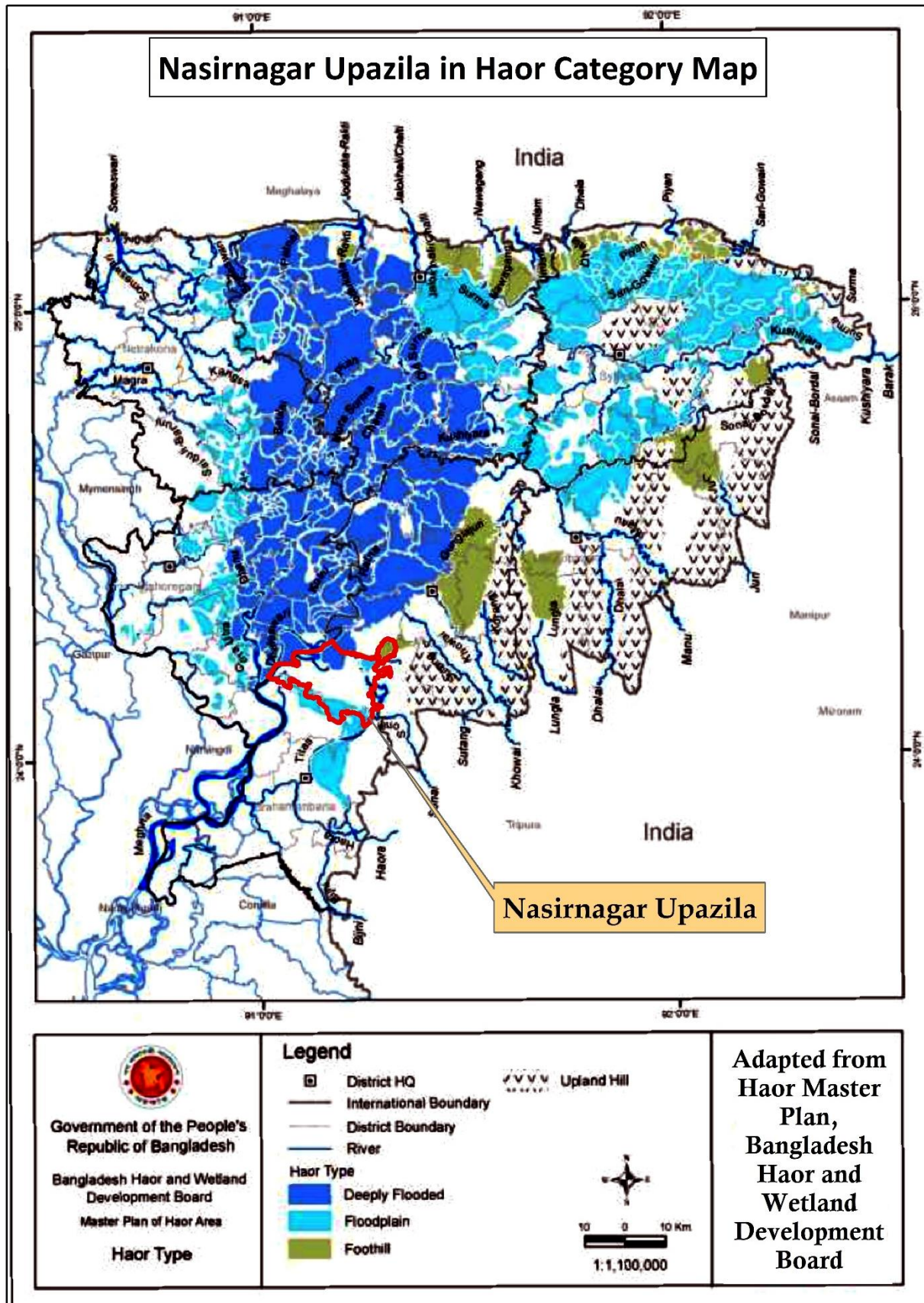


Figure 4: Haor Category Map.

4.3 BIO-ECOLOGICAL CHARACTERISTICS

The Bio-ecological characteristics map of the upazila has been shown below. The map shows that, it is mostly within Meghna Floodplain zone and partially a haor basin. Therefore, adequate opening for the road and road structures should be maintained.

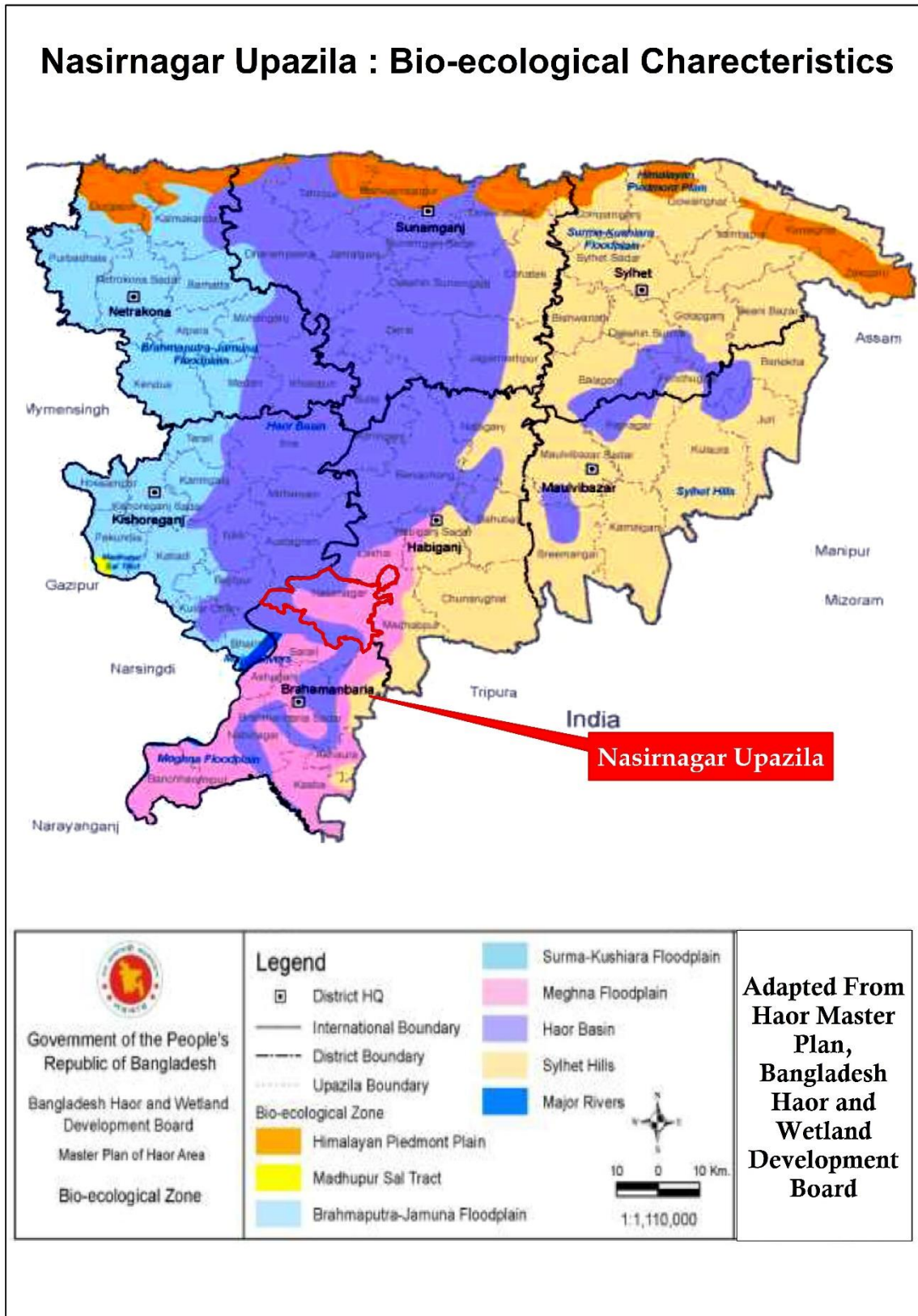


Figure 5: Bio Ecological Characteristics Map

5 RURAL ROAD CONNECTIVITY TO THE VILLAGES

5.1 SUMMARY OF THE VILLAGE CONNECTIVITY

Nasirnagar is an upazila with major haors. The rural road communication is quite poor here. Out of 132 villages, 28 are disconnected from the developed paved road network that brings huge sufferings for the people of those villages. The total rural road network of Nasirnagar is 423.03 km and out of which, 172.21 km paved and 250.82 km earthen.

Table 1: Total villages in the unions and their connectivity

SL No	Union	No of Villages	Connected Villages	Disconnected Villages
1	Bolakot	11	9	2
2	Burishwar	12	12	0
3	Chapartala	9	5	4
4	Chatalpar	18	10	8
5	Dhar Mandal	5	3	2
6	Fandauk	5	3	2
7	Goalnagar	14	11	3
8	Gokarna	10	10	0
9	Guniak	7	5	2
10	Haripur	8	8	0
11	Kunda	11	10	1
12	Nasirnagar	11	8	3
13	Purbabagh	11	9	1
Total=		132	103	28

5.2 VILLAGES AND THEIR CONNECTIVITY – UNION LEVEL

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

Table 2: Union wise connected & disconnected villages and their population

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
Bolakot (11)	1	Baghi	2649	Balikhola	4472
	2	Baruichira	1135	Kadorkandi	802
	3	Bholakot	7628		
	4	Durgapur	1520		
	5	Kandi	3013		
	6	Kandi Para	1110		
	7	Khagalia	6686		
	8	Kutai	2976		
	9	Sadhan	1022		
	Sub Total=			27739	

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
Burishwar (12)	1	Alakpur	800		
	2	Ashurail	5438		
	3	Bholauk	1745		
	4	Burishwar	5119		
	5	Chand Para	850		
	6	Dakshin Singaon	3515		
	7	Ganganagar	803		
	8	Ichhapur	663		
	9	Lakshmipur	3800		
	10	Sreeghar	10769		
	11	Tilpara	1449		
	12	Uttar Bhat Para	753		
		Sub Total=		35704	
Chapartala (9)	1	Baraiuri	489	Bengauta	1256
	2	Garauk	1022	Chapartala	6651
	3	Khandura	3413	Kaliuta	2288
	4	Matiaian	435	Uriain	1303
	5	Taraulla	789		
		Sub Total=		6148	
Chatalpar (18)	1	Baranagar	3548	Bekinagar	1244
	2	Bilerpar	983	Dhantali	5348
	3	Chatalpur	4421	Fakirdia	2269
	4	Fariarkandi	2199	Hasimpur	296
	5	Fulkarkandi	3136	Ichhapur	1061
	6	Ghunjia Khainurpur	5634	Kachua Dighi	4439
	7	Katalkandi	6232	Kairalpur	739
	8	Mankuta	1487	Ratanpur	2894
	9	Niazpur	722		
	10	Patair	3860		
	Sub Total=		32222		18290
Dhar Mandal (5)	1	Daulatpur	4559	Deorath	875
	2	Dhar Mandal	16454	Saiuk	929
	3	Ganna	723		
		Sub Total=		21736	
Fandauk (5)	1	Rajnagar	826	Ataukura	5850
	2	Rasulpur	665	Fandauk	9640
	3	Uttar Singaon	2115		
		Sub Total=		3606	

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
Goalnagar (14)	1	Bhitadubi	1178	Kadamtali	1768
	2	Dakshindia	1438	Lalurtuk	1463
	3	Goalnagar	2384	Maijkhola	1941
	4	Jhamarbali	915		
	5	Machhma	1610		
	6	Naogaon	1787		
	7	Pialapur	225		
	8	Rajnagar	312		
	9	Sabiarampur	2392		
	10	Simerkandi	693		
	11	Sonatala	1523		
			Sub Total=	14457	
Gokarna (10)	1	Brahman Shasan	3127		
	2	Chaikuri	1334		
	3	Chati Para	1976		
	4	Dighar	3650		
	5	Gokarna	8270		
	6	Jethagram	5072		
	7	Lahajura(Pukurpar)	1337		
	8	Nurpur	8977		
	9	Pathaniasar	521		
	10	Suchiura	1272		
			Sub Total=	35536	
Guniak (7)	1	Bara Nischintapur	1189	Gutma	3091
	2	Burunga	455	Matiain	401
	3	Chitna	3935		
	4	Daora	281		
	5	Karagram	539		
			Sub Total=	6399	
Haripur (8)	1	Aliara	2505		
	2	Bara Haripur	9449		
	3	Fulaijur(Ahsanpur)	529		
	4	Harinber	1840		
	5	Jarua	1014		
	6	Naraha	5118		
	7	Rustampur	1407		
	8	Sankardaha	2785		
		Sub Total=	24648		0
Kunda (11)	1	Bariachang	762	Kunda	10101
	2	Beruin	1399		
	3	Bitai	1776		
	4	Guchhagram	1223		

Union	Sl. No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
	5	Kahetura	4905		
	6	Mahishber	5649		
	7	Maslandapur	2202		
	8	Raniachang	339		
	9	Sreerampur	0		
	10	Tula Para	1177		
	Sub Total=		19432		10101
Nasirnagar (11)	1	Dantmandal	4411	Anandapur	636
	2	Dhankura	1320	Nasirnagar	8625
	3	Kamargaon	1187	Rustompur	3437
	4	Kulikunda	5408		
	5	Manoharpur	913		
	6	Nasirpur	4092		
	7	Phulpur	1754		
	8	Tekanagar	1651		
	Sub Total=		20736		12698
Purbabagh (11)	1	Bara Dhalia	715	Bhuban	3154
	2	Belo	1876		
	3	Chander Para	4271		
	4	Kadamtala	835		
	5	Kifatnagar	755		
	6	Koarpur	1588		
	7	Makbulpur	763		
	8	Purbabgh	5209		
	9	Shyampur	1668		
	Sub Total=		17680		3154

5.3 MAP OF DISCONNECTED VILLAGES & PROPOSED ROADS

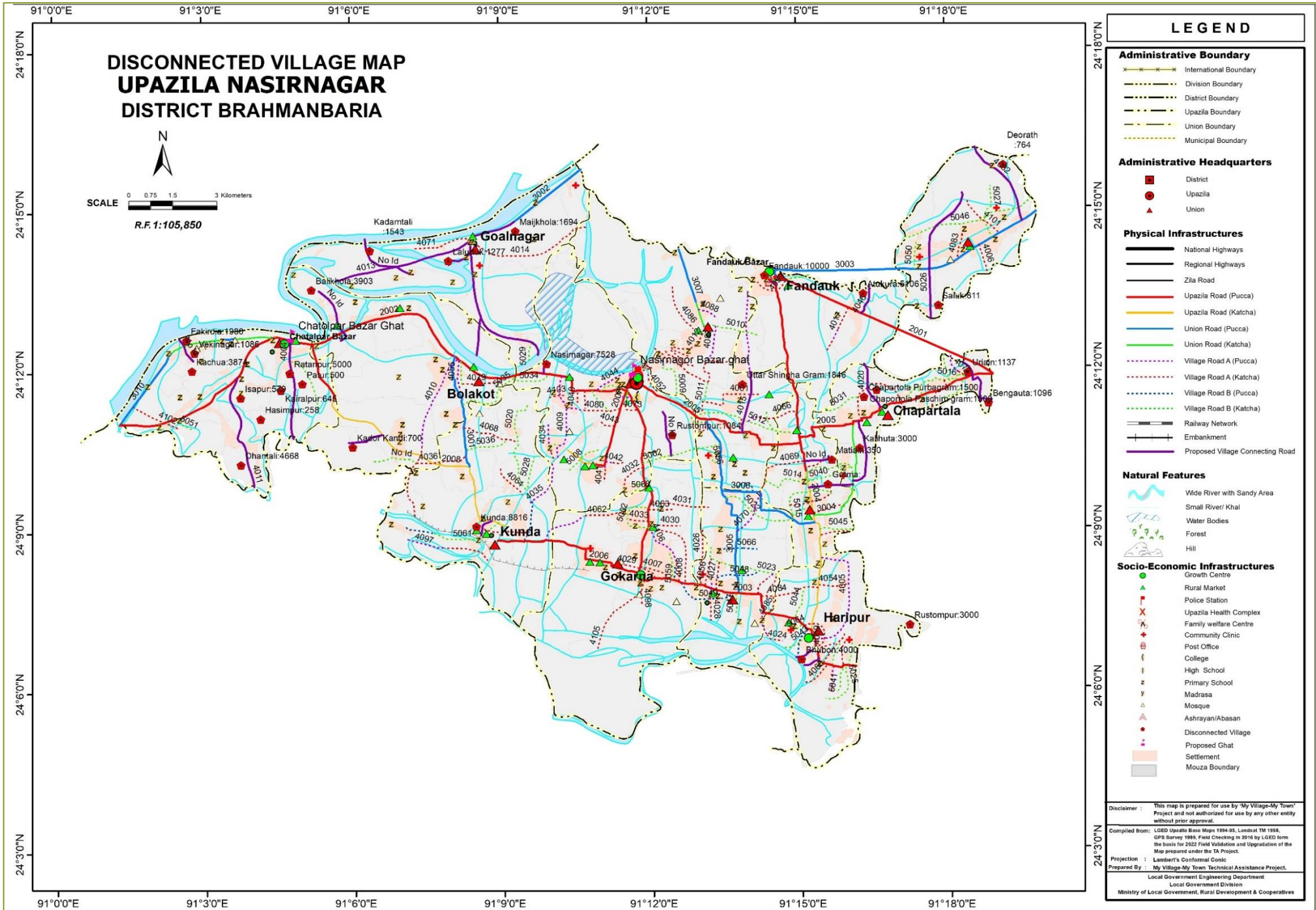


Figure 6: Upazila Map

6 CONSULTATION MEETING & FIELD VISIT

6.1 UPAZILA LEVEL MEETING

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



Figure 7: 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.

6.2 VISIT TO CASE STUDY UNION

The team visited Chatalpar, the case study union in Nasirnagar upazila, through “Baranagar Bazar - Dhantalia Village Road” having the Road ID: 412904011. 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.

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.



Figure 8: Condition of the visited road alignment at case study union

The length of this road is 4.04 km that is totally earthen. The road connects 3 major villages of the union named Dhantali, Isapur and Hasimpur having the total population of approx. 6700. People living here doesn't have any good road network with the Upazila HQ due to having unpaved road communication. There exists, one madrasa and one primary school. Alignment of this road is also a protection wall for the community.

7 DATA COLLECTION & ANALYSIS

The consultant collected data from the field on hard to reach/ disconnected 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:6*) showing prioritized roads and disconnected villages. The proposed riverine & road connectivity by the UE office have been discussed in this section.

7.1 PROPOSED RIVERINE ROUTES

As per actual field visit and data analysis from haor development board, Nasirnagar upazila consists of mostly *Meghna River Basin* and partially deep haor zone. About 7 rivers have flown over the upazila that are the major river *Meghna* along with *Langan, Balvadra, Bomalia, Titash, Karoti, Khasti*. At present, roads are the most dominant mode of transportation. Most of the structures were built on the rivers to make the road communication effective. One the other hand, the UE office, Nasirnagar proposed 2 (two) riverine routes for the upazila as multi-modal transport system.

At dry season, many people use these riverine routes specially for carrying their goods. Generally smaller engine boats are used in the dry seasons as the water level reduces. At monsoon almost 30% of the upazila gets inundated. During this part of the year, smaller & larger boats even cargo ships are readily available to transport community & commodity.

The name of the riverine routes & 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 – Nasirnagar bazar ghat – Nasirnagar vill – Nasirnagar Bhalakut bazar ghat – Chatalpar bazar launch ghat – Fidarkandi ghat	Langan & Meghna	Perennial	Small Boat, Engine Boat, Cargo	No
2	Upazila H/Q – Nasirnagar bazar ghat – Nasirnagar vill – Nasirnagar Bhalakut bazar ghat – Nasirpur bazar ghat – Goalnagar bazar ghat	Langan & Meghna	Intermittent (Apr – Aug)	Small Boat, Engine Boat	Yes

7.2 PROPOSED ROADWAY FOR DISCONNECTED VILLAGES:

At present, roads are the most dominant mode of transportation. Most of the structures were built on the rivers to make the road communication effective. Yet, 4 (four) bridges are needed to fulfil the purpose.

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 disconnected villages (KM)
423.03	172.21	250.82	54.73

7.2.1 PROPOSED ALL WEATHER ROUTES:

There are 10 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	Baranagar Bazar-Dhantalia Village Road	412904011	All weather	4.04
2	Fandauk RHB - Tilpara Road via Singhagram	412904015	All weather	6.92
3	Fandauk (Kamarer Para) - Fandauk Bazar Road Via Iskan Mandir	412904018	All weather	1
4	Atukura Bazar - Uttar gram Road via Ritu Master House	412904046	All Weather	2
5	Gutma Bazar-Gutma Asrayan Road	412904048	All weather	1.1
6	Dharmondal UP Office-Dayrat Community Primary School Road	412904082	All weather	4
7	Chapartala UP - Kaliuta & Mazishail	412904095	All weather	2
8	Kunda UNR-Kunda Embankment Road	412905003	All weather	2.06
9	Bengauta Edgha-Bengauta Road	412905032	All weather	0.9
10	Matiaian Village Road	No ID	All Weather	0.45

7.2.2 PROPOSED SUBMERSIBLE ROUTES:

There are 15 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	Bholakut UP - Rampur Bazar Via Goalnagar UP Office	412903002	Submersible	8.53
2	Ratonpur- Chalk Bazar Road	412904004	Submersible	2.76

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
3	Goalnagar - Kerolkoap Road	412904013	Submersible	4.74
4	Chapartala UP Office - Khashti River via Chapartala Darga Mura	412904020	Submersible	1.5
5	Nasirnagar - Chatalpar GC Road - Kamargoan Rishipara Road	412904037	Submersible	1
6	Horinbarbazar-North gram rd	412904037	Submersible	2
7	Bhubon Govt. Primary School - Bahauddin House	412904092	Submersible	1
8	Uriain RNR - Uriain Village Road	412905019	Submersible	1.9
9	Fakirdiya lanch ghat-Fakirdia khal bridge	No ID	Submersible	0.5
10	Rustompur road	No ID	Submersible	2
11	Balikhola Village Road	No ID	Submersible	2
12	Sonatola River Ghat-Kadamtali Primary School Road	No ID	Submersible	2
13	Goalnagar UP Office-Laluartuk River Ghat and Laluartuk GPS Road	No ID	Submersible	2.5
14	Daulatpur-Saiuk Primary School Road	No ID	Submersible	2.25
15	Bagi-Khadorkandi rd	No ID	Submersible	2.5

7.2.3 PROPOSED ROADS FOR DISCONNECTED VILLAGES HAVING NO ID:

There are 8 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 disconnected villages having No ID

Sl. No	Road Name	Road ID	Unpaved length (Km)
1	Matiaian Village Road	No ID	0.45
2	Fakirdiya lanch ghat-Fakirdia khal bridge	No ID	0.5
3	Rustompur road	No ID	2
4	Balikhola Village Road	No ID	2
5	Sonatola River Ghat-Kadamtali Primary School Road	No ID	2
6	Goalnagar UP Office-Laluartuk River Ghat and Laluartuk GPS Road	No ID	2.5
7	Daulatpur-Saiuk Primary School Road	No ID	2.25
8	Bagi-Khadorkandi rd	No ID	2.5

7.2.4 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.

8 CONCLUSION & RECOMMENDATIONS

- Nasirnagar Upazila is located within Middle Meghna Flood Plain zone and it has partially Deeply Flooded, Flood Plain and Foothill areas. There are 7 (Seven) major rivers that dominate the ecosystem, transport system of the Upazila. That are Meghna, Lagan, Balyadra, Bomalia, Titas, Karoti & Khasti rivers. During monsoon, these rivers carry huge volume of flood water. Though the Upazila has a number of rivers, riverine transport is available in this Upazila only during April – August and some can be used throughout the year. Small boats, Engine boats and Cargo ships carrying agricultural products and passengers.
- As the Upazila is heavily flooded during monsoon, rural roads and structures are highly vulnerable in this Upazila.
- The Upazila has a total number of 28 disconnected villages. To develop rural connectivity, there are proposals for all weather as well as 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 disasters. Due to climate change, the vulnerability is getting intense. The year 2022 has shown catastrophic flood that was not seen over the last 18years (last in 2004 similar to 1998 & 1988). Therefore, it is highly recommended to study the road alignments before going for investment.
- Case by case design of roads in this Upazila considering different aspects such as exposure to floods, erosion etc. is highly recommended. A special study regarding the road and structure design of the Upazila Nasirnagar in Brahmanbaria 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		
BURISHWAR	LAKSHMIPUR BAZAR	HB	Yes	General Market	Wholesale	2					0.32		2460	2360
CHAPAIRTALA	CHAPAIRTALA BAZAR	HB	Yes	General Market	Both	1						0.50	3504	3200
CHATALPAR	CHATALPAR BARA BAZAR	GC	Yes	General Market	Both	1				0.06	2.10	2.90	550000	1570000
CHATALPAR	CHATALPAR PASHUR BAZAR	HB	Yes	General Market	Both	1					0.45		0	3901500
DHARMANDAL	DHARMANDAL BAZAR	HB	Yes	General Market	Both	1				0.39	0.39	1.20	0	36000
FANDAUK	FANDAUK	GC	Yes	General Market	Both	1				0.98	0.98	2.50	137500	141111
FANDAUK	FANDAUK PASHUR BAZAR	HB	Yes	General Market	Both	1					0.71		6649321	5060000
GOALNAGAR	GOALNAGAR	HB	Yes	General Market	Wholesale	1							0	4400
GOKARNA	CHAIRKURI BAZAR	GC	Yes	General Market	Both	1	26	0.13	26	0.18	0.80	2.30	20000	81550
GUNIAUK	GUNIAUK	HB	Yes	General Market	Wholesale	2	2	0.01	12	0.10	0.05	1.20	20005	0
HORIPUR	HORINBER	GC	Yes	General Market	Wholesale	2				0.21	0.63	0.20	90000	70800
NASIRNAGAR SADAR	KOLIKHUNDA PASHUR BAZAR	HB	Yes	Special Market	Both	3					0.40		28100	4000
NASIRNAGAR SADAR	NASIRNAGAR	GC	Yes	General Market	Both	1	6	0.04	8	0.31	0.50	1.45	194700	177000
NASIRNAGAR SADAR	NASIRPUR	HB	Yes	General Market	Both	1	4	0.02	4	0.20	0.28	0.77	42500	25500
PREFACE	SHAMPUR BAZAR	HB	Yes	General Market	Wholesale	2				0.16	0.16	0.20	24000	24000
VALAKUT	BARUICHERA	HB	Yes	General Market	Both	2				0.05	0.30	0.90	661100	311000
VALAKUT	VALAKUT	HB	Yes	General Market	Both	1				0.15	0.63	2.00	661000	311000

ANNEXURE - 2

PRIORITY LIST FOR ROAD DEVELOPMENT

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
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	Chatalpar	Dhantali, Isapur, Hasimpur	6705	Baranagar Bazar-Dhantalia Village Road	412904011	VRA	All weather	4.04			4.04	4.04	484.8	45	405	889.8	1660	133	61	25	16	25	15	81
2	Fandauk	Fandauk	11458	Fandauk (Kamarer Para) - Fandauk Bazar Road Via Iskan Mandir	412904018	VRA	All weather	1			1	1	120	10	90	210	11458	18	15	30	10	25	15	80
3	Nasirnagar	Nasirnagar	8625	Nasirnagar - Chatalpar GC Road - Kamargoan Rishipara Road	412904037	VRA	Submersible	1			1	1	180		0	180	8625	21	15	30	10	25	15	80
4	Chatalpar	Kairalpur, Ratonpur, Fulkarkandi	10931	Ratonpur- Fulkarkandi Road	412904004	VRA	Submersible	2.76			2.76	2.76	496.8		0	496.8	3960	45	41	30	10	25	15	80
5	Kunda	Kunda	10101	Kunda UNR-Kunda Embankment Road	412905003	VRB	All weather	2.06			2.06	2.06	247.2	30	270	517.2	4903	51	31	30	10	25	12	77
6	Goalnagar	Maijkhola	1943	Bholakut UP - Rampur Bazar Via Goalnagar UP Office	412903002	UNR	Submersible	11.53	3		8.53	8.53	1535.4		0	1535.4	228	790	128	18	18	20	20	76
7	Chapartala	Chapartala	6651	Chapartala UP Office - Khashti River via Chapartala Darga Mura	412904020	VRA	Submersible	1.5			1.5	1.5	270	50	450	720	4434	108	23	25	10	25	15	75
8	Fandauk	Atukura	5850	Atukura Bazar - Uttar gram Road via Ritu Master House	412904046	VRA	All Weather	2			2	2	240	50	450	690	2925	118	30	25	10	25	15	75
9	Goalnagar	Maijkhola	1942	Goalnagar - Kerolkoap Road	412904013	VRA	Submersible	4.74			4.74	4.74	853.2		0	853.2	410	439	71	18	16	25	15	74
10	Purba Bagh	Bhubon	3154	Bhubon Govt. Primary School - Bahauddin House	412904092	VRA	Submersible	1			1	1	180		0	180	3154	57	15	20	10	25	15	70
11	Guniak	Gutma	3091	Gutma Bazar-Gutma Asrayan Road	412904048	VRA	All weather	1.1			1.1	1.1	132	51	459	591	2810	191	17	20	10	25	15	70
12	Chapartala	Kalihuta	2288	Chapartala UP - Kaliuta & Mazishail	412904095	VRA	All weather	2			2	2	240	30	270	510	1144	223	30	20	10	25	15	70
13	Chapartala	Uriain	1303	Uriain RNR - Uriain Village Road	412905019	VRB	All weather	1.9			1.9	1.9	228		0	228	686	175	29	18	10	25	12	65
14	Chapartala	Bengauta	1256	Bengauta Edgha-Bengauta Road	412905032	VRB	All weather	0.9			0.9	0.9	108	15	135	243	1395	194	14	18	10	25	12	65
15	Dhar Mandal	Deorath	875	Dharmondal UP Office-Dayrat Community Primary School Road	412904082	VRA	All weather	4			4	4	480	60	540	1020	219	1165	60	15	16	15	15	61
16	Nasirnagar	Ahsanpur	636	Horinbarbazar-North gram rd	412904061	VRA	Submersible	2			2	2	360	200	1800	2160	318	3397	30	15	10	10	15	50
17	Chatalpar	Kachua, Vekinagor, Fakirdia	7882	Fakirdiya lanch ghat-Fakirdia khal bridge	No ID	VRB	Submersible	0.5			0.5	0.5	90		0	90	15763	11	8	25	10	25	12	72
18	Nasirnagar	Rustompur	3437	Rustompur road	No ID	VRB	All Weather	2			2	2	240	5	45	285	1719	83	30	20	10	25	12	67
19	Bolakot	Balikhola	4472	Balikhola Village Road	No ID	VRB	Submersible	2			2	2	360	50	450	810	2236	181	30	20	10	25	12	67
20	Goalnagar	Kadamtali	1768	Sonatola River Ghat-Kadamtali Primary School Road	No ID	VRB	Submersible	2			2	2	360		0	360	884	204	30	18	10	25	12	65
21	Goalnagar	Lalurtuk	1463	Goalnagar UP Office-Laluartuk River Ghat and Laluartuk GPS Road	No ID	VRB	Submersible	2.5			2.5	2.5	450		0	450	585	308	38	18	10	25	12	65
22	Dhar Mandal	Saiuk	929	Daulatpur-Saiuk Primary School Road	No ID	VRB	Submersible	2.25			2.25	2.25	405		0	405	413	436	34	15	10	25	12	62
23	Bolakot	Kadorkandi	802	Bagi-Khadorkandi rd	No ID	VRB	Submersible	2.5			2.5	2.5	450		0	450	321	561	38	15	10	20	12	57
24	Guniak	Matiaian	401	Matiaian Village Road	No ID	VRB	All Weather	0.45			0.45	0.45	54	30	270	324	891	808	7	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)