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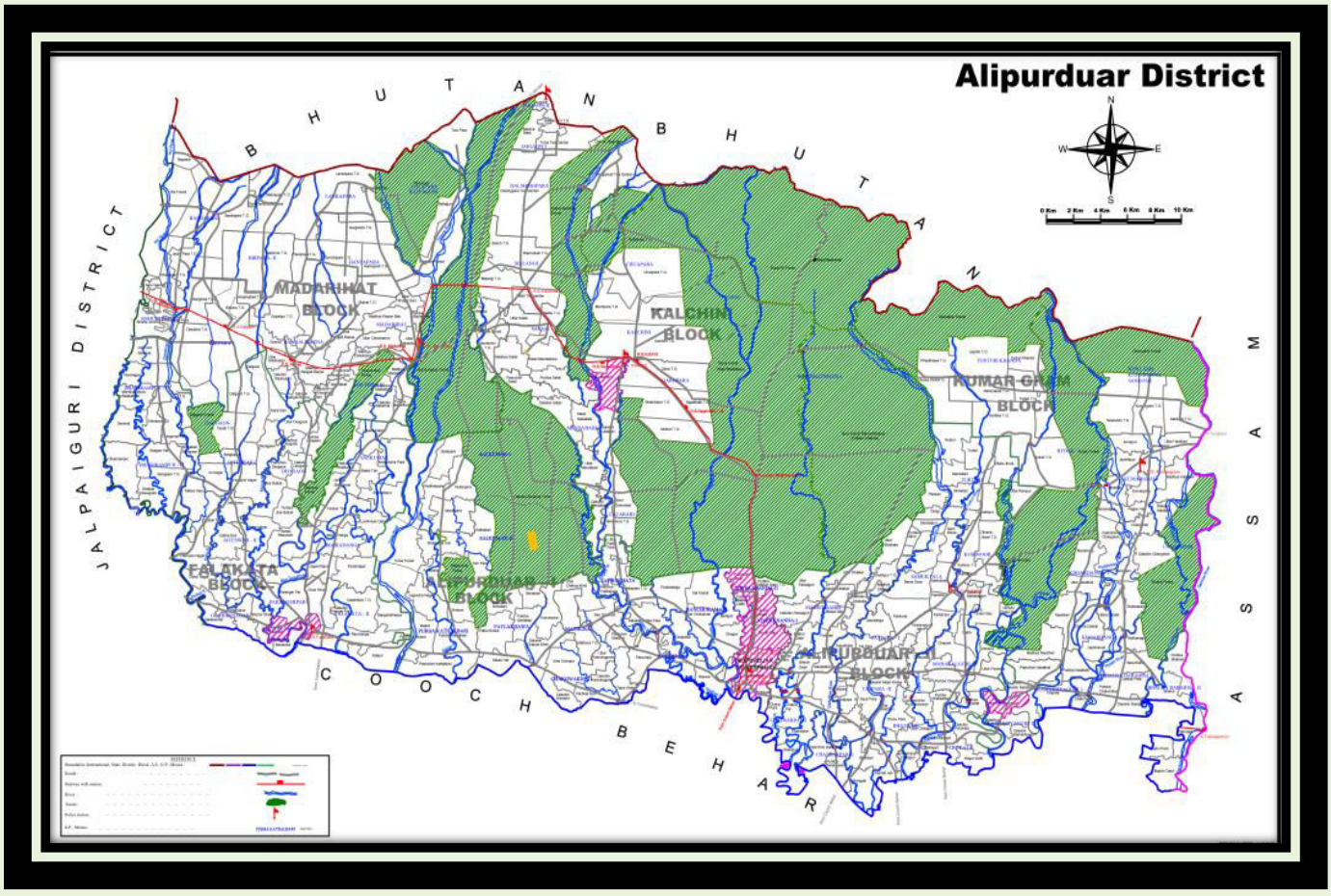
Disaster Management Plan 2019

District-Alipurduar



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FOREWORD

Disaster is a negative consequence of an event, natural or manmade, which brings major societal damage and disrupts developmental work. Sometimes it happens by chance without any notice or within a very short notice depending upon the nature of the event whether predictable or unpredictable. But be it predictable or unpredictable, loss and damage is inevitable which can be minimized only through proper mitigation and coordination plan. District Disaster Management Plan is a blueprint of entire disaster management activities encompassing preparedness measures, prevention and mitigation techniques, societal capacity, standard operating procedures, relief, response and rescue activities. I am delighted to publish Disaster Management Plan for the year 2019 of Alipurduar district, 20th district of West Bengal.

The district is diverse in terrain as well as ethnicity. Important places like Buxa Tiger Reserve, Jaldapara National Park, Jayanti Hills, Buxa Fort etc. have always drawn the attention of tourists from different corner. The district is also cut across by various mountainous rivers like Torsha, Holong, Mujnai, Rydak, Kaljani, Sankosh etc. which turns mighty and dangerous during rainy season. Thus the presence of these rivers has made the district a possible victim of flood during monsoon season every year. Of these, the year 1993 is notable as it was in this year that the district was ravaged by severe floods which left a deep mark among masses and recently, in the year 2017 also, the district has experienced a severe flash flood due to abnormal rainfall. A detail analysis reveals that natural issues like geographical position, slope, river bed rising, valley widening, river course network change etc. are triggering factors of such events which are beyond the range of human effort whereas factors like ignorance, inhumanity, lack of fellow feeling, unnecessary usage of natural resources are purely anthropogenic which can easily be tackled. However, in order to manage disasters like flash flood, earthquake or thunderstorm, it is prudent to be ready beforehand. Co-operation between different departments and various stakeholders in this regard is an absolute necessity which has been elaborated in the Disaster Management Plan as per NDMA guidelines with the intention of providing immediate and speedy remedial measures to face any kind of challenges in a disaster prone district like Alipurduar. This particular edition is a detail analysis of various aspects of disaster management and compilation of the flood contingency plans of Sub-Division, various Blocks and departments of Alipurduar district as well as provides information about various mode of action during any natural calamity.

I am supremely confident that this plan will help the authority and steering committee members at the time of need. Any suggestions/comments to enrich the document from the stakeholders will be highly appreciated.

Sri Shubhanjan Das, IAS
District Magistrate
Alipurduar

Acknowledgement

This document has been compiled by the information provided by various line departments like Irrigation, Health, Police, Civil Defence, PWD, Agriculture, District Industrial Centre, Bureau of Applied Economics and Statistics, Rail, Food Supply, Forest, Education, Inter - Agency Group etc. and other administrative offices like Sub-division and Blocks. During compilation of this book, numerous suggestions were also provided by State Disaster Management Authority. District Disaster Management Authority acknowledges the contribution of the above mentioned departments.

CONTENT

Abbreviation

AERB: Atomic Energy Regulatory Board
AHD: Animal Husbandry Department
ASSOCHAM: Associated Chambers of Commerce and Industry of India
ATI: Administrative Training Institute
AWS: Automatic Weather Station
BAI: Builders Association of India
BBB: Build Back Better
BIS: Bureau of Indian Standards
BMTPC: Building Materials and Technology Promotion Council
CADA: Coastal Area Development Authority
CAPF: Central Armed Police Forces
CAZRI: Central Arid Zone Research Institute
CBO: Community Based Organization
CBRI: Central Building Research Institute
CBRN: Chemical, Biological, Radiological and Nuclear Disaster
CCG: Central Crisis Group
CCS: Cabinet Committee on Security
CDMM: Centre for Disaster Mitigation and Management
CFCB: Central Flood Control Board
CFI: Construction Federation of India
CGWB: Central Ground Water Board
CIDC: Construction Industry Development Council
CII: Confederation of Indian Industry
CMG: Crisis Management Group
CoR: Commissioner of Relief
CPCB: Central Pollution Control Board
CRIDA: Central Research Institute for Dry land Agriculture
CRPF: Central Reserved Police Force
CRRI: Central Road Research Institute
CRZ: Coastal Regulation Zone
CSIR: Council of Scientific and Industrial Research
CSS: Centrally Sponsored Schemes
CWC: Central Water Commission
CWDS: Cyclone Warning Dissemination System
CZMA: Coastal Zone Management Authority
DAE: Department of Atomic Energy
DCG: District Crisis Group
DDMA: District Disaster Management Authority
DeitY: Department of Electronics and Information Technology
DEOC: District Emergency Operation Center
DGM: Directorates of Geology and Mining
DM: Disaster Management
DMC: Drought Monitoring Cell
DMP: Disaster Management Plan
DoACFW: Department of Agriculture, Cooperation and Farmers Welfare
DoAHDF: Department of Animal Husbandry, Dairying, and Fisheries

DoPT: Department of Personnel and Training
DoS: Department of Space
DoT: Department of Telecommunications
DRD: Department of Rural Development
DRDO: Defense Research and Development Organization
DRR: Disaster Risk Reduction
DSJE: Department of Social Justice and Empowerment
DSS: Decision Support System
DST: Department of Science and Technology
DWR: Doppler Weather Radar
EHRA: Earthquake Hazard and Risk Assessment
EIA: Environment Impact Assessment
EOC: Emergency Operations Centre
ERC: Emergency Response Centers
EREC: Earthquake Risk Evaluation Centre
ESF: Emergency Support Functionaries
EWS: Early Warning System
FC: Finance Commission
FCI: Food Corporation of India
FES: Fire and Emergency Services
FICCI: Federation of Indian Chambers of Commerce and Industry
GAR: Global Assessment Report
GDP: Gross Domestic Product
GIS: Geographical Information System
GoI: Government of India
GSI: Geological Survey of India
GST: Goods and Service Tax
HAZCHEM: Hazardous Chemicals
HF: High Frequency
HFL: Highest Flood Level
HLC: High Level Committee
HRVA: Hazard Risk and Vulnerability Assessment
IAEA: International Atomic Energy Agency
IAF: Indian Air Force
IAP: Incident Action Plan
ICAR: Indian Council of Agricultural Research
ICG: Indian Coast Guard
ICT: Information and Communication Technology
IDRN: Indian Disaster Resource Network
IDS: Integrated Defense Staff
IE (I): Institution of Engineers (India)
IEC: Information Education and Communication
IERMON: Indian Environmental Radiation Monitoring Network
IIA: Indian Institute of Architects
IIE: Indian Institute of Entrepreneurship
IIRS: Indian Institute of Remote Sensing
IIT: Indian Institute of Technology
IITM: Indian Institute of Tropical Meteorology
IMA: Indian Medical Association
IMD: India Meteorological Department

INCOIS: Indian National Centre for Ocean Information Services
IND: Improvised Nuclear Device
INES: International Nuclear Event Scale
INSARAG: International Search and Rescue Advisory Group
IRC: Indian Roads Congress
IRDA: Insurance Regulatory and Development Authority
IRS: Incident Response System
IRT: Incident Response Team
ISDR: International Strategy for Disaster Reduction
ISRO: Indian Space Research Organization
ITI: Industrial Training Institute
IWAI: Inland Waterways Authority of India
IWRM: Integrated Water Resources Management
LBSNAA: Lal Bahadur Shastri National Academy of Administration
M&E: Monitoring and Evaluation
MAH: Major Accident Hazard
MAI: Moisture Adequacy Index
MCI: Medical Council of India
MEA: Ministry of External Affairs
MHA: Ministry of Home Affairs
MoAFW: Ministry of Agriculture and Farmers Welfare
MoCA: Ministry of Civil Aviation
MoCAFPD: Ministry of Consumer Affairs, Food and Public Distribution
MoCF: Ministry of Chemicals and Fertilizers
MoCI: Ministry of Commerce and Industry
MoCIT: Ministry of Communications and Information Technology
MoD: Ministry of Defence
MoDWS: Ministry of Drinking Water and Sanitation
MoEFCC: Ministry of Environment, Forests and Climate Change
MoES: Ministry of Earth Sciences
MoF: Ministry of Finance
MoFPI: Ministry of Food Processing Industries
MoHFW: Ministry of Health and Family Welfare
MoHIPE: Ministry of Heavy Industries and Public Enterprises
MoHRD: Ministry of Human Resource Development
MoHUPA: Ministry of Housing and Urban Poverty Alleviation
MoIB: Ministry of Information and Broadcasting
MoLE: Ministry of Labour and Employment
MoM: Ministry of Mines
MoMSME: Ministry of Micro Small and Medium Enterprises
MoNRE: Ministry of New and Renewable Energy
MoP: Ministry of Power
MoPA: Ministry of Parliamentary Affairs
MoPNG: Ministry of Petroleum and Natural Gas
MoPR: Ministry of Panchayati Raj
MoR: Ministry of Railways
MoRD: Ministry of Rural Development
MoRTH: Ministry of Road Transport and Highways
MoSDE: Ministry of Skill Development and Entrepreneurship
MoSJE: Ministry of Social Justice and Empowerment

MoST: Ministry of Science and Technology
MoU: Memorandum of Understanding
MoUD: Ministry of Urban Development
MoWCD: Ministry of Women and Child Development
MoWR: Ministry of Water Resources
MoYAS: Ministry of Youth Affairs and Sports
MPCS: Multi-Purpose Cyclone Shelter
MSIHC: Manufacture Storage and Import of Hazardous Chemicals
NABARD: National Bank for Agriculture and Rural Development
NAC: National Academy of Construction
NATMO: National Atlas and Thematic Mapping Organization
NBCC: National Buildings Construction Corporation
NCC: National Cadet Corps
NCERT: National Council of Educational Research and Training
NCFC: National Crop Forecast Centre
NCMC: National Crisis Management Committee
NCMRWF: National Centre of Medium Range Weather Forecasting
NCT: National Capital Territory
NDMA: National Disaster Management Authority
NDMF: National Disaster Mitigation Fund
NDMP: National Disaster Management Plan
NDRF: National Disaster Response Force
NDVI: Normalized Differential Vegetation Index
NEC: National Executive Committee
NECN: National Emergency Communication Network
NEOC: National Emergency Operations Center
NER: North East Region
NGOs: Non-Governmental Organizations
NHAI: National Highways Authority of India
NHWIS: National Hazardous Waste Information System
NIC: National Informatics Centre
NICMAR: National Institute of Construction Management and Research
NIDM: National Institute of Disaster Management
NIO: North Indian Ocean
NIRD: National Institute of Rural Development
NISA: National Institute of Security Academy
NITTTR: National Institute of Technical Teachers' Training and Research
NPDM: National Policy on Disaster Management
NRAA: National Rain fed Area Authority
NRE: Nuclear and Radiological Event
NREMP: National Radiation Emergency Management Plan
NRSC: National Remote Sensing Centre
NSDA: National Skill Development Agency
NSDC: National Skill Development Corporation
NSS: National Service Scheme
NWDA: National Water Development Agency
NYKS: Nehru Yuvak Kendra Sangathan
O&M: Operation and Maintenance
PRD: Panchayati Raj Department
PRIs: Panchayati Raj Institutions

PWD: Public Works Department
R&D: Research and Development
RBI: Reserve Bank of India
RDD: Radiological Dispersal Device
RDSO: Research Designs and Standards Organization
RO: Reverse Osmosis
RTSMN: Real Time Seismic Monitoring Network
SAC: Space Applications Centre
SASE: Snow and Avalanche Study Establishment
SAU: State Agricultural University
SAVI: Soil Adjusted Vegetation Index
SBSE: State Board of Secondary Education
SDMA: State Disaster Management Authority
SDMC: State Drought Monitoring Cell
SDMF: State Disaster Mitigation Fund
SDRF: State Disaster Response Force
SDRN: State Disaster Resource Network
SEC: State Executive Committee
SEOC: State Emergency Operation Center
SERC: Structural Engineering Research Centre
SFAC: Standing Fire Advisory Council
SHG: Self Help Group
SIDM: State Institute of Disaster Management
SIRD: State Institute of Rural Development
SLBC: State Level Bankers' Committee
SOG: Standard Operating Guidelines
SoI: Survey of India
SOP: Standard Operating Procedure
SPCB: State Pollution Control Board
SRSAC: State Remote Sensing Application Centre
SRSC: State Remote Sensing Centers
SWAN: State Wide Area Network
ToT: Training of Trainers
UDD: Urban Development Department
UFDM: Urban Flood Disaster Management
ULB: Urban Local Bodies
UN: United Nations
UNDP: United Nations Development Program
UNISDR: United Nations International Strategy for Disaster Reduction
USDDM: Urban Storm Drainage Design Manual
UT: Union Territory
VHF: Very High Frequency
WRD: Water Resources Department

An overview of Disaster Management

Matter	Description		
Hazard	Any potential threat		
Disaster	any potential threat due to natural or manmade event that bring negative impact into our society		
	Natural Disaster		Earth Quake, flood, tsunami, cyclone, forest fire, land slide, lightning, river erosion, island inundation, changing of river course network, heat wave, cold wave, climate change.
	Manmade disasters		Communal riot, child trafficking, sexual harassment, deforestation, illegal construction, gender bias, environmental pollution, nuclear and chemical disaster.
Vulnerability	State of being exposed due to disaster, a kind of weakness and triggering factor for amplifying aftermath of any untoward situation.		
Disaster Management	Concept adopted by the govt. to handle any kind of adverse situation with an approach of minimizing the loss and damage by the help of existing resources.		
Activities	Pre disaster	Preparation of Disaster Management Plan, Community awareness, vulnerability analysis, early warning dissemination, mock drill, relief material distribution, resource mobilization in advance.	
	During disaster	Activate Incident Response Team (IRT) depending upon the nature and gravity of the situation, Sending daily situation report, CA-II report, Deployment of response team at the place of occurrence promptly, opening of relief camp and gruel kitchen, distribution of relief materials among distressed people, saving lives etc.	
	Post disaster	Removal of carcass, loss and damage assessment of life and property in terms of money, clearance of road blocked by any obstacle, bring back any emergency situation into normalcy, reimbursement of money or relief materials under various scheme among the beneficiaries etc.	
Magna Carta for rules and regulations	DM Act 2005		
DM plan	NDMP (National) SDMP (state) DDMP (District) BDMP (Block) Village level plan (village)		
Ministry	MHA		
Governing body who oversee actions	NDMA (Central) SDMA (State) DDMA (District) SDDMA (Sub Division) BDMC (Block)		
Line of Action	Standard Operating Procedure (SOP) Incidence Response System (IRS)		
Govt. Official	Principal Secretary & relief commissioner , Director (State) O/C- DMS, DDMO, Disaster Management Professional (District) SDDMO (Sub division) BDMO (Block)		
Search and rescue team	NDRF (central) SDRF, Police (state) QRT, Crisis Management Group, CD volunteers, SSB, BSF, Police (District)		
Stakeholders and line departments	Irrigation, PWD (Roads and construction), PHE, Health, Police, Agriculture, Food and supply, Forest, Fisheries, Animal Resource Department, Various NGOs and CBOs.		
Various nodal ministries for different kind of disasters	**Disaster**		**Ministry**
	Biological		Ministry of Health and Family Welfare
	Chemical and Industrial		Ministry of Environment, Forest and Climate Change
	Civil Aviation Accidents		Ministry of Civil Aviation

	Cyclone/Tornado/Tsunami/Earthquake	Ministry of Earth Science
	Flood	Ministry of Water Resources
	Landslide	Ministry of Mines
	Avalanche	Ministry of Defence
	Drought/ Hailstorm/Cold Wave/ Pest Attack	Ministry of Agriculture and Farmers Welfare
	Rail Accidents	Ministry of Rail
	Road Accidents	Ministry of Road Transport and Highways
	Nuclear and Radiological Emergency	Dept. of Atomic Energy
	Urban Flood	Ministry of Urban Development

Capacity Building	**Different mode of trainings and awareness**	**Possible area covered**	**Target group**
	Mock drill	Outdoor practice of rescue technique by creating artificial panic based on a hypothetical scenario	Various response forces, local NGOs, school students, govt. officials, different line departments etc.
	Awareness camp and display stall	Leaflet distribution regarding Do's and Don'ts, various relief grants and showcasing rescue equipments	Local people, community members.
	Seminar and workshop	Various risk reduction techniques, climate change, relief, response and rescue, First aid.	Engineers (Nirman sahayak), Govt. officers, School teachers, medical practitioners etc.
	Training of Trainers	Imparting training on disaster risk management.	Various govt. officers, teachers, mason and engineers.
	Civil Defence Basic Training, Fire fighting, Scuba diving	Collection of various in house and outdoor training and practices as the name suggest to local QRT network stronger	Local boys and girls
Training centre	NIDM (Central) ATI (State) RTC (District)		

Various financial schemes	**Type**	**Purpose of sanctioning**
	Mitigation Fund	Strengthening SDMA and DDMA Renovation of State EOC, District EOC and Control Room with the help of cutting edge technology and equipments Early warning centre
	Relief scheme	Exgratia grant Economic Rehabilitation grant House Building grant Gratuitous Relief (kind/cash or both) Various necessary articles like garments, blankets, Tarpaulin sheet etc.
	Construction scheme	Relief Godown Flood shelter Cyclone shelter

SYNOPSIS

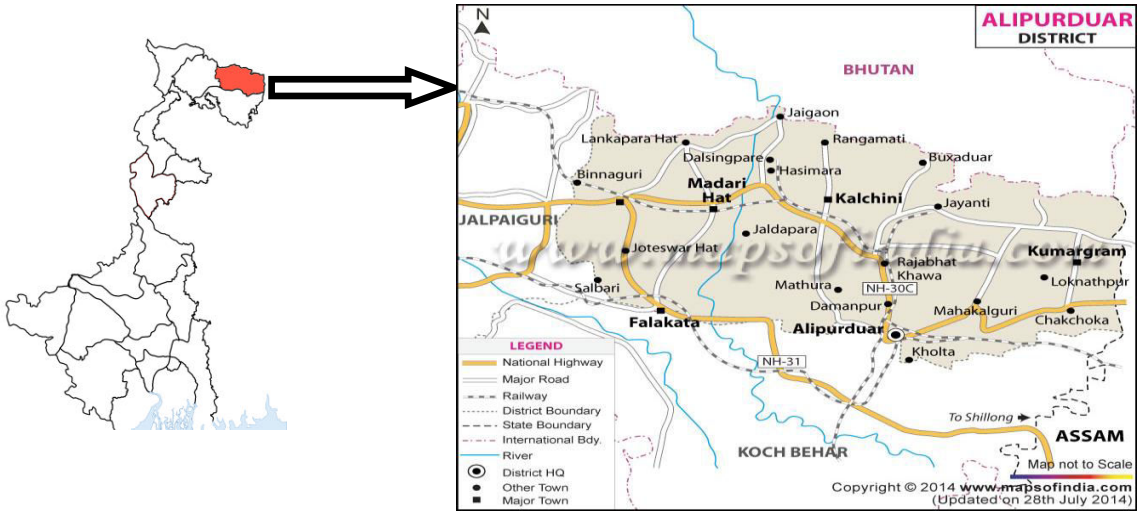
Natural hazard may occur at any time without notice. If we will not prepare to combat the challenge, it will turn into a disaster. And it is needless to say that disaster can bring damage to property, loss of life and disrupt societal development which can be minimized through proper planning at each administrative level. District Disaster Management Plan is a roadmap to tackle this kind of negative consequences due to natural hazard with existing resources and minimum effort at district level. It is a readymade guidebook for steering incident response team in a proper way, overseeing entire gamut of disaster management activities systematically and cater relief/rescue work. With that intension in mind, our District Disaster Management Plan has been prepared and made ready beforehand. The entire plan is consist of several chapters and one annexure in the format furnished below.

Segment	Description
District Profile	Basic statistics of the District District Climatology Topography and detail of various rivers Rainfall Analysis Land use pattern Population chart
Chapter 1	Objective, background and evaluation of DDMP Disaster Management Activity Different Stakeholders and their responsibilities DDMP framework
Chapter 2	Basic Terminologies Hazard history Risk and Vulnerability Analysis based on specific disasters Vulnerable area identification Tools and techniques of HRVA
Chapter 3	Institutional set-up at different administrative level Disaster Management Authorities Emergency Operation Centre Flood Control Room Incidence Response System Inter Agency Group
Chapter 4	Prevention and Mitigation Technique Structural and non-structural mitigation for different hazards Mainstreaming DRR with various Flagship programs
Chapter 5	Various Preparedness measure Early warning Search and Rescue Evacuation Damage and Loss assessment

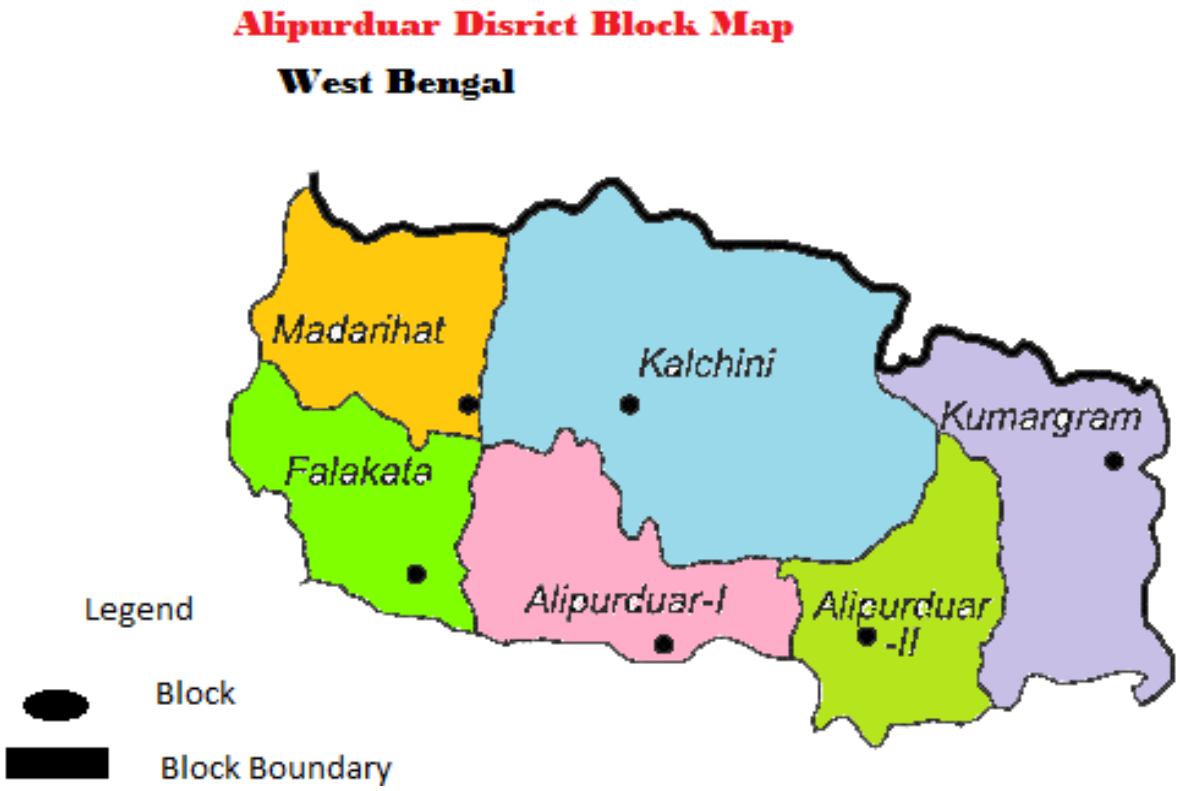
Chapter 6	Different types of training and mock drill Importance of awareness and training Training calendar
Chapter 7	Relief and Rescue Measure Resource Mobilization Response Flow Chart Responsibility Matrix
Chapter 8	Reconstruction and Recovery Measures Post Disaster Need Analysis Damage and Loss Assessment
Chapter 9	Various Financial resources Different type of existing relief scheme Mitigation and Response fund Disaster Risk Insurance
Chapter 10	Monitoring , Evaluation and Updation of DDMP
Chapter 11	Co-ordination mechanism for implementing DM plan Contingency plan of various line departments
Chapter 12	Standard Operating Procedures for different disasters : • Flood • Railway Disaster • Earthquake • Crowd Management • Drowning and Checklist of rescue items
Annexure	Important contact numbers Sluice Gate details in Alipurduar Town List of Dry Food Storing Agents and Dealers Important Research Organization Various International/National Day Various reports/manuals/books

DISTRICT PROFILE

The name Alipurduar derives after the name of Col. Hedayat Ali who was stationed once upon a time beside the bank of river Kaljani and rendered exemplary support and services during Indo-Bhutan war with great courage. Previously Alipurduar was a sub-division under the jurisdiction of Jalpaiguri District and later segregated from the same on 25th June, 2014 as 20th ammendment in the list of district in West Bengal, India. Alipurduar earned this long pending administrative upliftment based on several factors like challenging geographical position, fail to keep pace with various developmental scheme, population density and number of important establishment. It is consists of one municipality, one sadar sub-division and six community development blocks viz Madarihat–Birpara, Alipurduar–I, Alipurduar–II, Falakata, Kalchini and Kumargram. These blocks are further divided into 66 gram panchayats and nine census towns. This place comprises mainly of a rural population. More than 80 per cent of its total population belongs to SC/ST community **(2011 census)**. It is the hometown of various ethnic tribes like Rajbanshi, Rabha, Mech, Lepcha, Dukpa, Santhals, Madasia, Bodo and Toto & Oraons.



Alipurduar is situated at sub-himalayan foothills in the lap of Bhutan. Geographically it is land-locked by Jalpaiguri in the west, Assam in the east and Coochbihar in the south and the overall inter-state border is 28 km (in the east with Assam). In the north it shares an international border line with Bhutan spanning 45 km (Gumtu (Bhutan) in the west upto Kalikhola in the east) and hence the northern part serves as an important corridor in terms of international trade and commerce.The land is cut across by different landscape features like rivers, streams, jhoras, hills, tea garden, forest and habitation. Major rivers that runs across the district are Torsa, Raidak-I, Raidak-II, Jayanti, Kaljani, and Sankosh. Apart from all these, there are various non-perennial minor rivers, streams and jhoras that exist only in the rainy season. A fairly large portion of this District is under forest cover, managed by Cooch Behar Division and Buxa Tiger Reserve. These moist mixed tropical rain forests are constituted with a rich diversity of flora and fauna including some rare species also. Some of these species are on the verge of extinction.



BASIC DATA OF ALIPURDUAR DISTRICT

Administrative Setup

- No. of Subdivisions : 01
- No. of CD Blocks / Panchayat Samities : 06
- No. of Police Stations : 08
- No. of Gram Panchayats : 66
- No. of Villages : 327
- No. of Municipalities / Municipal Corporations: 01

Demographic Features (2011 Census)

- Population : 1501983 (Male 51.33 % , Female 48.67 %) (Rural 79.38 % Urban 20.62 %)
- Sex Ratio (Per 1000 Male): 948
- Scheduled Caste Population: 459017 (Male 15.74 % Female 14.83 %)
- Scheduled Tribe Population: 382448 (Male 12.79 % Female 12.67 %)
- Literacy Rate : 64.70% (Male36.23 % , Female 28.47 %)
- IMDP Blocks : Madarihat
- MSDP Blocks: Kalchini
- No. of Primary Schools: 840
- No. of Secondary Schools(V to X): 19
- No. of Madrasa: 05
- No. of SSK: 495

- No. of MSK: 47
- No. of Krishak Bazarr Kisan Mandi: 06
- No. of Pather Sathi: 01
- No. of ICDS Centres: 3155
- No. of Hospitals: 45
- No. of Tea Gardens: 60

District Domestic Product (DDP) and Per Capita Income [2013-14 at base 2004-05] [As per erstwhile Jalpaiguri district]

- DDP (Current Price) (Rs. in Crore): 28,182.60
- DDP (Constant Price) (Rs. in Crore): 14,240.17
- Per Capita Income (Current Price) (Rs.): 59,651.76
- Per Capita Income (Constant Price) (Rs.): 29,692.58

Work Force Participation (in Per cent)(as per Census 2011)

- Total Worker: 39.70% (Main 29.59%, Marginal 10.11%)

Area of Vested Agricultural Land distributed and Number of Beneficiaries in the district of Alipurduar

Upto	Area of land distributed (hectare)	Number of beneficiaries			
		Scheduled Caste	Scheduled Tribe	Others	Total
(1)	(2)	(3)	(4)	(5)	(6)
14-04-2017	37	62	73	113	248

Length of different classes of Roads maintained by P.W.D. in the district of Alipurduar

(Kilometre)

	National Highways	State Highways	District Roads	Village Roads	Total
	(2)	(3)	(4)	(5)	(6)
	121.54	99.05	250.36	11.10	482.05

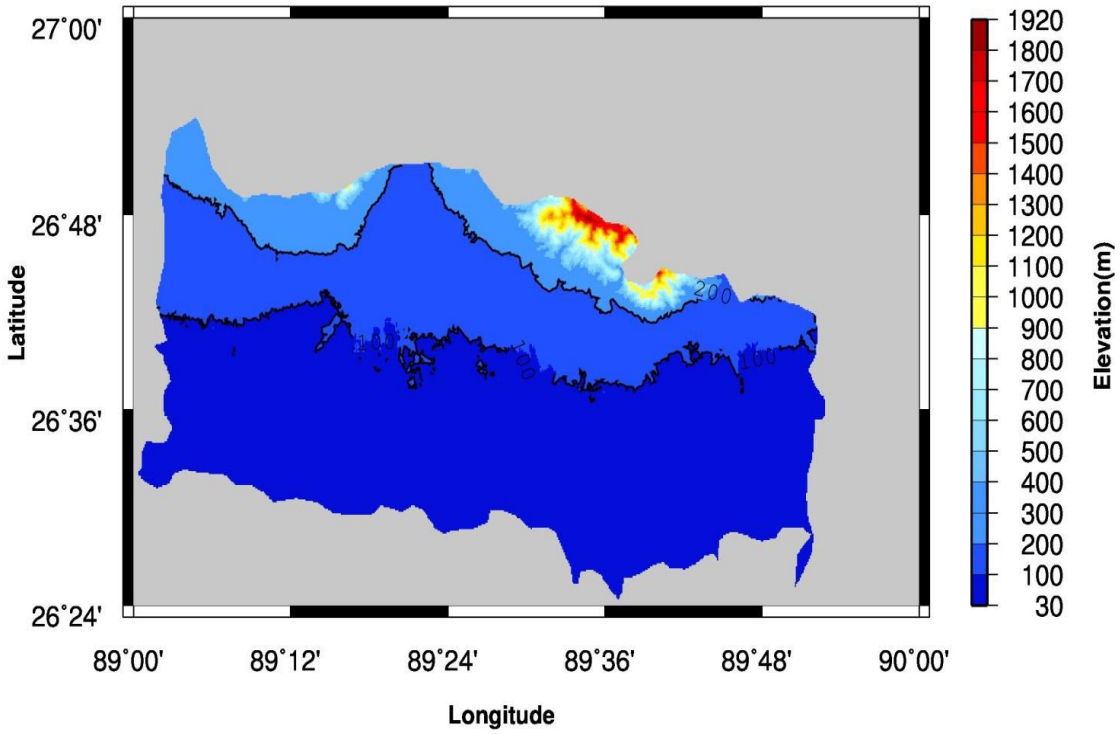
- Rural Population covered by main source of drinking water (as on 01.04.2015) : 99%
- No. of Fair Price Shops (as on 30th Sept, 2016): 452 (including Statutory & Modified Ration Shop)

Banking Facility & Social Security Benefits

- No. of Commercial / Rural / Co-operative & Private Banks : 72

Geography and climate

TOPOGRAPHY OF THE DISTRICT



Topography is a detailed graphic representation of the surface features of a particular place. From the figure it is clear that the district have shown a wide variety of topography including hills, foothills and flood plain. The value of elevation ranges from 30 meter to 1920 meter approximately (*data courtesy SRTM (90 m resolution*)). The 100 m and 200 m contour lines have been overlaid in the plot to distinguish different topographic features. The entire district can be broadly classified into four categories according to the nature of ruggedness of the topography viz low-lying, flood plain, foothills and hills.

Low-lying area whose elevation ranges from 30-100 meter, occupy the lion part of this district and get maximum damage during rainy season. Water logging situation is a common phenomena in this area. Important establishments like DM office, district hospital, college, municipality office, Zilla Parishad, railway stations, DRM office, NBSTC bus stands, human settlements are situated in this region which doubles the risk of impact due to flood.

Elevation of **flood plain** varies from 100-200 meter and comparatively less vulnerable to flood than the previous one because most of the region is covered by forest, national park and tea garden except a few portions which itself is a forestry habitat. This place is ideal for tea plantation because of land slope.

Foot hill is the most undulated area with elevation ranging from 300-1300 meter. Though there is not enough settlement over here, this place is mostly vulnerable to landslide and earthquake. All the rivers in this region are very narrow and flow of water is high enough to carry anything like cattle, tree, house etc. Most of the river changes its course frequently in this region (Torsa is a burning example).

Next comes to **hilly region** which ranges from 1300-1900 meter as far as elevation is concerned. There is hardly any settlement here and all the rivers are entering into the city through this area. The highest peak of dooars namely Chota Sinchula along with Jayanti hills and Lepchakha are situated in this location.

SOIL

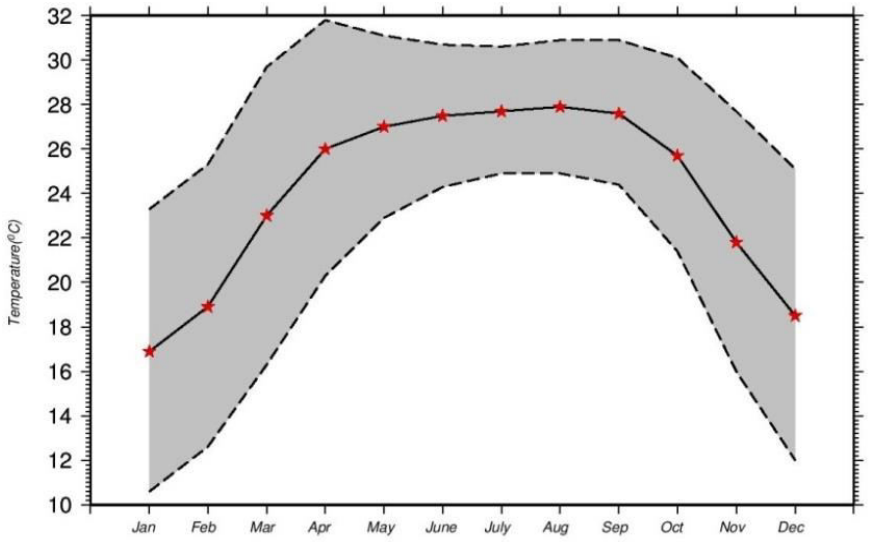
Soil is a byproduct of rock weathering. Information about local soil structure is an important aspect for agricultural sector and farm land. Harvesting strongly depends on soil characteristics like porosity, permeability, chemical composition, soil moisture, pH etc. As far as the type and characteristics of soil in the district is concerned, a significant part is covered with coarse sandy loamy type with an amalgamation of alluvium and very loose in terms of texture and tightness which is prone to erosion. This type of soil is deficient in organic matter due to heavy leaching during excessive rainfall thereby increases the acidity of the soil which is the root cause of agricultural damage. Change of river course network takes place very often due to sand deposition along with debris & stone on the river bed. The soil conservation measures are carried out by the Soil Conservation Wing under Agriculture Department of this district.

CLIMATE

Climate is defined as the average weather pattern of a particular place. It is primarily gauged by few atmospheric parameters like temperature, rainfall pattern, wind speed and direction, humidity etc. Of these, temperature and rainfall are most influential yardsticks and have a direct link with our society and daily life. Changing rainfall pattern, increasing trend of extreme events and storms, sea level rise etc. are few of those indicators by which we can perceive that climate is changing. And this change is too important to understand for the welfare of our society towards sustainable development. Climate change has a significant effect on local weather. So realization of local weather along with global climate and its pattern is a must. Here we will discuss about the two most important climatic parameters such as temperature and rainfall.

The monthly climatology of temperature of the entire district varies from 10^0 to 32^0 celcius (*data courtesy SKYMET*) whereas the average temperature is ranging from 16^0 to 27^0 celcius.

The gray shade denotes the contrast of temperature for each month. The shade is widen during the winter and summer whereas it shrinks during rainy season (June, July, August, September) which is the indication of arrival of monsoon. Recently, the maximum temperature has risen up to 38^0 C during summer which is the burning example of global warming.



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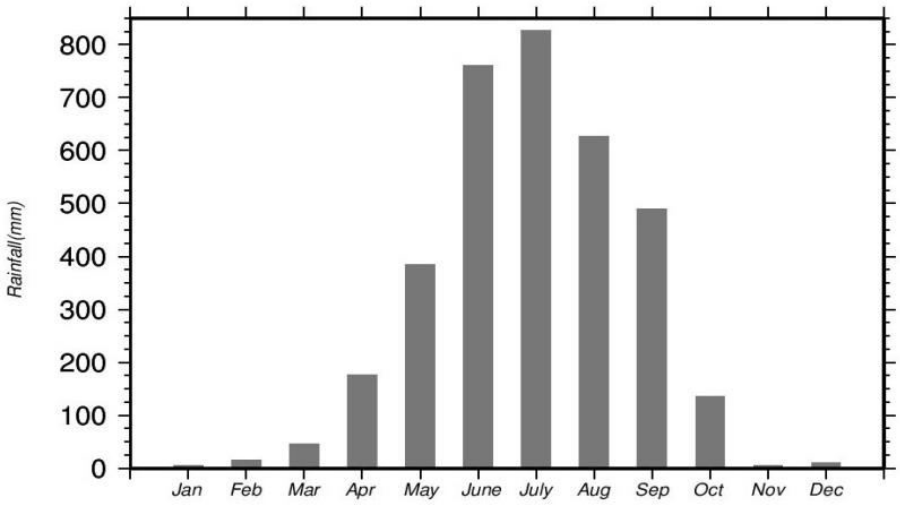
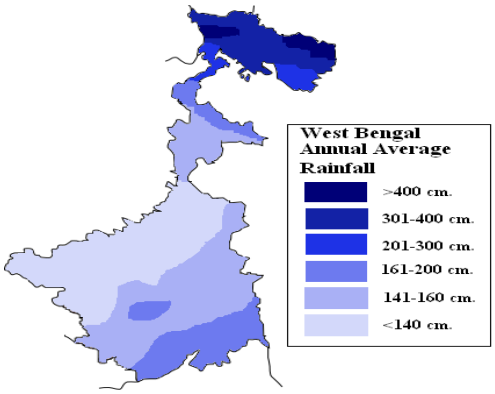
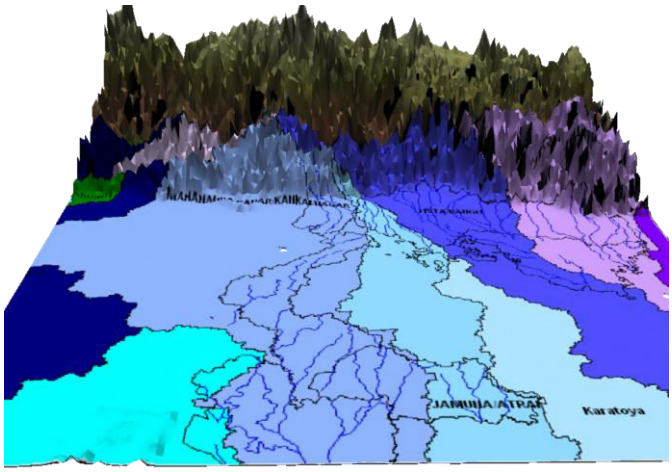
The monthly climatology of rainfall of the entire district has been plotted here. Figure shows that heavy rainfall occurs mainly during June, July, August and September during monsoon season and the district receives approximately 3000 mm (~ 75% of total rainfall of a year) cumulative rainfall in these four months. In this time period, all the rivers become turbulent and dangerous, sometimes incessant rainfall results into massive flash flood.



RAINFALL PATTERN ANALYSIS

Alipurduar is a heavy rainfall area in West Bengal according to rainfall zonation and receives generally more than 4000 mm cumulative rainfall per year due to the geographical position. If we see the northern side of Alipurduar, it is bordered by extensive mountainous range and acts as a shelter as well as barrier of cloud patches. Monsoon cloud enters through southern side and travel towards north but most of the part cannot cross beyond the barrier and huge rainfall occurs after being blocked by this mountain range.

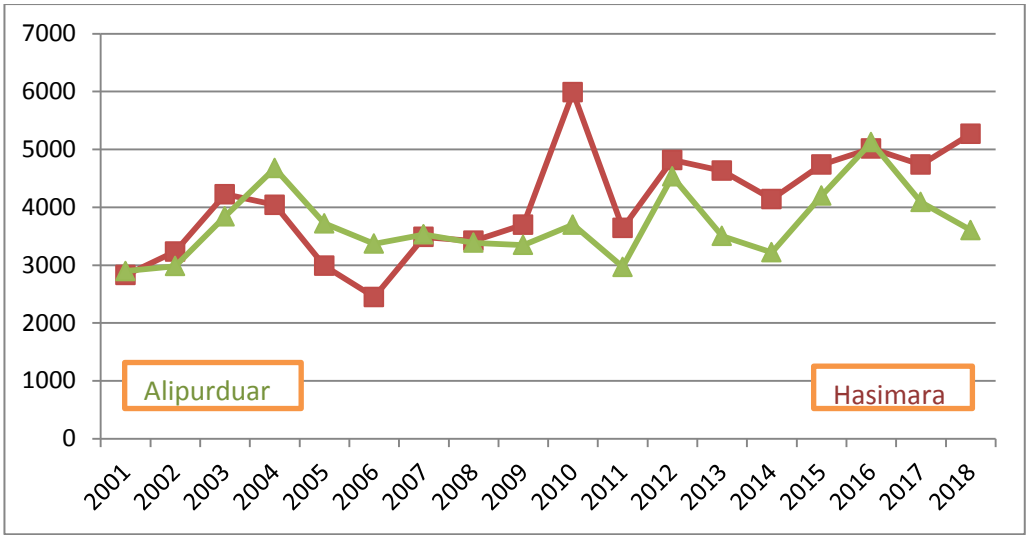




(*courtesy Prof J.Sankrityayan*)

Recent study shows that pattern of monsoonal rainfall has been changed and number of cloud burst event is increasing rapidly. Rainfall has become sporadic and incisive due to intensification of monsoon trough. Alipurduar district is of no exception and experienced such a spell of cloud burst during 2017 monsoon from 11-13 August. Some 530 mm rainfall occurred within just 30 hrs. which is equivalent to 15 days rainfall and considered to be the highest ever cloudburst event in the history of Alipurduar.

We have two rain gauge stations; one at Alipurduar town itself and one is installed at Hasimara. We have plotted cumulative rainfall of these two cases in a single frame at one go for inter comparison. The figure tells **that Hasimara is receiving more rainfall than Alipurduar for last 7-8 years. That is may be because of forest cover. Earlier there were almost equal forest cover in these two places but recently the area has been reduced significantly in the town by cutting trees in the name of development (from local questioner).**

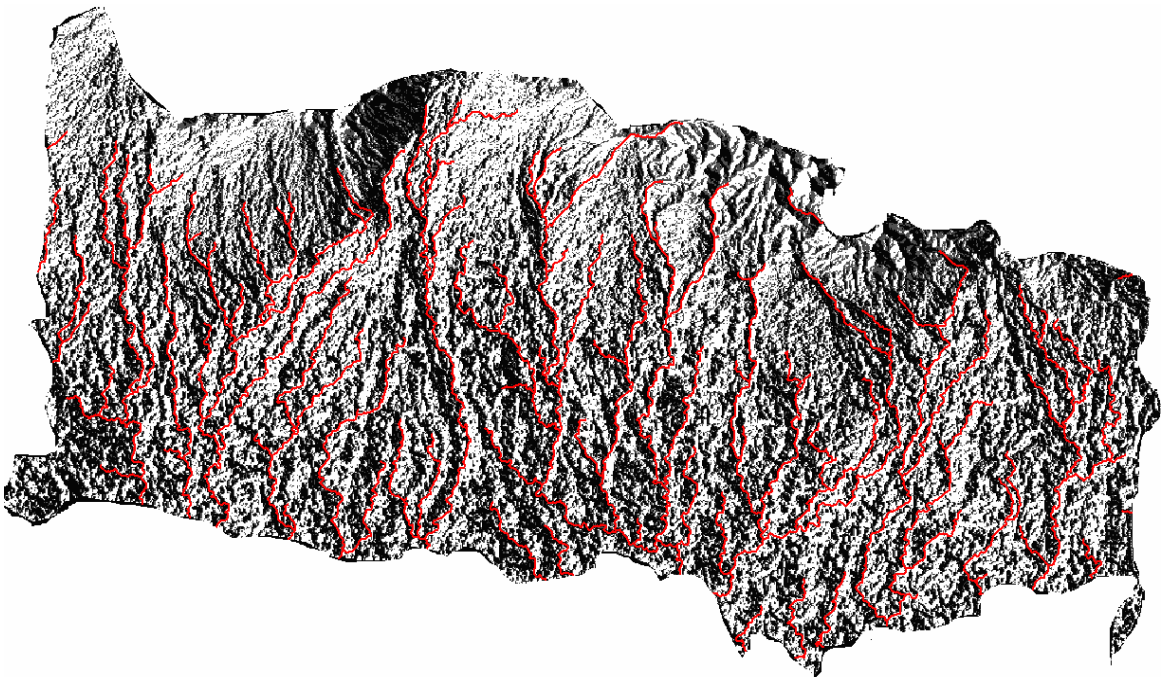

7000
6000
5000
4000
3000
2000
1000
0
Alipurduar
Hasimara
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

RIVERS

Alipurduar is a riverine district and numerous rivulet/jhoras are scattered here and there throughout the district. A Blockwise list has been prepared and written below.

Block	***Rivers***
Madarihat	Mujnai, Titi, Kalapani.
Falakata	Saraswati, Mujnai, Dudua, Birkiti, Barabak.
Kalchini	Pana, Basra, Raidak, Nonai, Gadadhar, Cheko, Haribhanga.
Alipurduar-I	Siltorsa, Chartorsa, Buritorsa, Dima, Kaljani.
Alipurduar-II	Kaljani, Chapro, Garghoria, Dima.
Kumargram	Kaljani, Sankosh, Raidak, Jayanti, Chengmari.

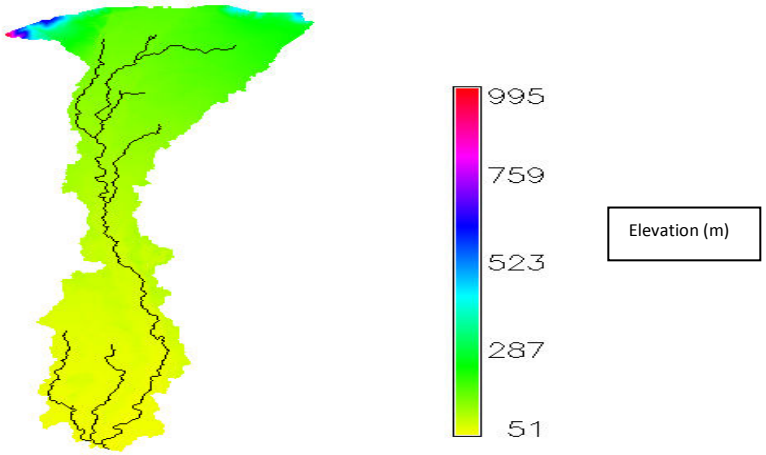
Among all the mentioned rivers, Kaljani, Rydak, Torsa and Sankosh are the most influential and devastating in terms of flood/flash flood. Any natural changes of these rivers like river course network shifting, river bed rising, erosion etc. or disturbances like embankment and guard wall breaching have an immense effect into the society. Apart from these, there are various minor rivers, streams and tributaries which run across the district, has been shown below as drainage map. All these small streams are non-perennial and appear only in the rainy season when they become rogue and turbulent enough to overtop the banks. Due to the lack of proper information like streamline and channel geometry of those small tributaries, we will concentrate only on these four major rivers. **The catchment area and streamline structure has been derived by the help of an open source GIS tool (GRASS GIS).** The basin area is calculated only in the district and hence the end of the basin or streamline should not be interpreted as the end of the entire river.



Drainage map of Alipurduar District

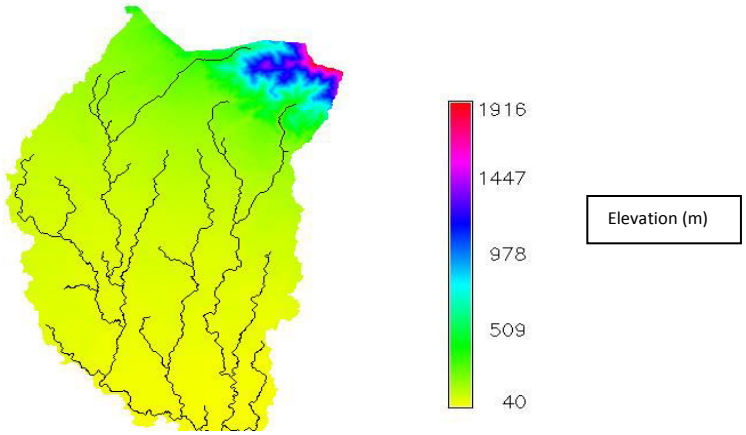
Torsa

River Torsa originates from Tibet, northern part of Bhutan and enter into the district through Phuntsholing, a city of Bhutan. The middle course of this river flows through Alipurduar District and finally merges with river Bhramhaputra in Bangladesh via Coochbihar. The total length of the river from origin is 122 km with a catchment area of about 4530 sq. km. In Alipurduar, the basin area is 252.6 sq. km. and the catchment is too narrow to accumulate other tributaries which reveals that it is almost a single flow channel. Between Alipurduar-I and Falakata block, this particular river has changed its course a number of times in the recent past which leaves a mark as a Buritorsa, Moratorsa, Chortorsa etc.



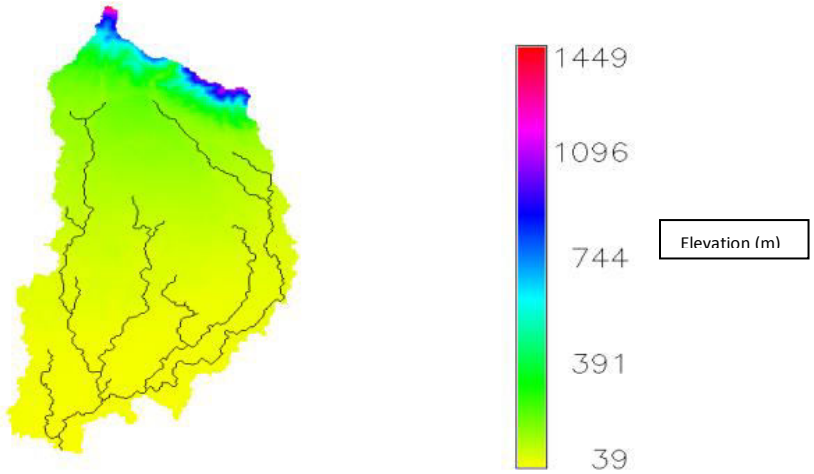
Kaljani

After emerging in the name of River Pana and Basra from Bhutan, the duo enters into the district and flows as a single unit. Near Alipurduar town, they merge with a rivulet called Dima and flow in the name of Kaljani River which is the main lifeline of Alipurduar town. On the other hand, this is a matter of serious concern because this particular river system is flowing through the heart of the town. Finally it merges with river Jaldhaka and flow towards east. This river also has changed its course a number of times. Topography varies drastically within this river basin which magnifies the intensity of flash flood. The catchment area is 664.8 sq. Km and this is the largest river basin in our district among others.



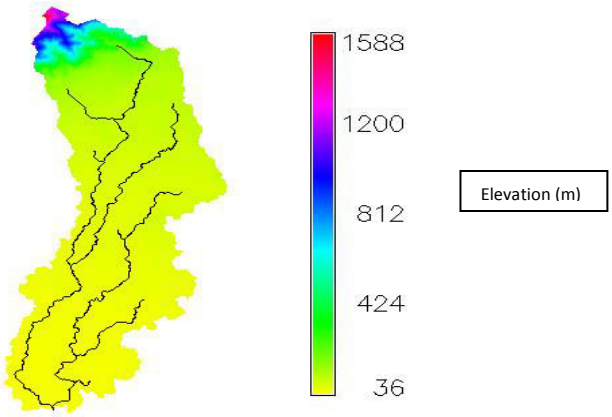
Jayanti-Gadadhar

Jayanti River is a sinuous river flowing through the Buxa forest. The river emerges from the lap of a hill bearing same name at Bhutan and flows all the way down to Alipurduar. It usually remains dry throughout the year except monsoons when it gushes with cool sparkling water. Once upon a time this particular river was the lifeline of Kalchini block but now-a-days it has become too narrow to carry water and looks like a drain. The pattern of changing this particular river course network is a matter of debate. But recent study reveals that excessive sand and pebble mining may be the root cause of this. This place is famous for its scenic beauty and every year is flooded with tourists from different corner.



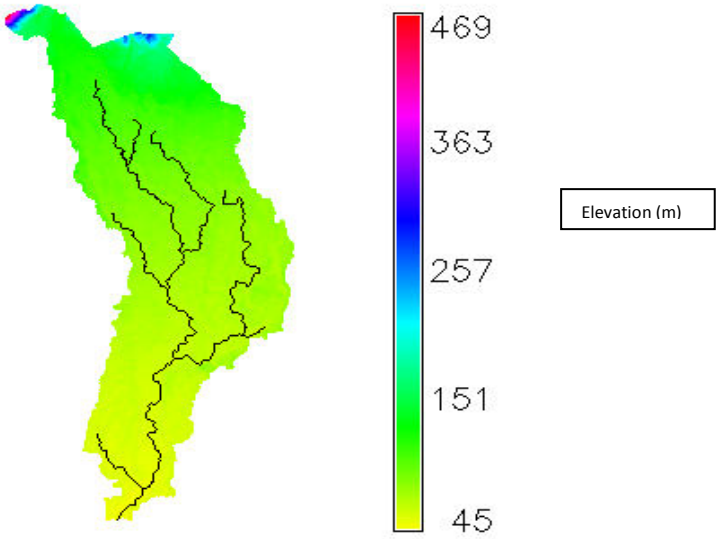
Raidak-I

After originating from Bhutan it reaches Alipurduar through Bhutanghat as a single flow and bifurcates into two parts namely Raidak-I and Raidak-II. Finally Raidak-I has ended into river Bramhaputra in Bangladesh whereas Raidak-II meet with river Sankosh at Baxirhat. **The catchment area of this river in the district is 268.17 sq.km** which is nearly 50% of the entire basin area. The topography of this river basin changes drastically from place to place which makes the river dangerous during rainy season in terms of flash flood.



Raidak-II

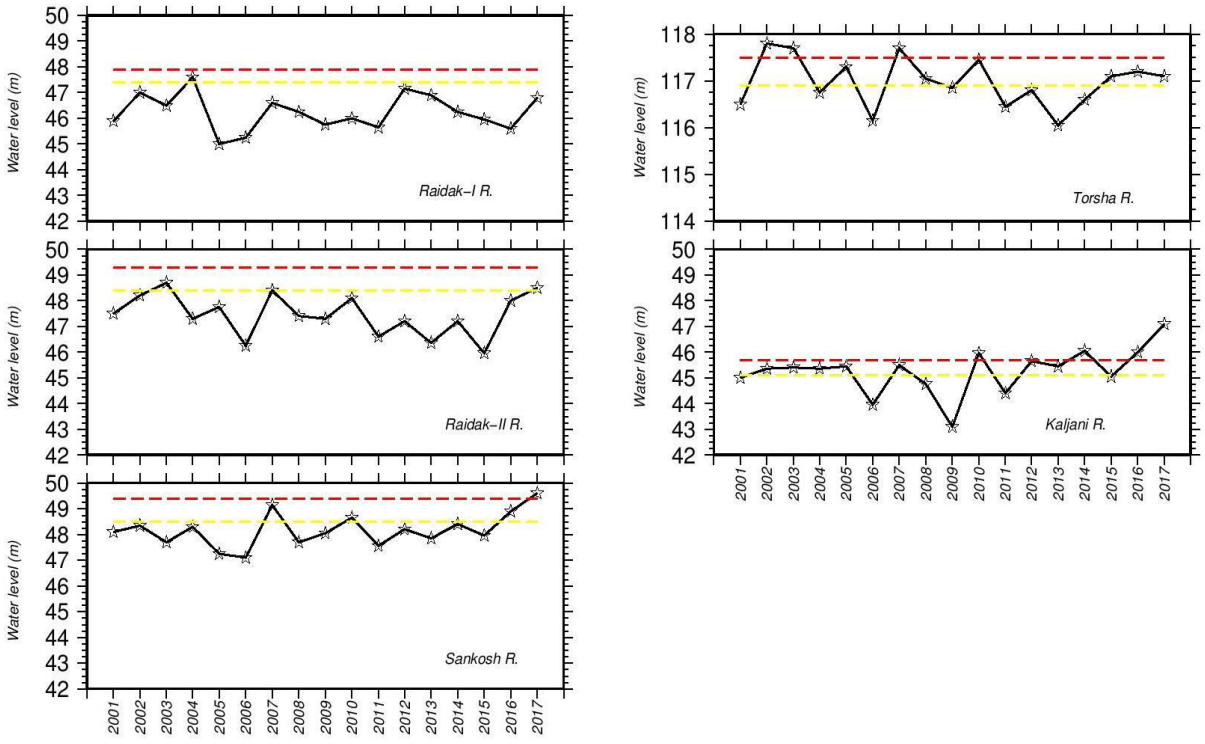
This river is considered as a distributary of Raidak river which has been bifurcated near Bhutanghat and flows through Kumargaram Block straightaway. Finally it merges with river Sankosh at Baxirhat, and then the combined flow enters into Bangladesh and joined with Bramhaputra. **The catchment area of this river fallen in the district is 184.38 sq.km.**



Water level of different river

Irrigation department is the nodal agency to measure the water level status and disseminate the same among other departments in concern during rainy season. In general, the record is taken in every 3-hr durarion but at the time of emergency hourly data data is taken for each 5 major rivers. There are two types of danger level viz, normal signalled as yellow and extreme signalled as red. The aforesaid levels of all major rivers has been written below in tabular format:

River	*Danger Level (Yellow) meter*	*Extreme Danger Level (Red) meter*
Sankosh	48.5	49.4
Raidak-I	47.4	47.9
Raidak-II	48.4	49.3
Torsa	116.9	117.5
Kaljani	45.1	45.7



In the above figure, the highest ever water level attained by each major rivers recorded for a particular year, has been plotted in one go for comparison. From figure, it is clear that in the last year two rivers Sankosh and Kaljani crossed the red level which is quite alarming and a matter of great concern.

OTHER INFORMATION

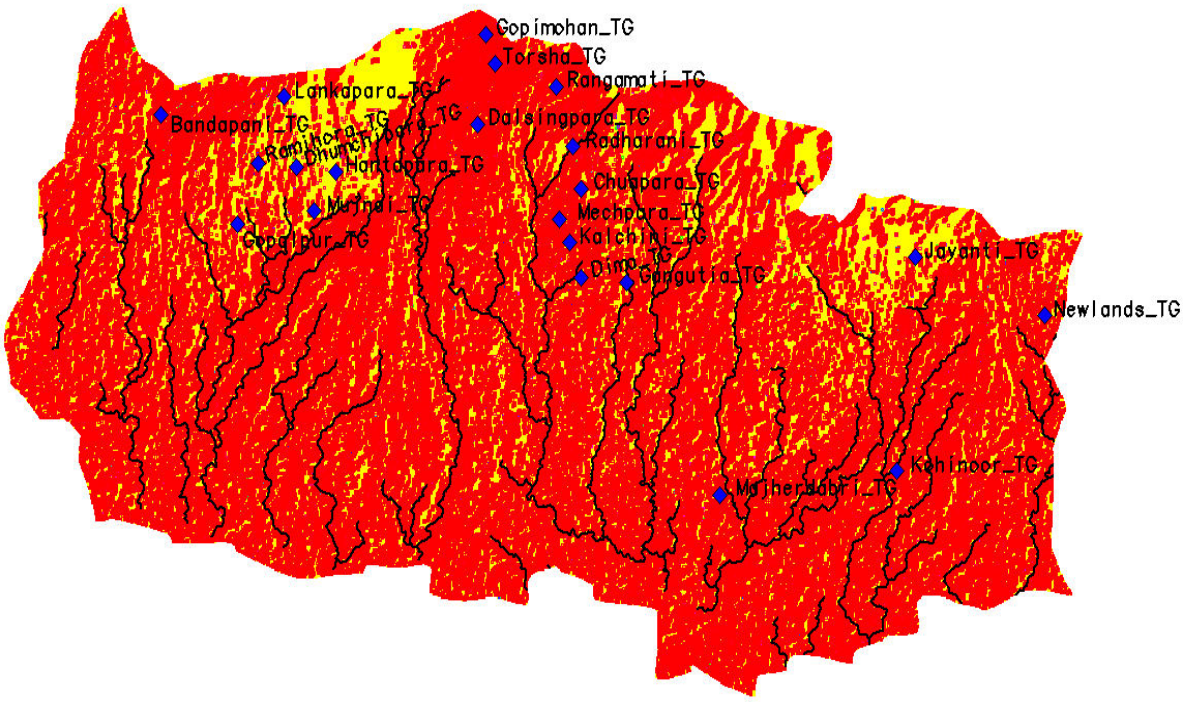
Tourist spots

Alipurduar is the hometown of many important tourist places like Buxa fort, Jayanti, Jaldapara, Chilapata, khaerbari forest etc. Visitors from different corner of our country very often congregate here to spend their vacation and enjoy the scenic beauty except monsoon period. The calm and serene atmosphere of Alipurduar always grabs the attention of those who wants to heave a sigh of relief from the hectic lifestyle.

Buxa Tiger Reserve is by far the most attractive tourist destination. From the railway station, the Rajabhatkhawa forest check post is just 10 kms away. Jayanti and Santalabari are about 25 kms and Buxa fort about 30 kms. Upcoming destinations inside Buxa such as Raimatang can be reached within an hour or so. **Jaldapara National Park** is also within the Alipurduar district. The forest of Jaldapara is 46 km (about an hour drive) from Alipurduar Junction railway station and is famous for its population of one horned rhinos. The forests of **Chilapata** are just 23 kms from Alipurduar junction. The Bhutan boarder of Phuentsholing is about 60 kms through Hasimara town. This is the hassle free and easily accessible road entry point to Bhutan through Jaigaon.

Tea Garden

Dooars area is an ideal place for tea plantation because of the topographic structure and is famous for producing tea of high quality. Not only that, tea garden is the mainstay of Alipurduar and most of the tribal peoples meet their both ends by collecting tea leafs. Numerous major and minor tea gardens are there throughout the district. During monsoon, when the entire district is affected by flash flood, soil erosion, bank overflow, water logging situation, and siltation each year, the tea industry are under stress because these are detrimental for the health of tea plantation. Tea plant is very sensitive and cannot grow under water stagnation and heavy siltation. So it is needless to say that this industry is always under serious threat during monsoon. Last year, due to heavy flood most of the TGs were washed away because of soil erosion and huge siltation. There are 60 TGs throughout the district out of which 5 TGs are closed and other fifteens are stressed at present.



List of Major Tea Gardens

	NAME OF the Tea Garden	***PHONE No.***
1	Gopalpur Tea Garden	9333787000/9531625663/9732894504
2	Kartick TG	9733399862
3	Rangpur Tea Association Ltd.	9434367859
4	Rajabhat Tea Estate	9832089697
5	Raydak Tea Estate	-------
6	ENGO TEA CO. LTD. A/C NEWLAND TEA GARDEN	7797801831
7	Goodricke Group Limited A/C Sankas Tea Garden	-------
8	Bhatkawa Tea Industries Ltd A/C Bhatkawa T.E.	9733380442
9	Dalmore Tea Estate Pvt. Ltd.	-------
10	TOORSA TE, TOORSA TEA CO. PVT. LTD	7076561201
11	KALCHINI Tea Estate, The Buxa Dooars Tea Co. Ltd.	9434143583/9932983944
12	RAIMATANG T.E., , ANJUMAN TEA COMPANY LTD.	8372036022/9434042557
13	RADHARANI TEA COMPANY PRIVATE LIMITED	9593704984/9735305086/97754422371
14	MANAGER MUJNAI T.E., Anjuman Tea Company Ltd.	9547774168/8721074139/9733029967
15	CHINCHULA TG	9434199155/9002803048
16	BEECH TG A/C Weastern Conglomerate Ltd.	Debol Roy. 7063877190/
17	ATIA BARI TEA CO. LTD	-------
18	Bharnobari Tea Estate	-------

19	MANAGER SUBHASINI TEA ESTATE	-------
20	Satali TG	9593631184/9832446663
21	Tasati Tea Ltd. A/C Tasati Tea Estate	9830039341/98300039351/9832446663
22	DIMA TG	8145793446/9873329261
23	Surajgovind Estates Privte Limited	-------
24	Ethelbari Tea Co. Ltd. A/C : Manager Ethelbari T.E.	9434449563/8670143373
25	Surugaon TG, Birpara PH :	Birpara- PH 204739 / 033-22254980/197/038 (fax)
26	NIMTIJHORA T.E. A/C Khayerbari Tea Co. Ltd	9733217640
27	Rahimpur Tea Estate	-------
28	Aryaman TE	-------
29	Dhoulajhora T.E. A/C BENGAL DOOARS NATIONAL TEA CO.	9002906432/9547749904
30	Srinath Pur TG,	9733155487
31	KADAMBINI Tea Estate	9474012781
32	RAHIMABAD TG	9932941976
33	TURTURI TG	9932941976
34	Kumargram TG	9647800560/9434151203
35	TOORSA PLANTATIONS PVT. LTD. A/C MAHUA TEA ESTATE	7430951465/7076561202
	Secy. , Dooars Branch of Indian Tea Association	03563-266152/ 267324
	Secy. , Indian Tea Planters Association	03561-230082/224552
	Secy. Tea Association of India (TAI)	R.A. SHARMA 03563-264564/ 9474688673,

List of Major Industries

Sl No	Name and Address of the unit	Type of Business with Ph No
1.	M/s Maa Ambey Industries Part.-Neelam Rajoria Shishujumra, Ethelbari,Apd-735204	Rice & Rice Bran Ph- 9832017397
2.	M/s B.B. Udyog Prop.-Bikash Sha Dakshin Rampur, Barobisha, Alipurduar	Pet Bottle Ph- 9834596291
3.	M/s Chilapata Jungle Camp Prop.-Ganesh Kumar Sah Uttar Chokowakheti, Nathuatari, Apd-736204	Tourist Cottage Ph- 9474382442
4.	M/s Raj Brother'sHotel & Restaurant Prop.- Mrityunjoy Kumar Patel Jogijhora Barabak, Ethelbari, Apd-735204	Hotel & Retaurant
5.	M/s R.B. Enterprise Prop.- Krishna Barman Laskarpara, Barobisha, Apd, 736207	Spice Grinding & Packing Powdered Spices Ph- 9932353752
6.	M/s Kanchanjungha Food Grains Pvt. Ltd. Dir.- Ashish Mittal Jogijhora , Ethelbari, Apd, 735204	Rice Mill Ph- 9733388868
7.	M/s Fo'rest Resort Prop.-Satyajit Roy	Resort

	UttarChakowakheti, Nathuatari, Apd	Ph-9903362610
8.	M/s Bania River Retreat Prop.-Smt. Gargi Roy Uttar Chokowakheti, Nathuatari, Apd,	Resort Ph- 9830791555
9.	M/s Sanjay Prasad Prop.- Sanjoy Prasad Jogijhora, Ethelbari, Alipurduar, 735204	Package Drinking Water Ph- 7797976751
10.	M/s Priya Precast Company Prop.- Rinku Dutta(Banik) Chingmaritari, Ethelbatri, Apd, 735204	Concrete Bricks & Tiles Ph- 9434191512
11.	M/s Greenx Concreto Prop.- Nisha agarwal Jogijhora Barabak, Ethelbari, Apd	Hollow and Concrete Bricks Ph- 8345698171
12.	M/s pradyut Kumar Bhowmick Prop.- Pradyut Kumar Bhowmick Dakshin Paniyalguri, Majherdabri, Apd	Wooden Furniture Ph- 9609125560
13.	M/s Capital Tyres Prop.- M.D. Neyaz B.G. Road, Jaigaon, Apd, 735222	Tyre Retreading(Cold Process)
14.	M/s Sishujhumra Rice Mill Prop.- Hari Prakash Jindal Sishujhumra, Ethelbari, Apd, 735204	Rice Mill Ph-9733365673
15.	M/s jai Hanuman Industries Part.- Neelam Rajoria Sishujhumra, Ethelbari, Apd, 735204	Fly Ash Bricks Ph- 9832017397
16.	M/s Torsa Tea Factory Part.- Pranab Kumar Saha Ajay Nagar, Falakata, Apd, 735211	Tea processing Ph-9593622928
17.	M/s Golden Valley Ice Factory Prop.- Smt. Bhaswati Mitra Birpara, Apd, 736121	Ice making without using Ammonia Ph-9475512600
18.	M/s Ali Hollow Brick Industries Prop.- Md. Moksed Ali Islamabad, Rangalibazna, Apd, 735213	Cement Concrete Hollow brick Ph- 9593704050
19.	M/s Pyramid Steel Prop.- Sadip kumar Ghosh Dakshin Majherdabri, Majherdabri, Apd, 736123	Steel pipes for furniture, fencing, railing etc. Ph- 9434117944
20.	M/s Om Namah Shivaya Prop.- manu agarwal Sishujhumra, Ethelbari, Apd, 735204	Cement concrete Bricks Ph- 7407967355
21.	M/s Mathura Cottage and Restaurant Part.- Krishna das Dakshin Chokowakheti, Apd, 736204	Home stay 7 Restaurent Ph- 7585077469
22.	M/s Tanvi Industries Prop.- Neelam Rajoria Jogojhora Barabak, Ethelbari, apd, 735204	Hume Pipes(Cemented Products)
23.	M/s Priyashree Rajoria Prop.- Priyashree Rajoria Jogijhora Barabak, Ethelbari, Apd, 735204	Hume Pipes(Cemented Products)
24.	M/s |Neelam Rajoria Prop.- Neelam Rajoria Sishujhumra, Ethelbari, Apd,735204	Concrete Cement Bricks Ph- 9832017397
25.	M/s Munni Devi Rajoria Prop.- Munni Devi Rajoria Sishujhumra, Ethelbari, Apd, 735204	Concrete Cement Brick Ph- 9832017397
26.	M/s Dooars Infra Projects(P) Ltd. M.D.- Ashim Kr. Ghosh Baganbari, Falakata, Apd, 735211	Cold storage Ph- 9434104055
27.	M/s Punj Lloyd Ltd P.M.- Vikas Pathania Paschim Chekamari, Rangalibazna,Apd, 735213	W.M.M. Plant Ph- 8945010962
28.	M/s Haldar Electrical Works Prop.- Rita Haldar Station road, Apd Jn. Apd, 736123	Transformer repairing Ph- 9733463526
29.	M/s Bhai Bhai Enterprise Prop.- Sanjit Ghosh	Betel Nut Processing

	Kunjanagar, Falakata, Apd, 735211	Ph- 9635291148
30.	M/s Sarvashiva Rice Mill Pvt. Ltd. Dir.- Shibraj Dutta Tapsikhata, Ghargharіahat, Apd, 736121	Parboiled rice Mill Ph- 9733314056
31.	M/s Sayan Steel Furniture Prop.- Ajit Paul Changpara, Chapararpar, Apd, 736121	Steel Furniture Ph- 8945092096
32.	M/s Sumaru Jungle Resort Prop.- Arnab Dasgupta Madhya Madarihat, Apd, 735220	Resort
33.	M/s Tinbaandhari Minerals(P) Ltd. Direc.- Rajesh Sharma Jogijhora Barabak, Ethelbari, Apd, 735204	Dolomite and Lime Stone Powder Ph- 9832952974
34.	M/s Ethelbari Cold StoragePvt Ltd. Prop.- Pradip Prasad Narsingpur, Ethelbari, apd, 736204	Cold Storage Ph- 9932040831
35.	M/s lahar Industries Prop.- Smt. Neelam agarwal Madhya rangalibazna, Gopal Bagan, Apd, 735213	Packaged drinking water Ph- 9800569699
36.	M/s Mahakal Himghar Pvt Dir. Sri Tridibesh Das Pararpar, Tapshikhata, Apd, 736121	Cold storage Ph- 9434005918
37.	M/s Anjali Industry Part.- Samir saha Raichanga, Falakata, Apd, 735211	Cement Products Ph-9832350401
38.	M/s J.P.C. Rice Mill Prop.- Sri Jay prakash Chowdhury Dakshin Latabari, Apd	Raw Rice
39.	M/s swastika Stone Crusher Industries Prop.- Smt. Lipi sarkar Radhanagar, Alipurduar	Stone Crusher
40.	M/s West Bengal Alluminium Industries Prop: Pradoip Baid Subhash Pally,Alipurduar,736121	Alluminium Industries Ph-9832062014

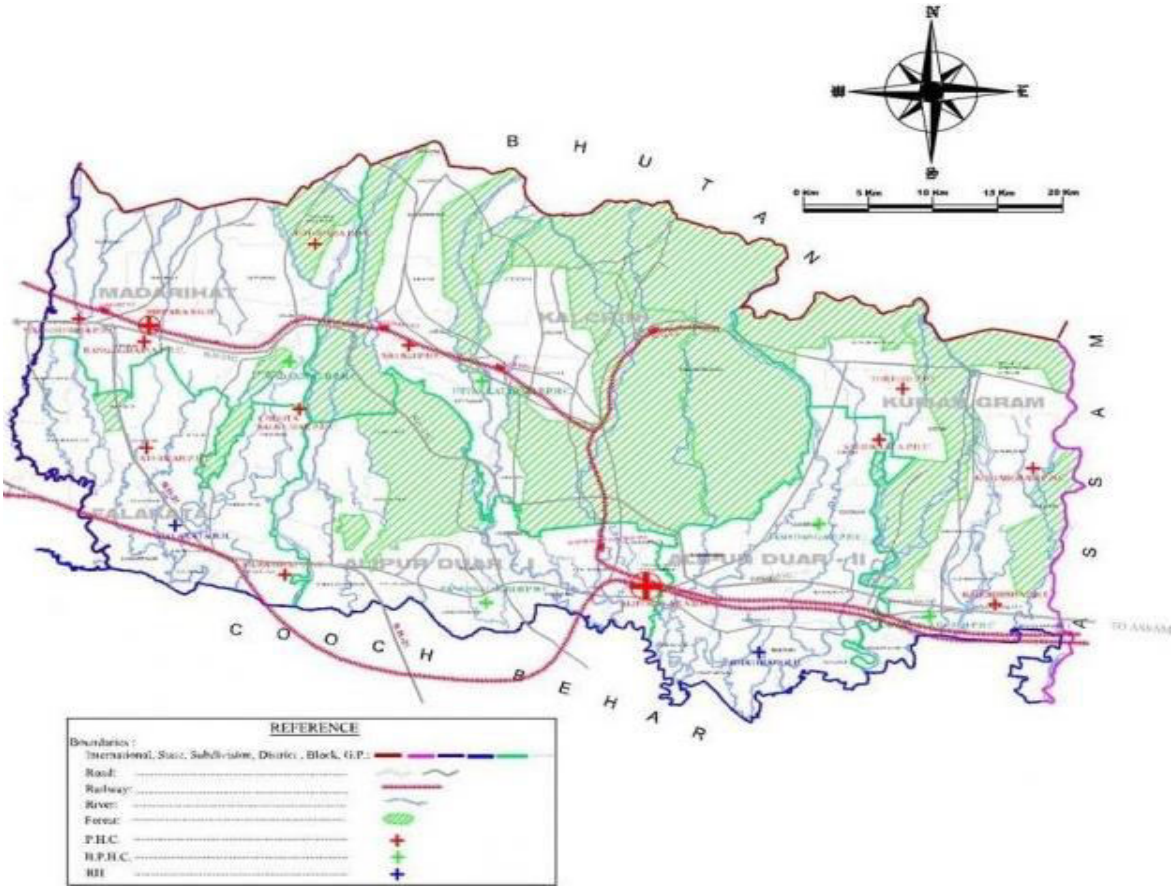
Culture & language

Mainstay of Alipurduar district is Tea Garden and Tourism industry. Next is collecting forest product mainly timber and wood. A fairly large portion of population depends on tea gardens for their livelihood directly or indirectly. Most of the plantation labourers were migrated from different parts of our country. These plantation workers belonged to different ethno-cultural and linguistic groups. In course of time they created a different kind of culture. They usually speak in their own tribal language within the tribe for communication. 'Sadri' a language practiced by their ancestors in Chhotonagpur area is used as link-language among the different tribes. Now a day's Hindi is also used for this purpose.

The area was originally inhabitated by aborigine tribes and castes like Ravas, Garos, Meches, totos, Dhimals, Koches and Rajbanshis etc. the migration of Hindus from the erstwhile East Bengal at the time of partition in 1947 and their settlement in these areas reduced land-man ratio to a great extent. The culture of these migrated Hindu people, mingled with rich folk culture of the aboriginals, enriched the cultural life of this area. Gradually people came and settled down in this area from almost all corners of India. These people speak about 141 languages including some distinct dialect. However, Bengali is largely spoken language. Intermingling of heterogeneous ethno cultural groups helped evolve a strong eco-friendly material culture in this area since prehistoric period. Admixture of traditional knowledge of different ethnic groups with advanced technology, easy availability of indigenous materials and climatic condition of this area augmented this process to gain a different shape than other parts of Bengal.

Road and Railway network

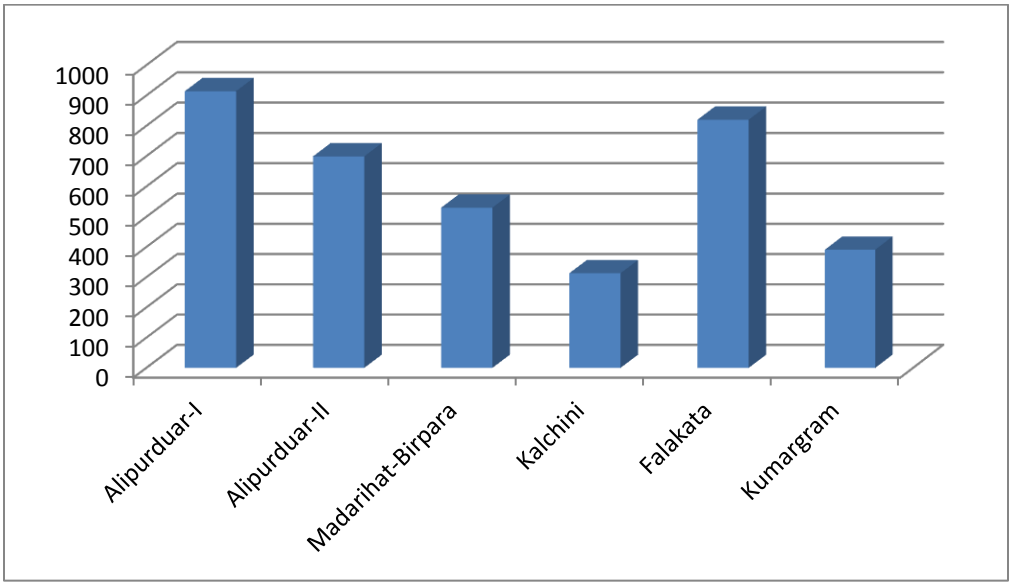
Alipurduar is a major connecting hub between north east part and other sector of our country. Two main stations are Alipurduar Jn. and New Alipurduar. Most of the superfast and mail trains touch New Alipurduar station which is situated at the outskirt of the main city. On the other hand, a very few express train avails Alipuduar Junction. Beside this two satellite stations are situated at the heart of the town namely Alipurduar court and Alipurduar. Some passenger and local trains connecting inter-district towns run through this line. There are two major railway tracks at Alipurduar which are of different nature with respect to time and path it covers. One runs through Coochbihar straightaway and mainly passes through human settlement area to reach nearest big station New Jalpaiguri aka NJP while the other runs through the forest area and tunnel which is time consuming. All important trains generally use the former track because it takes less time than the other one. This is all about railway track.



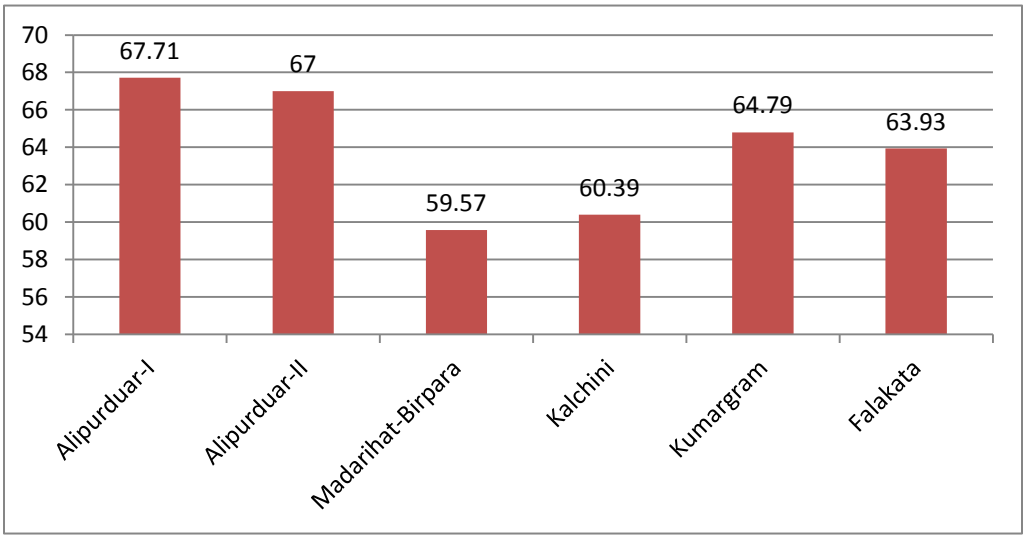
Now as far as the road network is concerned, the entire district has a strong motorable road network running through the deep forests and tea gardens. In the east-west direction a highway is situated which connects Alipurduar with Assam through Kumargram and Siliguri through Falakata in the east and west directions respectively. National Highway 31 and a State Highway 12A along with other local roads connect the belt of all the blocks and GPs in the district. NH 31 is divided into two parts 31C and 31D which covers a total of 63 KM (46 KM of 31-C from Hasimara to Salsalabari and 17 KM of 31-D from Falakata to Sonapur).

DISTRICT LEVEL STATISTICS

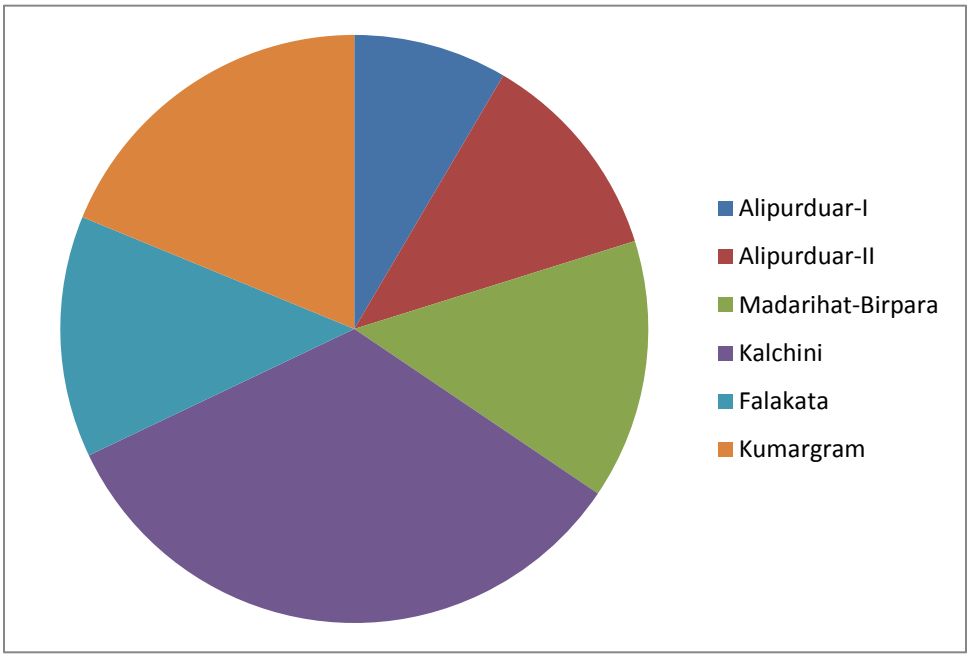
Population Density (per km^2)



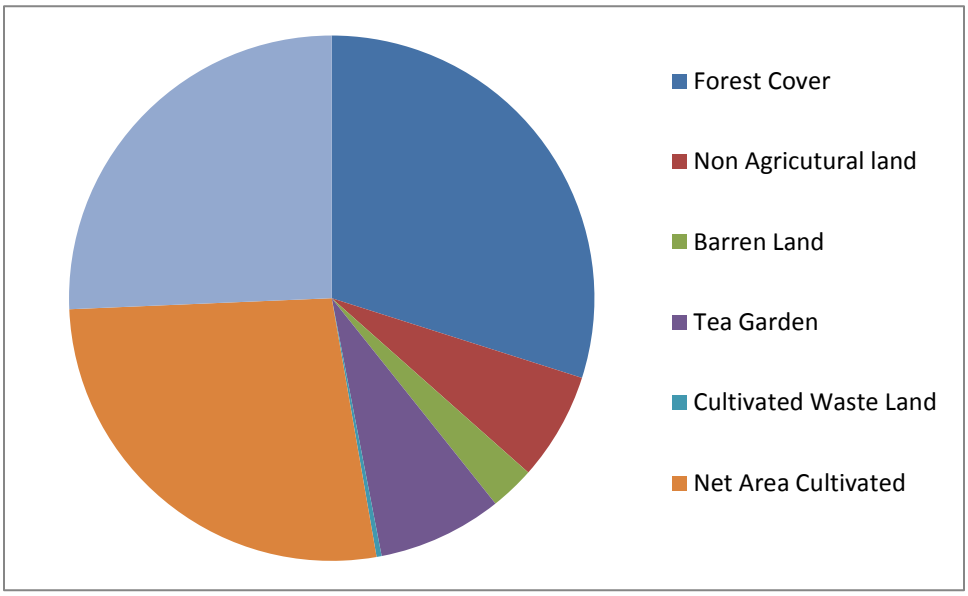
Literacy rate (%)



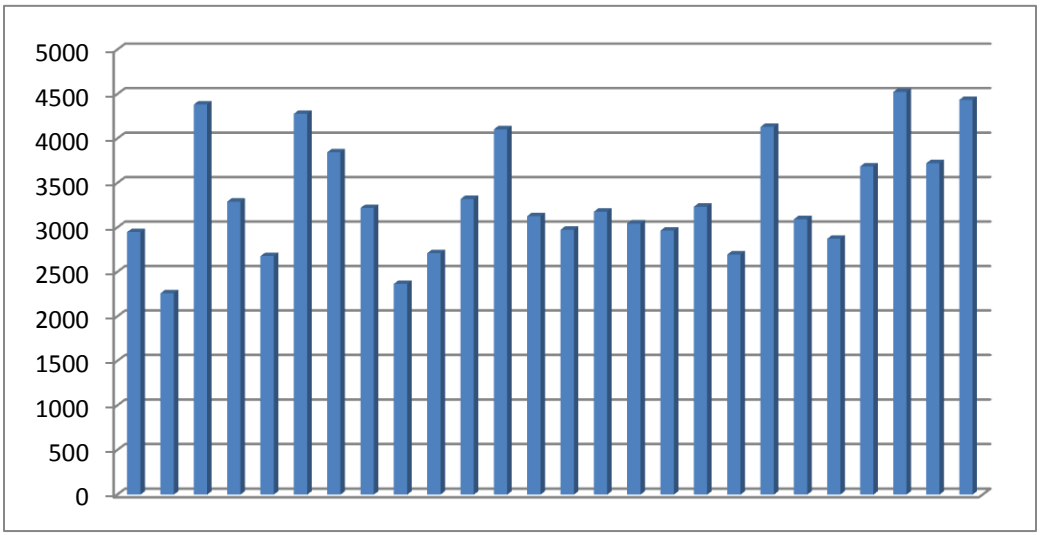
Bockwise Area distribution



Agricultural land use pattern



Annual cumulative rainfall (1993-2018, mm)



Chapter 1

INTRODUCTION

Plan is a detail roadmap to achieve a particular goal. In general it helps the steering committee members or policy makers immensely in coping up with a problem and provide a readymade solution to get out of it. A plan is compiled based on the past and present scenario for the future after a thorough and careful analysis. The District Disaster Management Plan (DDMP) is of no exception as well. It is a comprehensive study of the entire gamut of disaster management with a special emphasis on district specific disaster, its impact to the society, rescue operation and relief technique elaborately. The prime target lies on the issues like type of hazard, identification of vulnerable zones, pre disaster awareness, preparedness measure and build back better from any untoward situation.

DISASTER MANAGEMENT ACTIVITY

Before the existence of the concept of Disaster Management, the entire aforesaid activity was called as relief work and was running under the aegis of Ministry of Agriculture in the name of Relief Department. But three serious and devastating occurrences namely Orissa super cyclone in 1999, Gujarat Earthquake in 2001 and Bay of Bengal Tsunami in 2004 which took place within a span of five years, signaled the rift between governance and response. These incidents opened the eyes of Govt. authorities and they realized the fact that mere relief activity is not enough to embrace the challenge and threat poses by a disaster of having high intensity and thought of setting up of separate department to look after all the issues. Then the department of disaster management was created under the ministry of Home Affairs and a committee was set up immediately after the decision was taken to lay down all the guidelines in a single entity called DM act 2005, a landmark document. That is how the concept of Disaster Management came into picture. Then the wheel of fortune of this particular department started rotating and paradigm shift took place from a relief centric approach to a holistic one. Recently Disaster Management and civil defense has been intermingled owing to meet up the some common goal/interests towards the society.

This particular department is responsible to cater all the basic disaster risk reduction activities such as rescuing people from danger, providing relief and safe environment to the indigent people in the relief camp/temporary shelter, distributing necessary emergency kits as per the requirement etc. in a systematic manner. Apart from all these, some specific prevention and mitigation measures like preparation of disaster management plan, conducting safety drill and community awareness, dissemination of early warning information is also spearheaded from this wing under the stewardship of nodal officers. In accordance with the activities, disaster management synergy has been classified into three components like pre-disaster, during disaster and post disaster. There are some predefined functionaries and responsibilities at each of these stages mentioned below.

Phase	Activities
Before Disaster	Preparation of DM Plan, Community awareness, early warning dissemination, mock drill, relief material distribution, resource mobilization in advance, hands on training regarding various safety tools etc.
During Disaster	Activate Incident Response Team (IRT) depending upon the gravity and impact of any disaster, Sending daily situation report, CA-II report, Deployment of response team at the place of occurrence promptly, opening of relief camp, distribution of relief materials among distressed people, saving lives etc.
After Disaster	Removal of carcass, loss and damage assessment of property in terms of money, clearance of road blocked by any obstacle, bring back the situation in normalcy, reimbursement of money or relief materials under various scheme among the beneficiaries etc.

BACKGROUND OF THE PLAN

As per the section 31 of the Disaster Management Act, 2005 (DM Act), the mandatory provisions of DM plan are

- There has to be a specific plan for every district of a state.
- The district plan shall be prepared by District Disaster Management Authority (DDMA), after discussing with local bodies, municipalities, and block. On completion of the plan, it is duly approved by the state authority.
- In addition to this, the DDMP has to be reviewed and updated annually as per the section 31(4) of the act.
- The copies of the District Plan referred to in sub-sections shall be made available to the Departments of the Government in the district.
- The District Authority shall send a copy of the District Plan to the State Authority which shall forward it to the State Government.
- The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

The present plan has been compiled keeping all the rules and regulations of DM Act 2005 in mind. A bottom up approach has been followed at the time of preparation of this plan. Each block has collected information from various Gram Panchayet (GP) and transferred the same to the district level. Finally DDMA has piled up the information collectively in the present format. Apart from this, we have taken some useful information from various line departments and inter-agency groups like Agriculture, Health, Forest, PWD, Irrigation, Civil Defence, Fire and Emergency services and Food Supply.

OBJECTIVE OF THE STUDY

A District Disaster Management Plan is a prototype of the current situation of a district regarding the scope and/or strength and an elaboration of how the entire system will response based on the available potential it possess.

As per the section 31 of the Disaster Management Act, 2005 (DM Act), a district plan should include the following:

- The vulnerable places in the district which are under serious threat by different forms of disasters.
- The measures to be taken, for prevention and mitigation of disaster, by the Departments of the Government at the district level and local authorities in the district.
- The capacity-building and preparedness required by the Departments of the Government at district level and local authorities in the district to face any threatening emergency situation.
- The response plans and procedures, in the event of a disaster, providing for-
  - i) Allocation of responsibilities to the Departments of the Government at the district level and local authorities.
  - ii) Prompt response to disaster and relief.
  - iii) Procurement of essential resources,
  - iv) Establishment of communication links and
  - v) The dissemination of information to the public.

In a nutshell, DDMP covers the entire procedure ranging from pre-disaster awareness to post-disaster activities as a whole. It also helps us to find out the solution during emergency period.

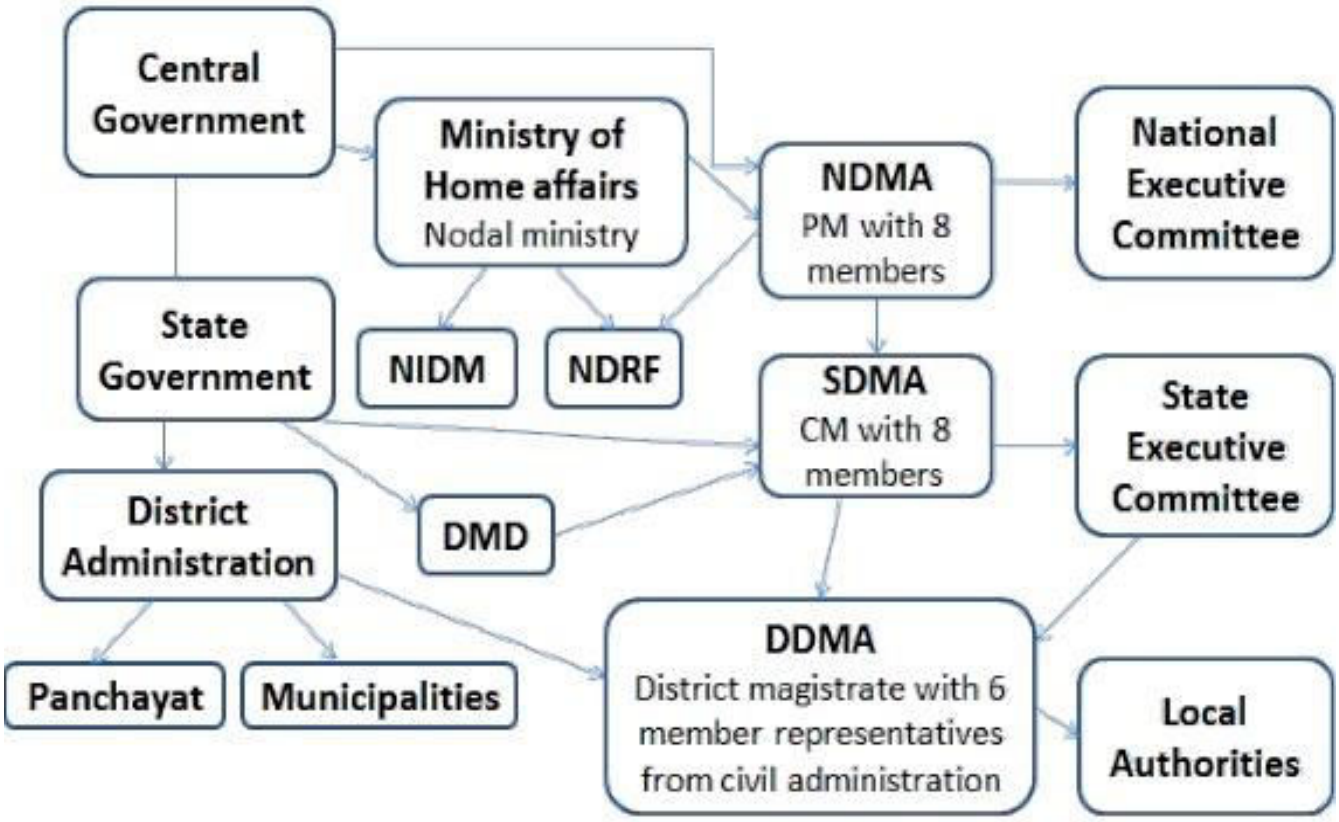
DIFFERENT STAKEHOLDERS AND THEIR RESPONSIBILITIES

Department/Organization	Functionaries
Police Department	• Maintaining law and order during and after disaster. • Providing security arrangements for VIP persons visiting to assess the post disaster damage. • Lending co-operation to the local people for evacuation of people from vulnerable areas. • Help in gathering actual information regarding loss and damage as a consequence of a disaster.
Electricity Department	• Restoring power supply to the affected area at the earliest. • Periodic inspection of the places where high tension wires, transformers and power grid system lies. • Uninterrupted power supply to some important places like collector's office, district court, municipality office, police station and hospitals/nursing homes during emergency. • Making arrangements for additional support to the relief camp for extended period. • Raising awareness among local people regarding the use of solar and renewable energy.
Health Department	• Ability to undertake emergency health service for the distressed people in the spot. • Keep additional bed in hospitals and round the clock medical facilities. • Strengthen blood bank and keep ready mobile medical van before any occurrence. • Raising awareness regarding different kind of health hazards.

Public Works Department	• Responsible for restoring damaged building and civil construction. • Give emphasis on building earthquake resistant building. • Inspect the high rise buildings and hospitals periodically before and during the disaster. • Construct public information centre for community awareness.
Irrigation Department	• Keep watch on dam and water discharge rate during heavy rainfall. • Provide extensive protection to the irrigation infrastructure and restore the damaged embankments. • Identify flood prone rivers and start to implement flood monitoring mechanism before the onset of monsoon. • Repairing of culvert, bridges and pump at the time of need. • In case of possibilities of flooding in the downstream, the settlements should be informed well in advance and necessary warnings for evacuation should be given to the adjoining districts and to those districts beyond the state borders.
Agriculture Department	• Restore the district specific agricultural product and monitoring soil health. • Assure protection of crop during extreme condition. • Carry out the surveillance for pests and diseases. • Damage and loss assessment after any catastrophe takes place owing to meet up crop insurance.

Civil Defence Department	• Taking prime responsibility for rescue and relief during and after disaster. • Ability to protect life from dreadful situation. • Monitoring stock of rescue items periodically. • Provide support in the flood control room and round the clock surveillance. • Provide training among local boys and girls with the intention of making the network of quick response team stronger.
School Education Department	• Practice the culture of preparedness among students and make school a safer place to reside during emergency. • Various activities like road show, poster presentation, quiz competition etc. should be carried out for awareness.
Higher Education Department	• Encourage research in the field of disaster management in college and university level. • A special mandatory course on disaster management should be initiated.
Inter Agency Group	• Bridge the gap between government policies and actual need of public. • Providing additional support in entire disaster management activities ranging from pre disaster awareness up to post disaster damage analysis i.e., promoting awareness, looking after the health and sanitary issues at relief camp, post disaster need analysis etc.

DISASTER MANAGEMENT HIERARCHY FRAMEWORK



- **NIDM**- National Institute of Disaster Management
- **NDRF**- National Disaster Response Force
- **DMD**- Disaster Management Department

- **NDMA**- National Disaster Management Authority
- **SDMA**- State Disaster Management Authority
- **DDMA**- District Disaster Management Authority

EVALUATION OF LAST DDMP

According to NDMA guideline every district should prepare/compile Disaster Management Plan in every year and has to be assessed annually. Our DDMP-2018 has been prepared as per the regulations laid down by NDMA. Though the prime focuses have been paid on district specific disasters, vulnerable area identification, disaster management activities, capacity building and training, relief/response, post disaster damage analysis etc, there are few gaps and lacunas that have been identified and tried to filled in properly.

The identified gaps are written hereunder:

1. There was no Standard Operating Procedure separately for Flood and Earthquake so far. Since Alipurduar District is fallen under zone IV and V, hazards like earthquake need to be treated with a special emphasis. Hence the SOP for flood and earthquake has been incorporated properly in the chapter under Standard Operating Procedure.
2. Financial resources and various relief aids were not put in place properly and have been described systematically.
3. Responsibility matrix did not exist in the Relief and Response chapter and has been incorporated.
4. Chapters like implementation of DDMP and Co-ordination mechanism has been added which were not in the previous edition.

Chapter 2

VULNERABILITY ASSESSMENT OF THE DISTRICT

Hazard, risk and vulnerability assessment (HRVA) is a study of making a place disaster resilient, by addressing the issues like major disaster, vulnerable zone, cause of vulnerability and disaster preparedness. It is generally prepared with the help of best available information like hazard history, vulnerability profile, ranking of hazards based on its frequency/impact, preparation of risk matrix etc. A HRVA will not make a place hazard free overnight, rather it help us to understand the cause of vulnerability and guide us in making preparation to face any adverse situation with available resources well in advance. Put another way, it is a remedy for reducing the damage/threat poses by any area specific disaster. HRVA has both spatial and temporal dimension. We have considered here the Gram Panchayet (GP) being the smallest unit for our study. Before going into details, we should familiar with few terminologies that will be used very frequently in this entire edition. They are not watertight compartment and related to each other.

Hazard is any kind of event in a geographical area which can pose threat to people, society, economic assets, livelihood, behavioural pattern of flora/fauna etc. which may turn into a disaster. This may be manmade or natural occurrences.

Disaster is defined as a serious disruption of the functioning of a society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope using its own resources. Disaster is a consequence of a hazard in largely populated area where chances of getting damage are very high because a hazard like tsunami has no meaning in an uninhabited island.

Vulnerability is the extent to which a community, structure, service and geographic area is likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction and proximity to hazardous terrain or a disaster prone area. It is a type of societal disability. For example a low-lying area is always vulnerable to flood or coastal area is always vulnerable to cyclone etc.

Risk is a measure of expected losses in terms of death, injuries, assets or economic activities due to a potential hazard occurring in a given area over a specific period of time. Risk analysis involves determining the probability of the occurrence of an event and the level of vulnerability of the people that may be affected by the event. Disaster is the realisation of a risk. For example, there is always a risk of injuries of a bike rider riding without helmet.

Capacity is the helpful individual or social abilities with the help of which any untoward situation can be challenged.

Prevention is the set of rules to prevent any disaster from its occurrence. It is applicable especially in man-made disaster; no natural disaster can be prevented fully as such.

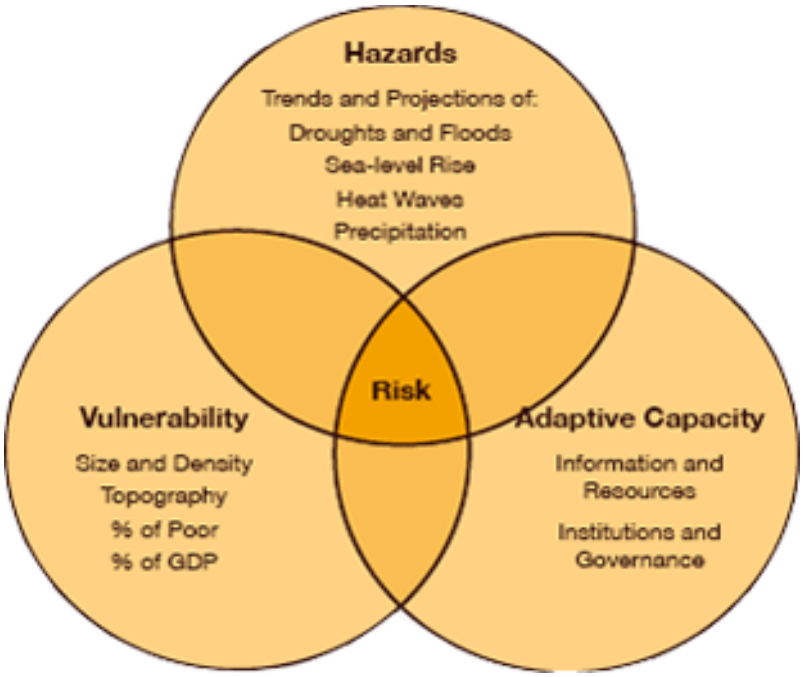
Mitigation is the process or collection of techniques owing to make a place disaster resilient. It is further classified into two categories: structural and non-structural. Structural mitigation is referred to adopting some technology or implementation of some engineering works whereas non-structural mitigation is referred to adopting non-engineering policies like promoting awareness, vulnerable area identification and early warning dissemination.

The basic rule of thumb is Disaster = Hazard * Vulnerability. We cannot stop natural hazards but a systematic approach will definitely help us to save lives, protect our property from damage and a speedy recovery.

Hazard, Risk and Vulnerability connects with each other through the conventional rule of thumb written below:

Risk = (Hazard X Vulnerability)/ Capacity.

Risk, Vulnerability and Hazard are the negative factors whereas the only positive factor is Capacity which deals with the strength of resources in the society and its proper applicability at the time of emergency to reduce the loss.



Tools and Techniques of HRVA:

HRVA is an approach of minimising threat of any disaster by thoroughly analysing the characteristic of a particular place from different perspective. The whole initiative is broadly classified in different mutually exclusive tasks furnished below:

- Hazard analysis and ranking of hazards based on frequency from hazard history.
- Vulnerability analysis of a society.
- Risk analysis by calculating frequency and thrust/impacts of different disasters.

Hazard analysis

Hazard is any kind of disturbance that may turn into a disaster due to lack of co-ordination and poor governance. Types of different possible hazards are listed below:

Natural hazard	Geological hazard	Earthquake, Tsunami, Volcanic eruption, Mine burst, Landslide.
	Water and Climatic hazard	Tropical cyclone, Flood, Drought, Heat and cold wave, Coastal erosion, Avalanche.
	Environmental and Biological hazard	Environmental pollution, Epidemic, Pest attack, Deforestation, Food poisoning, Desertification, change of bio-diversity.
	Climate change	Cloud burst, extreme weather, sea level rise, island inundation.
Manmade hazard		Boat/Road/Train accident, Air crash, Building collapse, Stampede, Riot, Mutiny, child trafficking, sexual harassment, Chemical and industrial disaster, Nuclear plant failure, Power grid failure, Oil spill.

Furthermore, all the hazards may be classified again into two groups according to the rapid onset and slow onset. Rapid onset disasters are earthquake, cyclone, tsunami, flash flood, forest fire etc. whereas slow onset disasters are climate change, island inundation, sea level rising, drought etc. Whatever the case may be, India is a diverse country that experiences the threat of different natural hazards like drought, flood, coastal erosion, storm surge, landslide, forest fire, heat wave, hailstorm etc. because of having different characteristics and geographical features of different places like topography, local weather, riverine system and catchment area, rainfall pattern, bio-diversity etc. To focus on area specific hazards, analysis of past disasters is of paramount importance. It is none other than hazard history which will describe the details of specific disasters that a district might have been facing for a decade or so and thereby lead the decision makers to a proper way in policy making. History of hazard of Alipurduar District for last 27

years has been written below.

Year	*Flood*	*Earthquake and Landslide*	*ThundesStorm*	*Remark*
1991	Yes	No	No	Villages were affected, crops were damaged, cattle were died.
1993	Yes	No	No	Remarkable flood occurred due to heavy and continuous rainfall, roads disconnected, Torsa, Raidak flooded vast area, cattle ,crop , house etc. were severely damaged, **this occurrence left a deep mark to the local people who still remember the aftermath and trauma.**
1994	No	No	Yes	Some people lost their houses and some villages were damaged.
1995	Yes	No	No	Villages were affected, crops were damaged, house besides the river bank were destroyed.
1996	Yes	No	No	Heavy rain occurred for nearly seven consecutive days and the floodplain was inundated, people died, farmland affected, houses were damaged.
1998	Yes	No	No	Villages were affected, crops were damaged, cattle were died.
1999	Yes	No	Yes	Because of heavy rainfall in the last week of August, Torsa, Sankosh and Kaljani rives were flooded, people died, farmland affected
2001	Yes	No	No	Flash flood occurred due to heavy rainfall, embankment collapsed, crops were damaged, cattle were lost.
2002	Yes	No	No	Several blocks, farmlands were damaged due to heavy rainfall and resultant flooding.
2004	Yes	No	Yes	Crops damaged, cattle died and peoples were affected due to flood and pre-monsoonal calamities.
2005	Yes	No	No	Villages were affected, crops were damaged, houses were collapsed due to very heavy rainfall and flood.
2006	Yes	No	No	Villages were affected, crops were damaged, cattle were died.
2007	Yes	Yes (Landslide)	Yes	Uphill area of Dooars were flooded, houses were destroyed by mudslide.
2010	Yes	No	No	Peoples, houses and crops were affected due to flood.
2011	Yes	Yes (Earthquake)	No	Peoples, houses and crops were affected due to flood and earthquake.
2012	Yes	No	Yes	Peoples, houses and crops were affected due to flood.
2013	Yes	No	Yes	Peoples, houses and crops were affected due to flood.
2014	Yes	No	No	Peoples, houses and crops were affected due to flood.
2015	Yes	Yes (Earthquake)	Yes	Peoples, houses and crops were affected due to earthquake and flood.

2016	Yes	No	Yes	Peoples, houses and crops were affected due to flood.
2017	Yes	No	Yes	Massive flood occurred due to incessant rainfall. While the death toll was not high, damage to properties like fish pond, road, culvert, bridge etc. were huge.
2018	Yes	Yes (mild)	Yes	Some people lose their shelter, some died due to thunderstruck.

So as per the table, the ranking of hazard is: (* hazard that does not occur has been excluded)

Hazard	**Frequency**
Flood	27
Thunderstorm	10
Earthquake	4

Vulnerability Analysis

Vulnerability is the detail study of weakness of a community, system or asset that makes susceptible to the damaging effect of a hazard. It is a signal of the health of a society and encompasses four major tangible components that written below:

Type	**Description**	**Condition at Alipurduar District**
Physical Vulnerability	It is determined by the physical aspects like geographical location, structural pattern of building materials, remoteness of a settlement etc.	Being situated at the lap of Bhutan in sub-himalayan foothills region, the district is bound to shoulder upon excess water coming from mountainous trans-boundary rivers during rainy season and is fated to suffer from massive flash flood.
Social Vulnerability	It is determined by the social aspects like level of literacy, awareness of the common people, religious belief, local language, livelihood, social equity, gender issues etc.	The district is full of tribal people and average literacy rate is low which causes serious threat because most of the community people suffer due to ignorance.
Economic Vulnerability	It is determined by the economical aspects like income and status of individuals, percentage of socially deprived group like SC/ST, women and children, financial accessibility, transportation, health care facilities etc.	Collecting tea leaf and forest products are mainstay of the livelihood at Alipurduar. There is no big industry
Environmental Vulnerability	It is determined by environmental aspects like soil erosion, changing pattern of river course, loss of biodiversity, emission of toxic chemical pollutants, ground water contamination etc.	Changing river course network and soil erosion are prominent here. Apart from this, excessive sand and dolomite mining are the factors which play a major role in environmental degradation.

Apart from all these, there are some intangible components of vulnerability as well like social relationship, communal harmony, political instability etc. We have not taken into account these components because all these parameters are not easily measured. Here are some basic parameters of vulnerability that can describe the present situation of Alipurduar District has been written below.

Indicator	**Condition at Alipurduar**
Road networks	Good (G)
Wireless communication	Bad (B)
Availability of drinking water	Good (G)
School/Education	Medium (M)
Health centre	Medium (M)

Capacity Assessment

Capacity assessment is the process to determine how people cope up with any crisis situation with the help of traditional practice, previous knowledge, existing resources and off course proper co-ordination. Trained volunteers and personnel, procurement of rescue equipments, raising awareness, local logistic supports prompt response, early warning dissemination etc. are some of the indicators of capacity assessment.

Indicator	**Condition at Alipurduar**
Literacy	Medium (M)
Trained local volunteer	Good (G)
Number of Divers	Medium (M)
Raising awareness	Good (G)
Procurement of rescue items	Medium (M)
Early warning dissemination	Medium (M)
Livelihood	Low (L)

Risk Analysis

Risk is the chances of occurring harmful event and untoward situation. Risk assessment is carried out by analysing frequency, magnitude, intensity and location based on historical data and is a mammoth task. Outcome of this analysis is risk matrix which is basically a ranking of risks in a single frame and thereby helps us in gaining insight, building knowledge, adopting strategy and making policy about some specific disasters.

Risk Matrix (Risk= probability * impact)

Impact / Probability	Low (1)	Moderate (2)	High (3)
Low (1)	1 (Low)	2 (Low)	3(Low)
Moderate (2)	2(Low)	4 (Moderate)	6(Moderate)
High (3)	3(Low)	6(Moderate)	9(High)

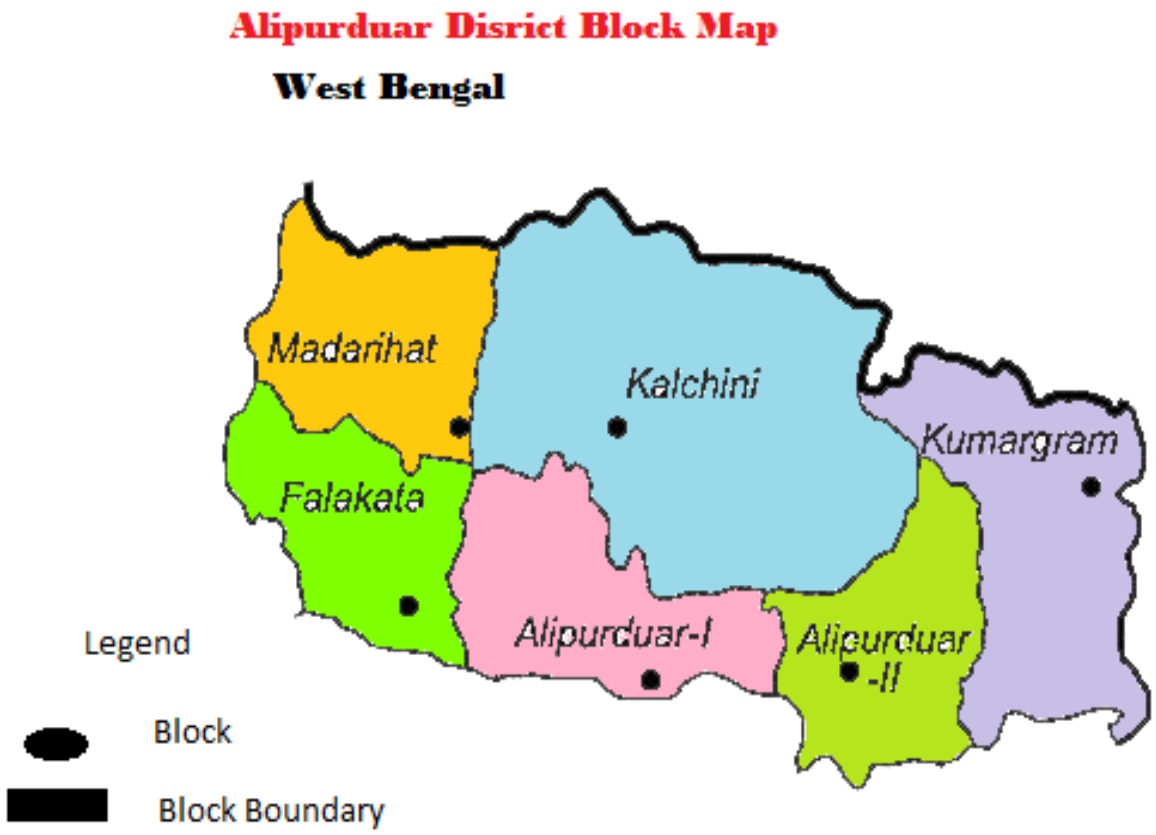
Risk matrix of Alipurduar district is as follows,

Hazard	**Probability**	**Impact**	**Risk***
Flash Flood	3	3	9 (Very High)
Erosion	3	3	9 (Very High)
Landslide	2	3	6 (High)
Thunder squall	2	2	4 (Moderate)
Earth quake	1	3	3 (Low)
Snake bite	3	1	3 (Low)

* **(9 - Very High, 6 - High, 4 - Medium, 3 - Low, 2 - Very Low, 1 - Minimum)**

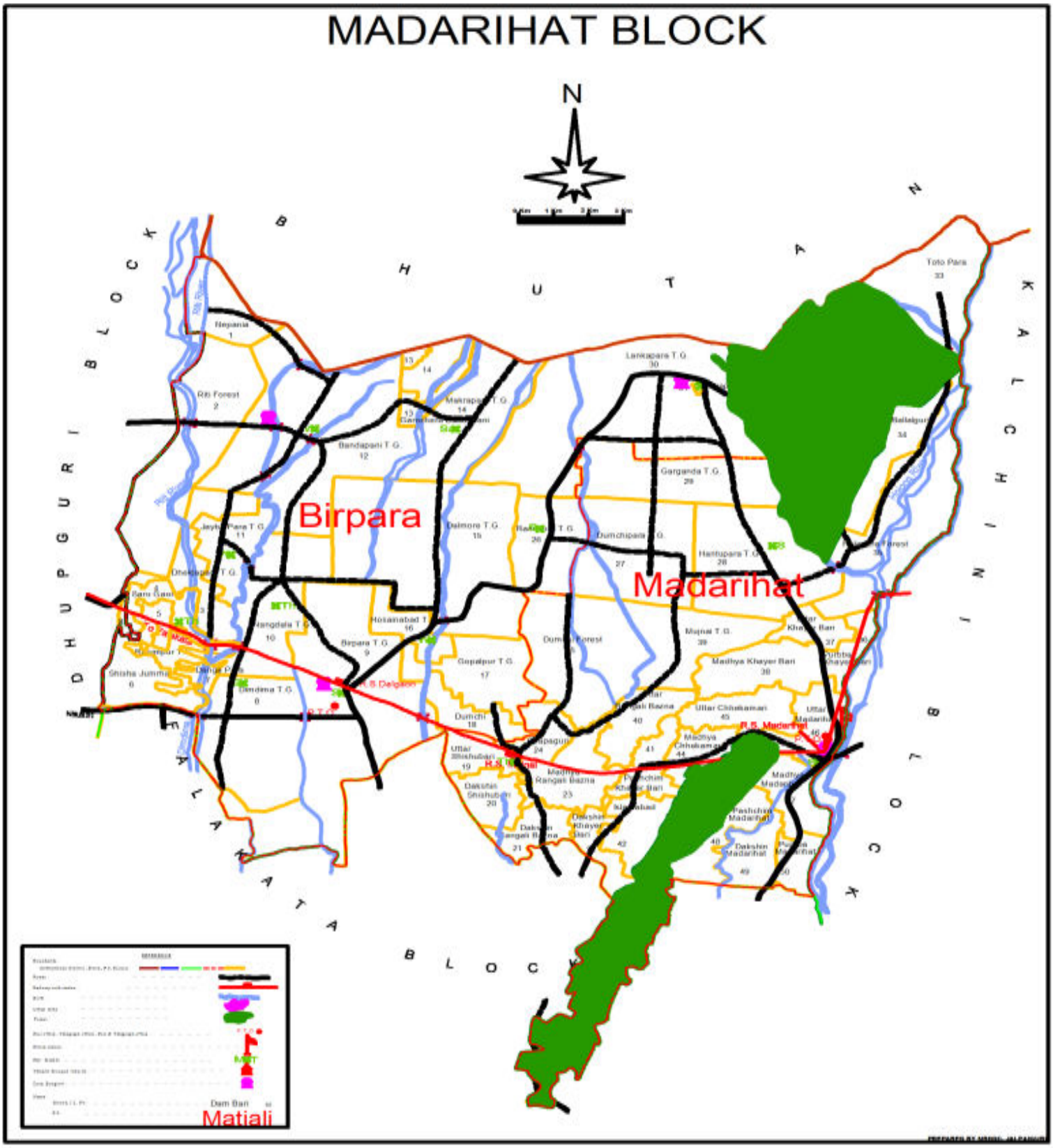
Hence flood should be put in highest priority and should be paid much attention at the time of preparing any contingency plan followed by erosion, land slide, thunder squall and earthquake.

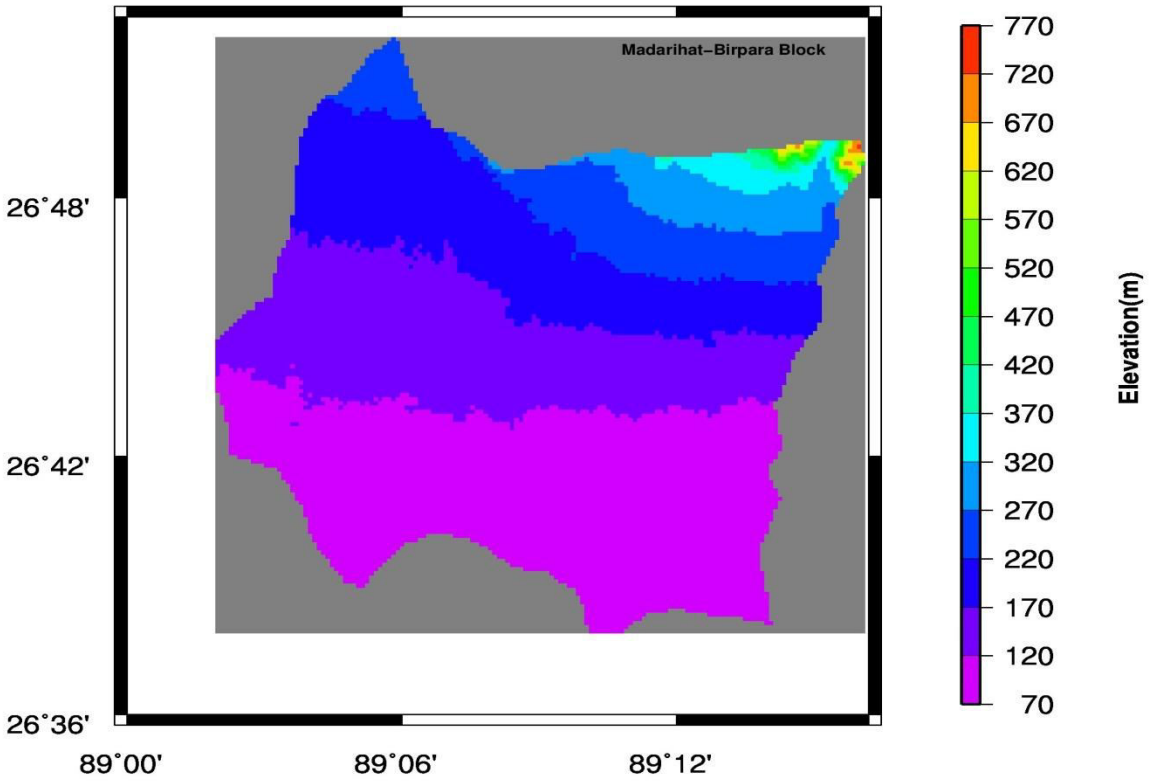
BLOCK WISE HRVA



There are six community blocks at Alipurduar district. Each blocks is vulnerable from different kind of disasters. In the northern side, Kalchini, Kumargram and Madarihat-Birpara are prone to flash flood and landslide whereas lower part like Alipurduar-I, Alipurduar-II and lower half of Kumargram are prone to flood, erosion and water logging situation.

Madarihat block

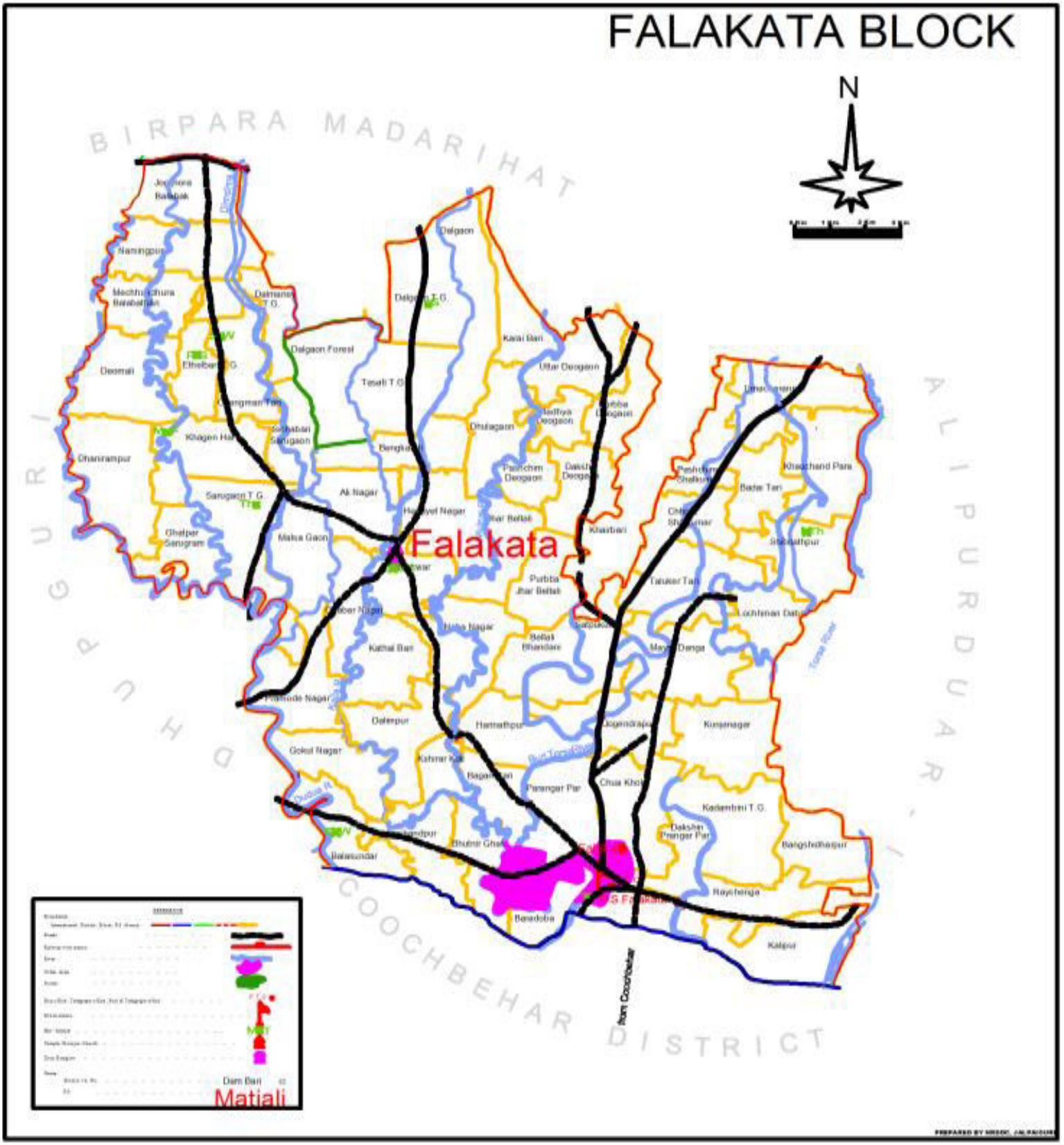


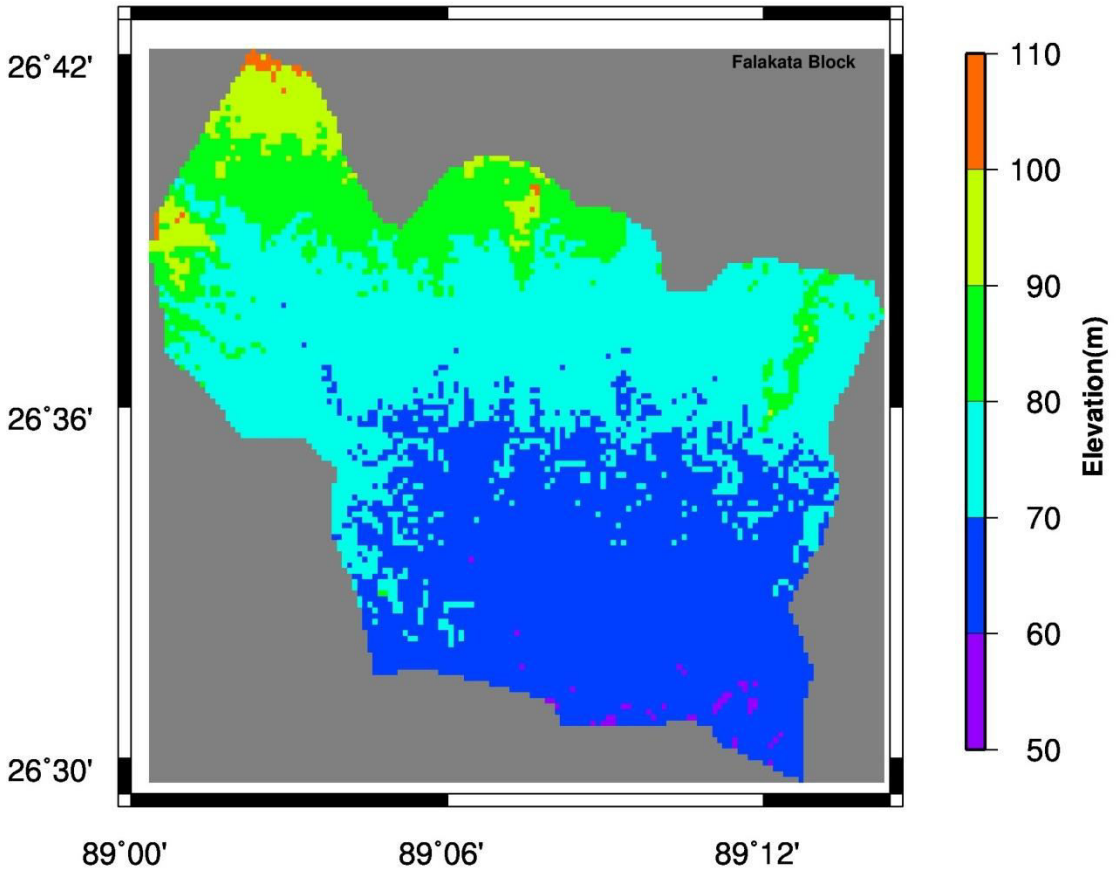


Madarihat block is situated in the north-west sector of the district. It is bounded by Bhutan in the north, Falakata in the south and Kalchini in the east. Jalpaiguri district is in the western side of the block. There are 10 Gram Panchayet (GP) in this entire block and population density is 492/sq.km. Totopara GP is of special status because of the residence of world's smallest community group namely TOTO. Jaldapara and Khaerbari RF have made this place more interesting and increase the level of environmental vulnerability. Average rainfall is 3000-3500 mm/year which is above normal range. Topography is dynamic and average slope pattern varies from 4 to 9 mt/Km. There are numerous streams and jhoras (very small river like canal) that cut across the block. During rainy season, heavy rainfall for consecutive days flow through this dynamic slope pattern creates the place a flood prone area.

	Birpara-I	Birpara-II	Bandapani	Sishujhumra	Lankapara	Hantapara	Madarihat	Khayerbari	Rangali Bazna	Totopara
Vulnerability	H	H	H	H	H	H	MH	MH	H	H
Hazard	VH	VH	VH	VH	VH	VH	M	H	H	VH
Capacity	L	L	L	L	L	L	L	L	L	L

Falakata block

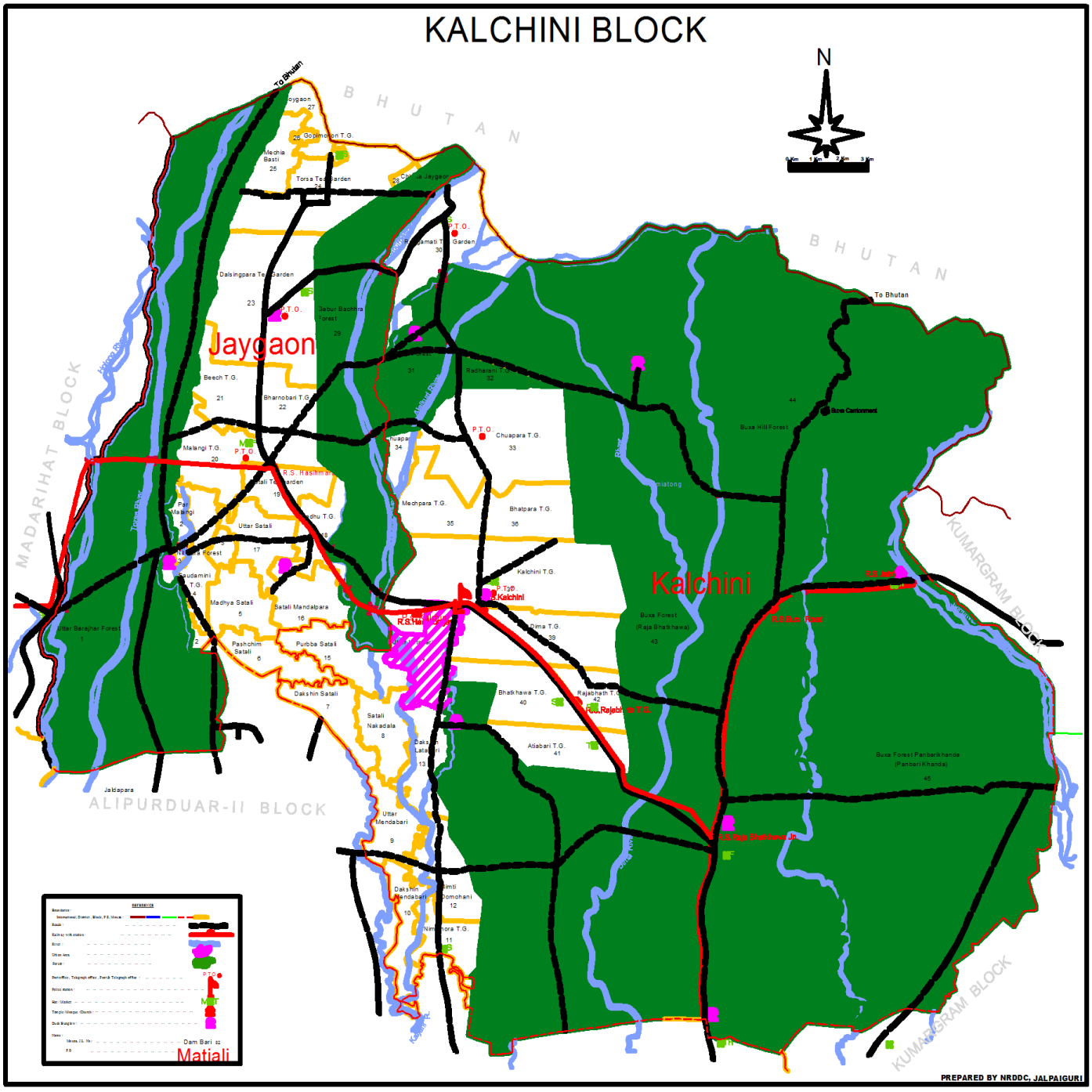


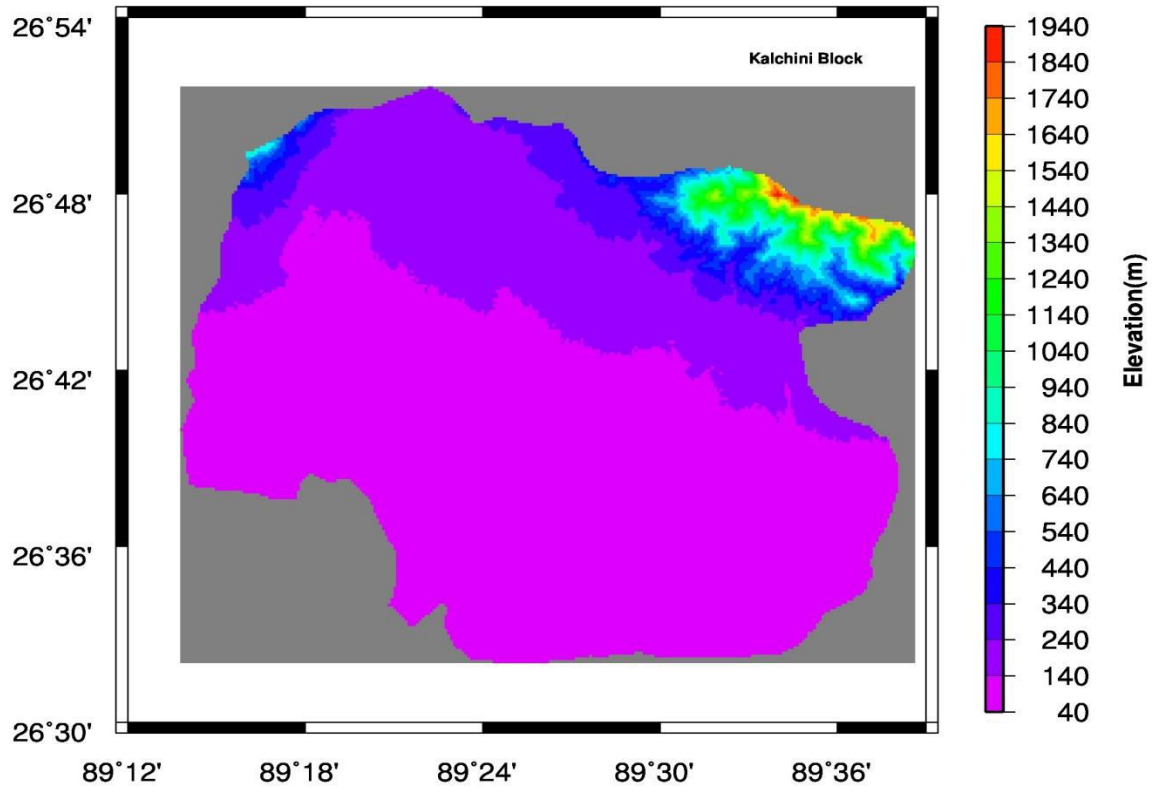


Falakata is situated in south-western sector of the district and bordered by Madarihat in the north, Alipurduar-I in the east, Kalchini in the north-east, Coochbihar in the south and Jalpaiguri in the west. There are 12 GP in this entire block and population density is 718/sq.km. Dalgaon and Jateswar have small forest patches. Average rainfall in this block is 2500-3000 mm/year. The overall slope pattern is very low ranging from 0.6-3 mt/km except some places like Dhanirampur, Dalgaon etc. where slope is steep and varies from 3-5 mt/km. Most of the GPs are facing soil erosion during peak monsoon due to deforestation. Environmental vulnerability is very high due to the presence of Khaerbari and Jaldapara RF. Very ofthen forest animals like elephant, tiger emerges to the localities and create panic among city dweller.

	Jateswar-I	Jateswar-II	Falakata-I	Falakata-II	Guabarnagar	Salkumar	Deogaon	Mairadanga	Parangerper	Dhanirampur-I	Dhanirampur-II	Dalgaon
Vulnerability	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH
Hazard	M	M	VH	VH	VH	H	VH	H	VH	VH	VH	VH
Capacity	H	H	H	H	H	H	H	H	H	H	H	M

Kalchini block

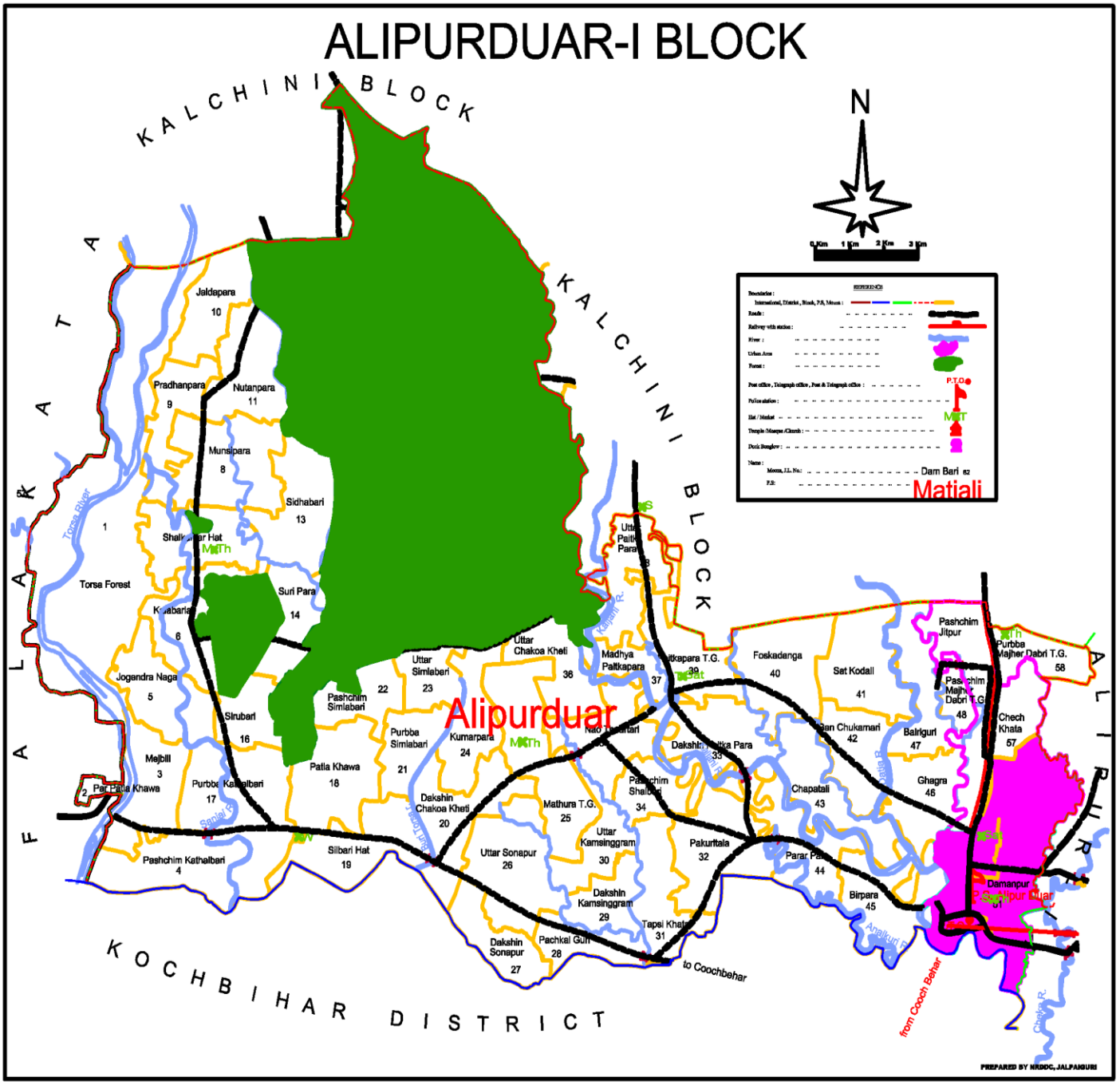


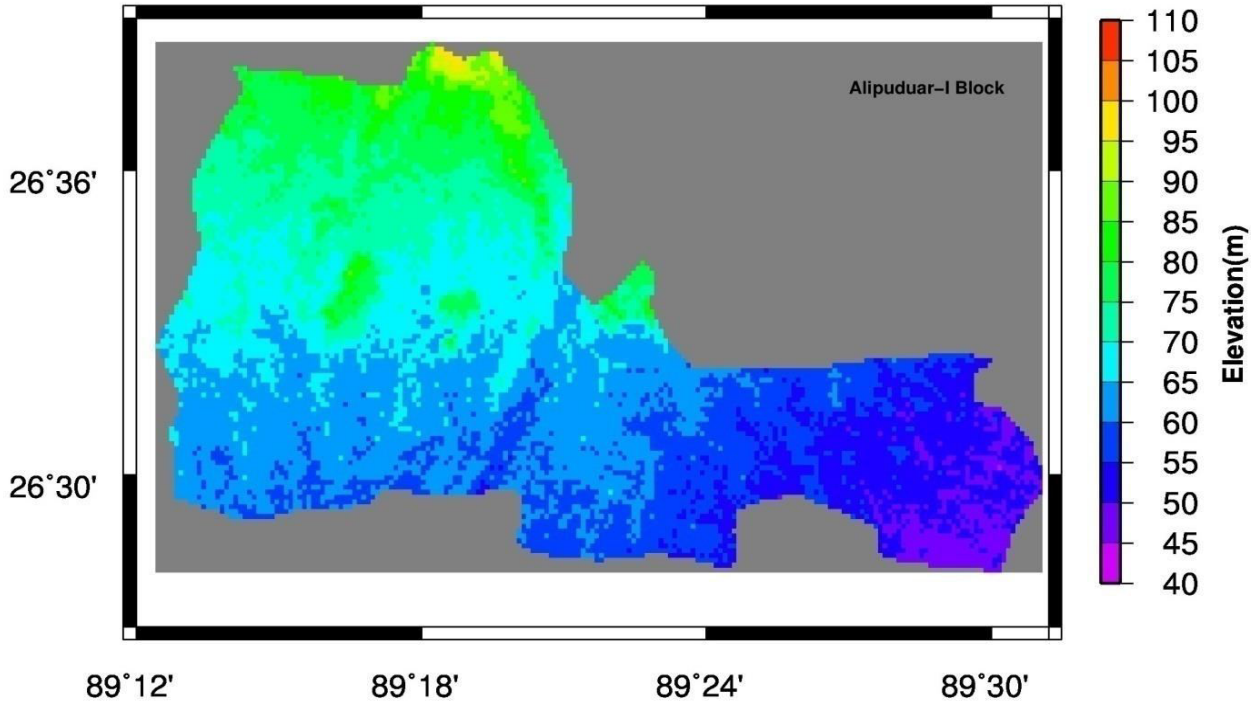


Kalchini is situated in the northern most part of the district and bordered by Madarihat in the west, Bhutan in the north, Kumargram in the east, Alipurduar-I in the south and Alipurduar-II in the south-east sector. It is the most vulnerable blocks among all because it possesses an area of 711 square kilometre and the largest block according to the size. Population density is 355 per square kilometre and has eleven GP. A major area of this block (approx. 60%) is covered by forest and tea gardens. Three major RF viz. Jaldapara, Bhutri and Rajabhatkhawa surrounds the whole block. This block receives an average annual rainfall of 3000-3500 mm/year. There is a Air Force base station at Hasimara. A dynamic variation in slope is observed and it ranges from 30mt/km (near Rajabhatkhawa) to 3.6mt/km (near Latabari and Mandabari). The average slope is 9-10 mt/km which is high as well. Literacy rate is quite low because of the presence of tribal community who depends only on collecting forest products, timber and tea leaves.

	Jaygaon-I	Jaygaon-II	Dalsingpara	Malangi	Satali	Mandabari	Latabari	Chuapara	Kalchini	Garopara	Rajabhatkhawa
Vulnerability	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH
Hazard	H	H	H	H	H	H	H	H	H	H	H
Capacity	L	L	L	L	L	L	L	L	L	L	L

Alipurduar-I Block

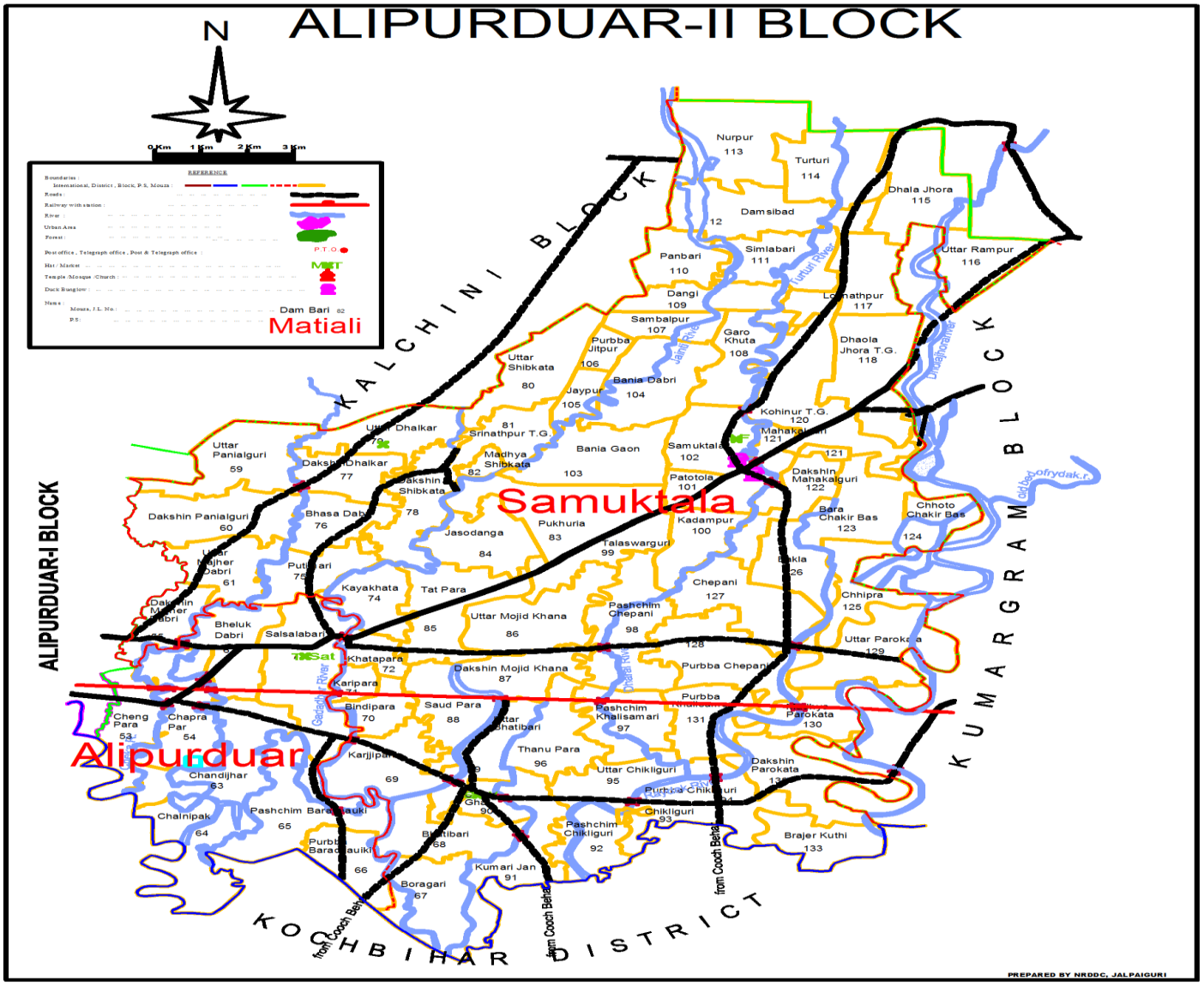


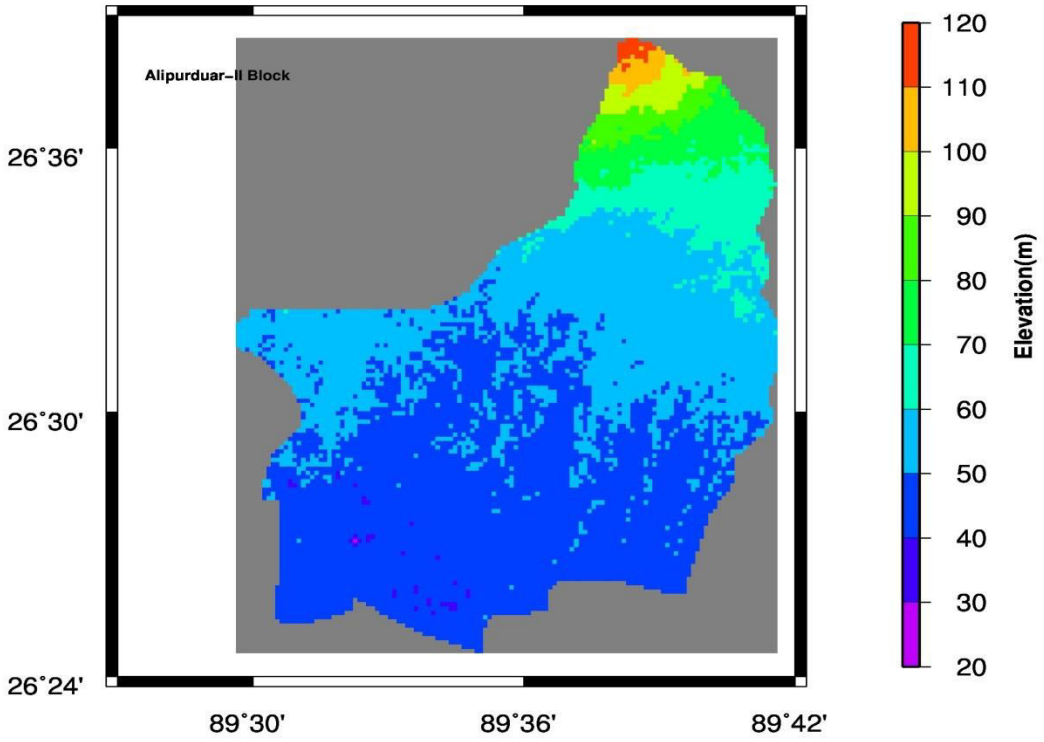


Alipurduar-I is situated in the southern part of the district and is bordered by Coochbihar in the south, Falakata in the west, Alipurduar-II in the east and Kalchini in the north. The area of this block is 378 square kilometer, population density is 521 per square kilometre and have eleven GP. District headquarter is situated in this block and most of the land is covered by human settlement, offices, schools, major hospitals and nursing homes etc. Two important railway lifeline Alipurduar Jn. and New Alipurduar railway station along with two other satellite stations are situated in this block to meet the purpose of navigation of tourist, travellers and others. The slope pattern is very low and ranges from 1-1.3 mt/km. This proves that it is a low lying area and water accumulate very easily from uphill through stream or river during monsoon.

	Mathura	Topshikatha	Parerpar	Banchukumari	Vivekananda-I	Vivekananda-II	Salkumar-I	Salkumar-II	Purba Kanthalbari	Patlakhawa	Chokoakheti
Vulnerability	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH
Hazard	H	VH	VH	H	VH	VH	H	H	VH	VH	VH
Capacity	M	M	M	M	M	M	M	M	M	M	M

Alipurduar-II Block

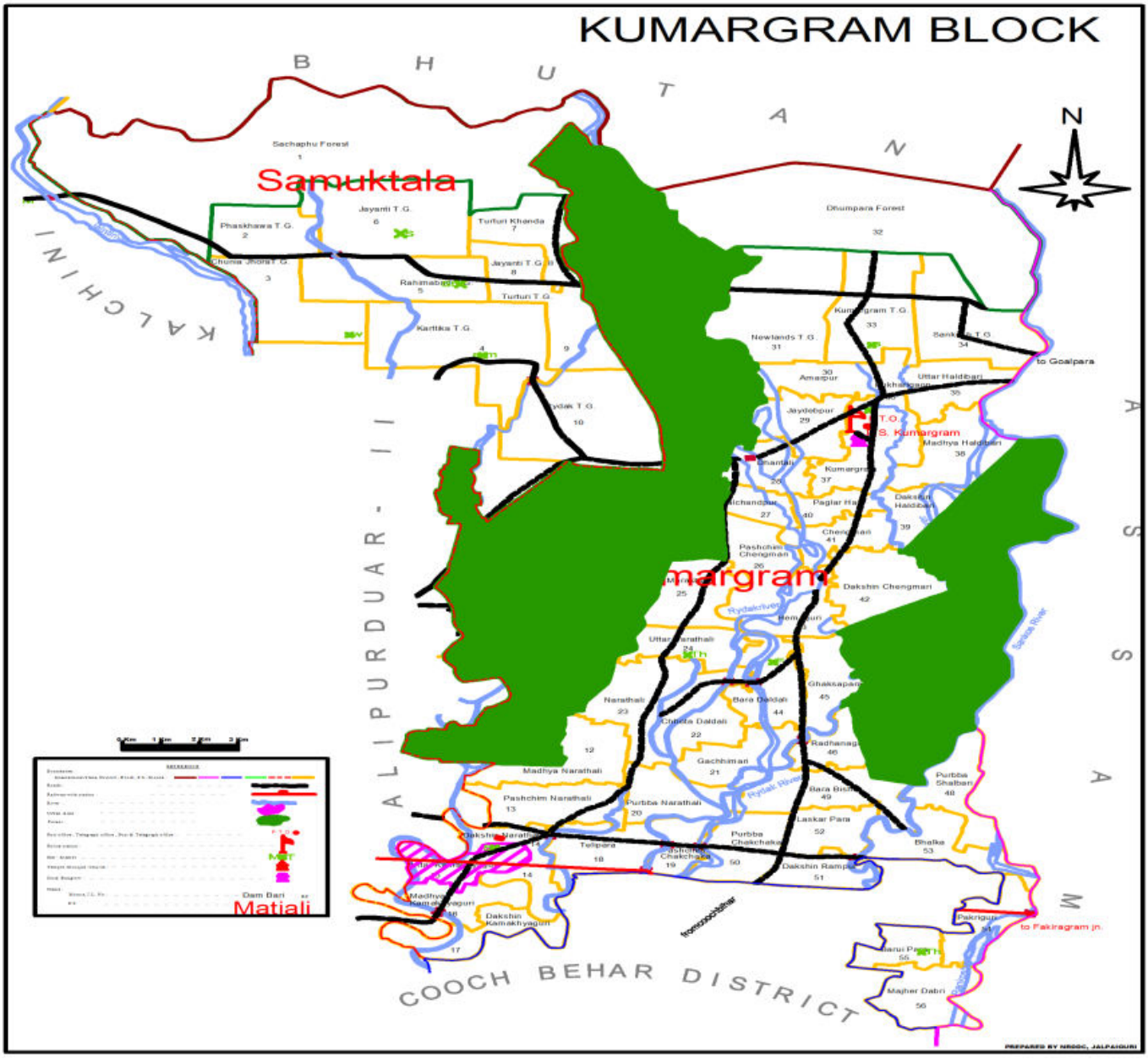


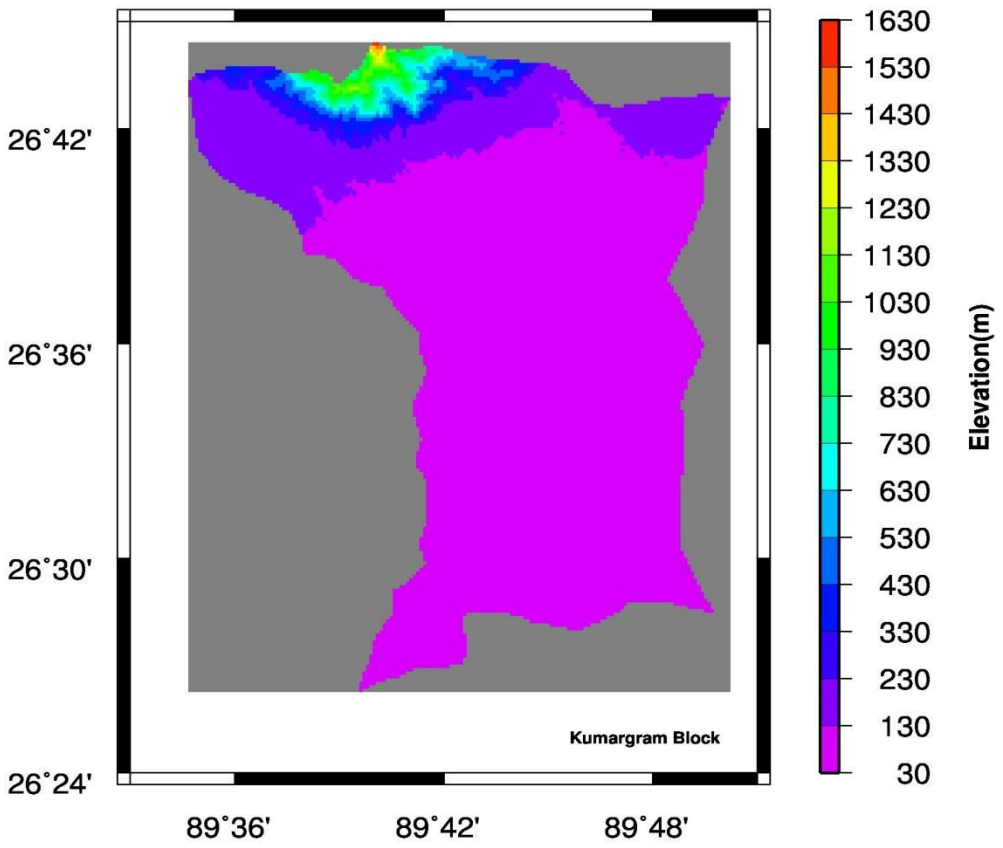


Alipurduar-II block is situated in the south-eastern part of the district and bordered by Coochbihar in the south, Kumargram in the east, Kalchini in the north and Alipurduar-I in the west. The area of this block is 319 square kilometer, the smallest one among six blocks, population density is 618 per square kilometre, densely populated block and have eleven GP. Average annual rainfall in this block varies in the range of 2500-3000mm/year approximately. Slope pattern is varying, places like Turturi, Samuktala Majherdabri have higher slope, approx. 2.5-3.5 mt/km. Rest of the paces varies from 1.2-1.4 mt/km. This is also a low lying area and increases the level of danger during rainy season.

	Turturi	Samuktala	Mahakalguri	Parokata	Kohinoor	Majherdabri	Totopara-I	Totopara-II	Bhatibari	Chaparerpar-I	Chaparerpar-II
Vulnerability	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH
Hazard	H	H	H	VH	M	M	VH	VH	VH	VH	VH
Capacity	M	M	M	M	M	M	M	M	M	M	M

Kumargram Block





Kumargram is the eastern most block of this district and bordered by Bhutan in the north, Assam in the east, Coochbihar in the south and Alipurduar-II in the west. It has the area of approximately 518 square kilometre and population density is 344 per square kilometre. It is also divided into eleven GP. Sankosh and Raidak, the two dreadful tributaries of river Brahmaputra are flowing through this block making a flood prone area during rainy season. This block get annual rainfall of 2500-3000 mm/year. Slope pattern is very dynamic which varies in the range 10-30 mt/km in some places like Raidak, Khanda , Kumargram etc. but rest of the places is in the range of 1.5-5 mt/km.

	Turturi Khanda	Raidak	Kumargram-Sankosh	Kumargram	Chengmari	Barobisha-I	Barobisha-II	Khoardanga-I	Khoardanga-II	Kamakhyaguri-I	Kamakhyaguri – II
Vulnerability	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH	MH
Hazard	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH
Capacity	M	M	M	M	M	M	M	M	M	M	M

Vulnerable Places identification: (based on available office record)

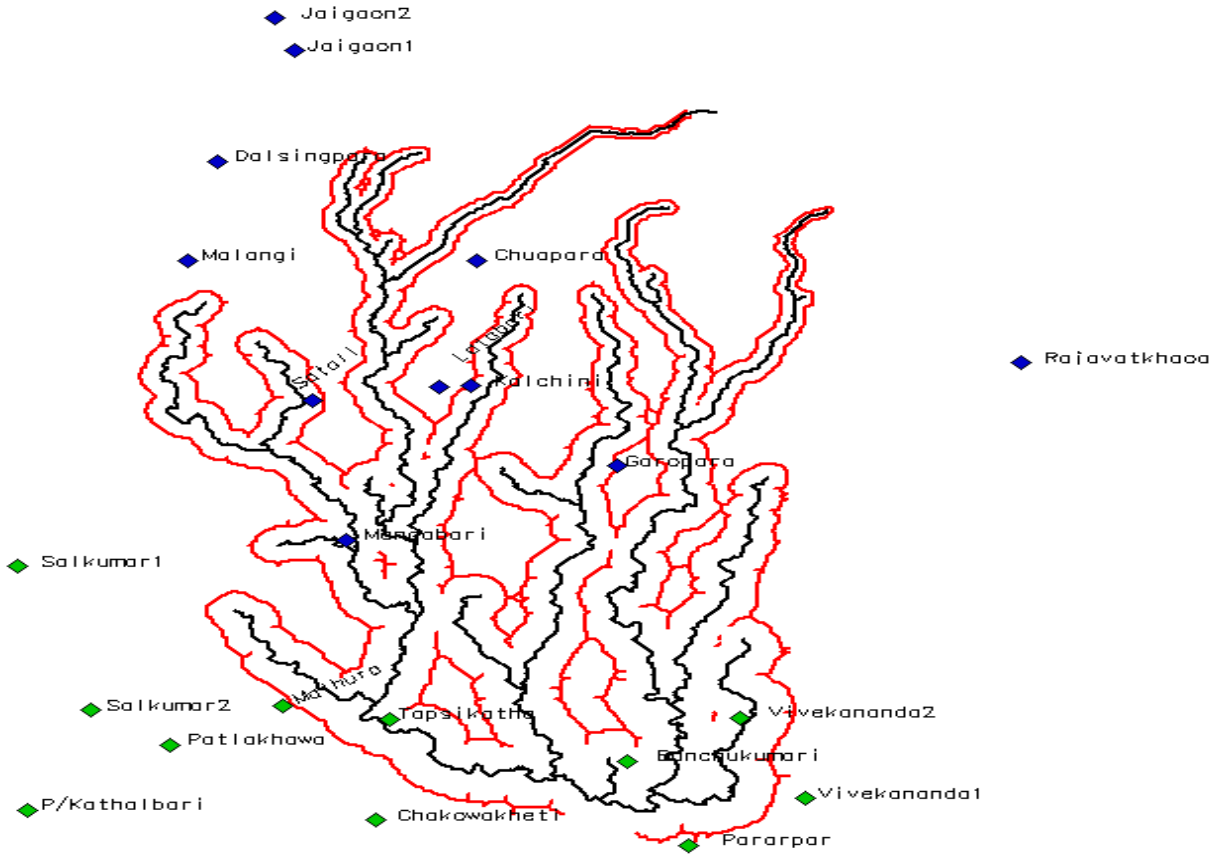
Flood	Alipurduar-I	Pararpar, Vivekananda-I, Vivekananda-II, Purba Kathalbari, Tapshikatha, Banchukumari.
	Alipurduar-II	Majherdabri, Kohinoor, Parokata, Samukhtala, Mahakalguri.
	Kalchini	Jaygaon, Rajavatkhawa, Dalsingpara.
	Kumargram	Kumargram-Sankosh, Barobisha, Kamakhyaguri, Turturikhanda.
	Falakata	Dhanirampur, Dalgaon, Guabarnagar, Jateswar.
	Madarihat	Birpara, Totopara, Lankapara, Hantapara, Rangalibazna.
	Municipality	Ward no. 5, 8, 13, 16, 18, 20.
Landslide	Entire Kalchini, Madarihat and upper portion of Kumargram Block.	
Earthquake	Entire District (fallen under zone IV and V)	
Snakebite	*Name*	*Cases*
	Alipurduar-I	5
	Alipurduar-II	15
	Kalchini	2
	Kumargram	4
	Falakata	10
	Madarihat	10
	Municipality	3
	According to official records Alipurduar II block is more vulnerable than other places. But the entire portion covered by forest and tea garden comes under the district is vulnerable to Snakebite.	

Vulnerable Places identification: (based on GIS and statistical techniques)

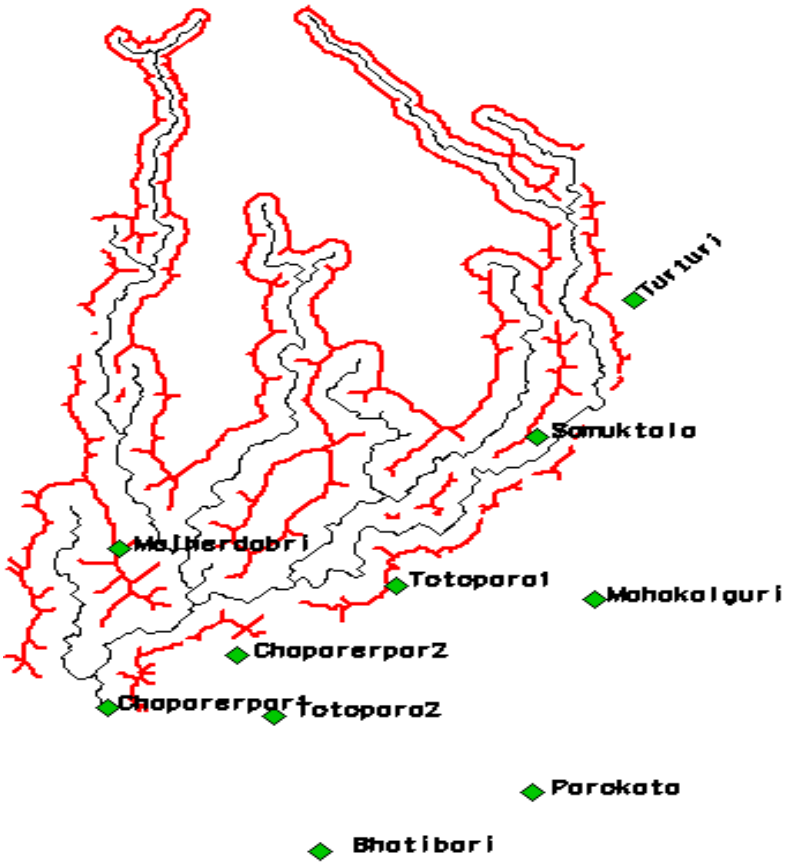
GIS is a software which can help and give insight in different real scenarios like river geometry, river sinuosity, flood water flow, forest cover, slope detection etc. by using 2-D and 3-D technique based on available input. Here we have tried to concentrate only on flood and landslide.

Flood

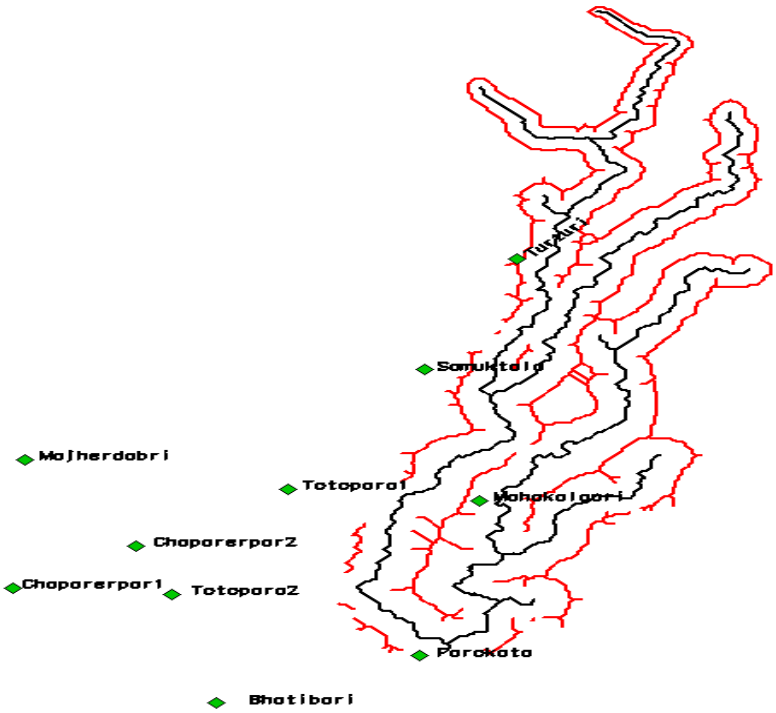
There are few major rivers at Alipurduar namely Kaljani, Rydak, Sankosh and Jayanti which become dangerous during monsoon season. Incessant rainfall of 2-3 hours is enough to inundate the banks due to shallow river bed. We have calculated low lying areas based on red water level height of three individual rivers like Kaljani, Rydak-I and Jayanti. The black line denotes the normal course of that particular river whereas the red line stands for the red water level. From this map, we can infer and detect the places that can be affected during inundation.



(Kaljani River)



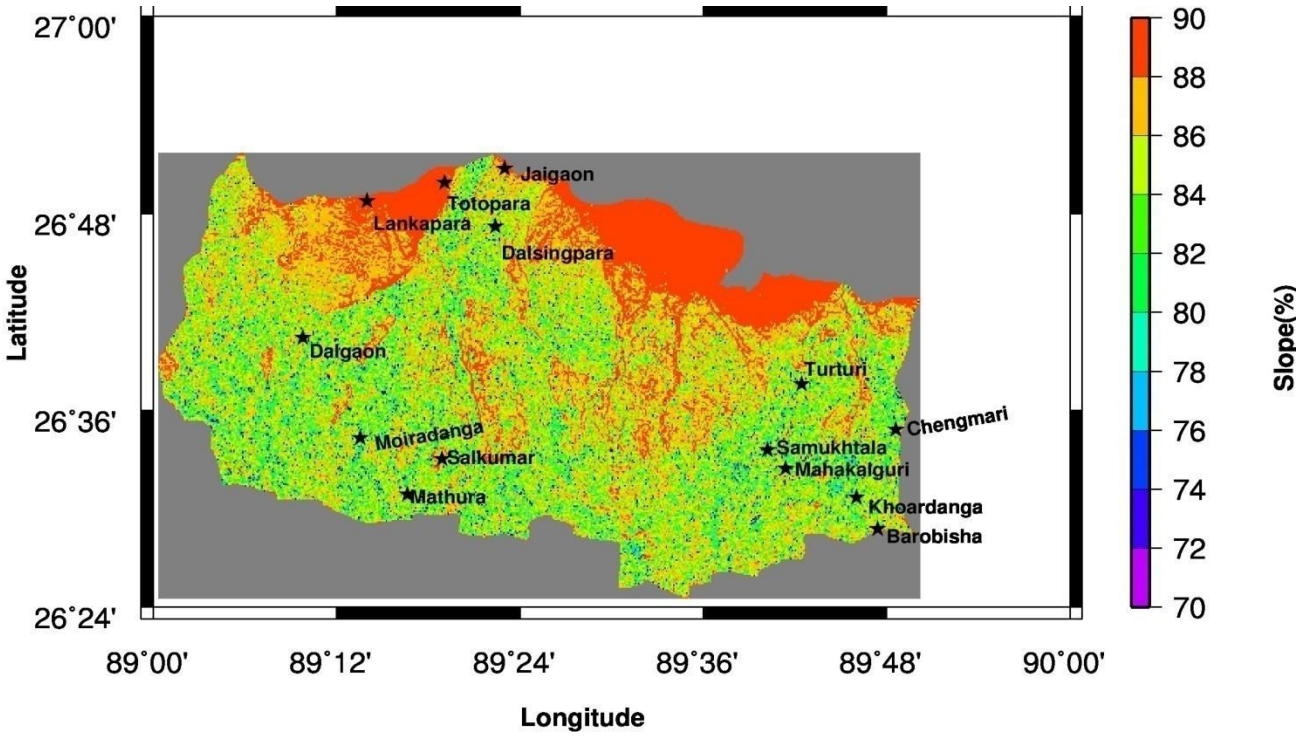
(Jayanti River)



(Rydak-I River)

Landslide

Landslide is a collapse of a mass of earth or rock from a mountain or cliff and mostly occurs due to any primary events like earthquake, heavy rainfall etc. It is generally occurred at the foothill area and it is needless to say that upper part of Alipurduar is a breeding ground of landslide. Here we have tried to identify the vulnerable places due to landslide by calculating slope. Red color stands for high sloping area. According to the figure, places like Barobisha, Khoardanga, Turturi, Chengmari, Dalgaon, Lankapara, Totopara, Jaigaon etc. are vulnerable to landslide.



Disaster Management Vulnerability Matrix

Name of the Block/Municipality	Number of people in Vulnerable zone due to flood	Number of people in Vulnerable zone due to Cyclone	Number of people in Vulnerable zone due to Tsunami	Number of people in Vulnerable zone due to landslide	Number of people in Vulnerable zone due to industrial/Chemical Disaster	Number of people in Vulnerable zone due to any other disaster	Total number of people	Earthquake Vulnerability Zone	Priority Ranking as per vulnerability to multiple disaster
Alipurduar-I	20800	Alipurduar is not a coastal district and hence effect of cyclone is very less.	Alipurduar is not a coastal district and hence there is no direct impact of Tsunami.	**----**	Alipurduar is not a big industrial hub	**------**	**20800**	Zone-IV	1. Flood 2. Earthquake 3. Thunderstorm 4. Landslide 5. Snakebite
Alipurduar-II	43654			**----**			**43654**	Zone-IV	
Kumargram	39921			19960			**59881**	Zone-V	
Kalchini	25035			41947			**66982**	Zone-IV	
Madarihat-Birpara	15270			30310			**45580**	Zone-IV	
Falakata	11800			**----**			**11800**	Zone-IV	

Chapter 3

INSTITUTIONAL ARRANGEMENT

Disaster Management activities are very dynamic as well as challenging and need to be handled with proper care. Good governance, proper co-ordination and co-operation in between all line departments and various sub-ordinate offices ranging from state authority right up to panchayet level are very much essential to bring any adverse situation under control. All these can be achieved through proper institutional structure and inbuilt mechanism. On the other hand, cementing the gap between public and private sectors is indispensable for prompt humanitarian response. Owing to meet up the demand of proper co-ordination, Government have decided to implement the law on disaster management for institutional mechanism to bring all the department and allied wings under a common frame. According to the section 3, 14 and 25 of DM Act, 2005, there should be disaster management authorities, a multi-disciplinary body with nodal officers from various line departments, both state and district level alike.

There exists different kind of institutional structures which has been constructed for different purposes.

Structure	**Purpose/Activities**
Administrative hierarchy	Onward transmission of various reports, current stock position and requisition of fund/relief articles/response force etc.
Quick Response Team	Local level arrangements for prompt response and rescue work.
Incident Response Team (IRT)	An institutional mechanism having different components constructed by various nodal officers to reduce the burden of work from a particular task force.
Emergency Operation Centre	Central hub for monitoring, co-ordinating and supervising relief, response and rescue activities.
Control Room	Storing house of various rescue materials, monitoring round the clock surveillance and deployment of different task force as and when required.
Inter-Agency Group	A common platform consisting of different NGOs, SHG, Govt. Organisation, CBO etc. in order to bridge the gap between public and private sectors.

ADMINISTRATIVE HIERARCHY

Hierarchy	***Nodal agency***	***Functions***
National level	National Disaster Management Authority (NDMA)	1. Coordinate disaster management at national level. 2. Operate National Emergency Operation Centre (NEOC) smoothly which has been set up in the Ministry of Home Affairs with state-of-the-art equipments. 3. Develop/Update National Contingency Action Plan.
State level	West Bengal Disaster Management Authority (WBDMD)	1. Coordinate disaster management at state level. 2. Operate State Emergency Operation Centre (SEOC) smoothly. 3. Distribute the grant and relief materials to the respective divisions/districts. 4. Check and verify the DM plan for each district. 5. Impart Trainings.
District level	District Disaster Management Authority-Alipurduar (DDMA) Email :dmsapd20@gmail.com Ph. No 03564-253637	1. Coordinate entire disaster management activities at district level. 2. Looking after the chain of command at District Emergency Operation Centre (EOC) during crisis. 3. Develop/Update Disaster Management Plan. 4. Identify vulnerable area and chalk out strategies 5. Disburse the contingency and ex-gratia grant to the block level. 6. Impart Trainings. 7. Deliver the relief materials to the block well in advance. 8. Supervise and help in control any emergrnt situation, if arises, at Block and Municipality

DDMA is the apex body to monitor and supervise all the disaster management activities in a district ranging from raising awareness to providing relief and rescue to a people in need. DDMA can also support the district by assisting with various thought provoking mitigation measure to build back better and make our society disaster resilient. According to the order under section 25 of DM act, 2005 every district should have a DDMA comprising of seven persons at most. We have already formed DDMA at our district with the following members:

- District Magistrate
- Sabhadhipati/ Zilla Parishasad
- Additional District Magistrate
- Superintendent of Police
- Chief Medical Officer of Health

Functionaries:

1. Build/Construct a proper disaster management plan including preparedness, relief, response and rehabilitation of the district.
2. Coordinate and monitor the implementation of the National Policy, State Policy, National Plan, State Plan and District Plan.
3. Detecting vulnerable areas in the district prone to specific disaster and ensuring special mitigation measure for those places.
4. Give directions to different authorities at the district level and local authorities to take such other measures for the prevention or mitigation of disasters as may be necessary.
5. Lay down guidelines for prevention of disaster management plans by the department of the Government at districts level and local authorities in the district.
6. Organize training programs for different levels of officer, employees and voluntary rescue workers in the district.
7. Coordinate immediate response to any threatening disastrous situation.
8. Review the state of capabilities for responding to any disaster or threatening disaster situation in the district and give direction to the relevant departments or authorities at the district level for their up gradation as may be necessary.
9. Conduct meeting with all BDMO for reviewing and assessing the progress on yearly basis.
10. Advise and coordinate the activities of the Department of the Government at the district level, statutory bodies and non-governmental organization in the district engaged in various activities related to disaster management.
11. Identify buildings and places which can serve the purpose of relief centers or camps and make arrangements for water supply and sanitation in such buildings or places.
12. Provide information to the State Authority related to different aspects of disaster management at the time of their need.
13. Maintain stockpiles of relief and rescue materials in a systematic way to make them available within a short notice.
14. Perform other functions as the State Govt. or State Authority may assign from time to time which is necessary for disaster management in the District.

QUICK RESPONSE TEAM

The ultimate target of disaster management activists is to reduce loss of life and damage to properties, public and private alike. That can only possible by providing prompt response without delay, resource mobilisation as per the need/demand of indigent people and rescuing distressed persons from danger. Quick Response Team is a task force that can perform all the above mentioned tasks at a single stroke. QRT is generally formed with the help of local boys and girls (if necessary) for immediate response and is deployed to strengthen all the vulnerable areas identified based on vulnerability analysis in a particular locality. **We have 966 trained civil defence volunteers throughout the district till date who can serve the purpose of forming QRT and among them 31 personnel are well trained scuba divers. Some of them have taken fire fighting training also. To make local QRT network stronger, the district administration is regularly organising basic training at local level.**

INCIDENT RESPONSE TEAM

While efforts have been made towards responding disasters to the best of available resources, the analysis of various responses indicated the following lacunas.

1. Lack of systematic planning process.
2. Weak chain of command and supervision of response activity.
3. Lack of proper communication plan and inefficient use of available resources.
4. Want of coordination between first responders, duty officers and NGOs with specialized skills during the response phase.

Incidence Response System aka IRS is a built-in in-house mechanism which reduces the burden of responsibilities from the shoulder of a particular task force by distributing tasks among various expert group, called Incident Response Team, depending upon the nature and magnitude of a particular disaster. The basic characteristics of IRS are

1. It is a system with flexibility of activating a particular wing from an existing structure without hampering other counterparts as per the situation demands.
2. It incorporates all the responsibilities and activities through a well-designed chain of command and strictly follows the top-down approach.
3. It select all the officers required for a particular scenario and get them trained.

IRS is a framework whereas IRT is a team that can be activated during crisis as per the situation. It comprises of various officers:

i) INCIDENT COMMANDER- Command and control of the specific response team.
ii) OPERATIONS SECTION CHIEF- Supervision and Performance of different tactical actions required for disaster response.
iii) PLANNING SECTION CHIEF- Collection, analysis of data, working out the resource requirement and preparing an action plan.
iv) LOGISTIC & FINANCE SECTION CHIEF - Providing logistic support, procurement, maintaining accounts and ensuring cost effectiveness.

We have formed IRT at different administrative levels such as District, Sub-division and Block.

DISTRICT EMERGENCY OPERATION CENTRE (DEOC)

EOC is the backbone of disaster management section. Important decisions and activities like early warning dissemination, close monitoring of any untoward situation, deployment of various response team, keeping communication with different stakeholders and higher authorities during crisis period etc. is performed from this particular wing in a systematic manner. Bold decision and proper communication network is two important pillar of good governance and timely response which is executed here under the guidance of committee members and nodal officers. So disaster management section without an EOC is just like an aircraft without a pilot. The two most important sectors that might be affected by any hazard are power/electricity and communication.

Keeping all these things in mind, recently we have refurbished our DEOC with state-of-the-art equipments like digital display board for run time water level monitoring, two dedicated computer system of having high performing capability, microphone with speaker for spreading alert message, inverter with capability of providing power supply for extended period etc. To run the emergency centre smoothly during crisis period, senior officials like Officer-in-Charge, DDMO, SSOI (civil defence), Disaster Professional, other office staffs and volunteers from civil defence are available and perform their individual duty meticulously. Following activities are performed in our DEOC in general:

Normal Period	• Receive routine information from block and municipality level. • Distribute relief materials to the block in advance. • Ensure proper dissemination of information of district control. • Identify manpower belongs to different stakeholders, NGOs, Corporate sectors and line department with contact number and address to form a team. • Monitor preparedness measures of the blocks by visiting the places. • Organise monthly meeting with the block level personnel for their progress. • Maintain a proper database for all the resources like relief materials, trained manpower, technical instruments etc. • Updation/modification of DM plan according to the NDMA guidelines. • Identification of vulnerable area in terms of intensity of a catastrophe to put extra effort towards saving life and property. • Monitoring stock of relief materials periodically.
Emergency Period	• Keep constant watch on weather report and disseminating the same in the form of radiogram to the various block and municipality. • Produce CA-II report to the higher authority periodically. • Deploy different trained manpower and task forces in the vulnerable places as and when required. • Keep contact with the relief camp time to time to meet up the need of distressed persons. • Keep close contact with different line departments and other stakeholders like NGO, CBO etc.

FLOOD CONTROL ROOM

Control room is the storehouse of various rescue materials, diving instruments and manpower. In the district, a seasonal control room for five months is opened according to the commencement and withdrawal of monsoon. During this period activities like round the clock surveillance, close watch on weather report/rainfall measurement/water level, keeping record of any negative event like water logging condition/heavy rainfall/ drowning etc. is carried out by civil defense volunteers according to a duty roster furnished by the district authority. We have a flood control room at our district which generally open on 01.06.2018 and close on 31.10.2018 and it has a dedicated landline telephone number marked as hotline with Army because of the importance.

Place	**Control room number**
District HQ	03564-257091
Sadar Sub-Division	03564-256391
Municipality	03564-255580
Alipurduar-I Block	7797864100
Alipurduar-II Block	7797864200
Kalchini Block	03566-240205
Kumargram Block	03564-252239
Madarihat Block	7797863900
Falakata Block	03563-260283

INTER AGENCY GROUP (IAG)

Inter Agency Group is a common platform to share thoughts and views of different govt. and non govt. organizations that are attached with various disaster risk reduction activities. In a nutshell, it is an effort towards bridging the gap between govt. sectors and non govt. organization. Our state level IAG was formed in the year 2014 and started the journey. In this due course of time, it has been extended far enough and at present it has more than 150 members from different sectors like Ham radio operator, members of various NGO's, Police dept., NDRF personnel, DDMO, SDDMO, BDMO etc. Among them, we have identified those organizations that are long been working in our area at Alipurduar from grass root level and made a database of them along with the sector of expertise they are working for. Some of them work only for the safety of children, some are working for environment and health hazard, some are attached with social activities and some are attached with entire DRR activities. This database guides us to take prompt decision to select the expert group without wasting time.

Organization	Area of expertise	Contact person
PRISM	Disaster Risk Reduction, School safety, Health hazard.	Anirudhdha De-9748107612 Nita Dhar-9832664896
CASA	DRR activities, child safety issues.	Animesh Mazumdar-8145523347 Debojyoti Chakravorty-9433190122
DPGBS	DRR activities.	Pritwish Karmakar-9733142464
Rural Aid	Community awareness.	Manik Dhar-8509391010
Mahila Sishu Suswastha Suchetana Org. (MSSO)	Women health awareness and empowerment	9733272943
Lok Kalyan Parishad	Social welfare	9641608940
BIRPARA WELFARE ORGANIZATION	Social welfare	Indrajit Dey- 9832515736
JALDAPARA-MADARIHAT WELFARE ORGANIZATION	Social welfare	Sugam Goutam -9734024747
NEST	Environmental activities	Kallol Dey- 9733120504
St. John Ambulance & Red Cross Society	Medical Treatment, First Aid and Snakebite Specialist	Jayanta Das-8967408378

SIREN SYSTEM

Siren is a device which acts as an alarm bell for warning of any danger. It is basically a sound system and is blown for a particular time period with various frequencies to aware local peoples and officials regarding any event. We have our own siren system which is kept functional and is blown on daily basis at sharp 9:00 AM for one minute.

Chapter 4

PREVENTION AND MITIGATION MEASURE

Disaster Risk Reduction aims to reduce the damage to property and loss of life. That can only possible by proper prevention and mitigation technique at pre-disaster phase. Though the terms are looking similar, there is a slight difference. Prevention means to prevent any hazardous situation from root/source whereas mitigation means to minimize the impact of any negative consequence by adopting effective and plausible strategies. Here one thing has to be mentioned that we cannot prevent natural disaster rather we can only mitigate. Mitigation measure is further classified into two categories, structural and non-structural.

The details has been mentioned below in tabular forms

Prevention	Applicable only for man-made disaster like health hazard, road and rail accidents, deforestation etc.	
Mitigation	Structural (construction)	Flood shelter construction. Resilient building construction. Dam, embankment and reservoir construction. River channel diversion.
	Non-structural (non-engineering)	Vulnerable area identification. Training and mock drill. Early warning dissemination.

As far as vulnerability and threat is concerned, Alipurduar is an earthquake and flood prone area**.** Sometimes this place very often experiences also thunderstorm along with lightning which is increasing at an alarming rate these days. Changing rainfall pattern, cloud burst, heat wave etc. are few of those that have been amended recently in the list of natural hazard as a consequence of climate change. Alipurduar is no exception as well and have already experienced unprecedented rainfall. This is all about natural hazards at Alipurduar.

Apart from all these, there are various other threats also that Alipurduar is facings every now and then. These are wild life animal attack, snakebite, change of river course network etc.

Preventive Measure at Alipurduar:

Prevention is only possible for human-made disasters like disease outbreak, death due to superstition regarding snakebite, child trafficking, women harassment, post traumatic stress disorder, chemical, radiological and biological disaster, road and rail accidents, deforestation, environmental degradation etc. In all such cases, it has been observed that ignorance and mischievous activities play a vital role to amplify the risk of danger. There are various ways to get out from these types of problems. Promulgating awareness among community members,

govt. officials, engineers attached with constructional work and school teachers is one such solution among others. There are different awareness procedures like road rally, child safety week, school safety drill, community awareness camp, street drama etc. Alipurduar district administration is instrumental to observe various special day, road safety week, child safety week, international women's day, national day for disaster reduction etc. In these initiatives, local civil defence volunteers, members from NGO, Self Help Group, school students, elected members, community personnel etc. along with govt. officers take participate in various activities like discussion, road rally, street drama, seminar, workshop, mock drill etc. We have already celebrated Child safety week, Safe Drive Save Life week, International Women's Day, Training of Trainers for school teachers on school safety/first aid, National Day for Disaster Reduction etc.

Mitigation Measure at Alipurduar:

We cannot prevent natural hazard, rather we can mitigate it by adopting various strategies. There are two types of mitigation measures, structural and non-structural.

Structural mitigation

Flood Shelter	Temporary arrangement for marooned peoples. There are 17 permanent flood shelters throughout the district.
Dam/Reservoir	There is no dam or reservoir at Alipurduar District.
Embankment/Guard wall	There are embankments/Guard wall at different places at the bank of various rivers as per requirement.
Channel diversion	There are numerous small rivers and jhoras at Alipurduar District which remains dry throughout the year but can swells up to dangerous level during rainy season due to unprecedented rainfall and causes much damage, both private and public alike. All these rivulets/jhoras join with each other due to heavy downpour and wreck havoc. Channel diversion is a nice technique to handle this type of situation and very often we adopt this technique.
Resilient Building construction	Alipurduar is an earthquake prone area and fallen under Zone-IV and V. So we always keep this in mind during any high rise building construction and incorporate engineering technique on the basis of resilient building construction.

Vulnerable area identification

Alipurduar is a flood and earthquake prone district. From the perspective of earthquake, Alipurduar is fallen under zone-IV and V and therefore very destructive in terms of intensity. Kumargram block is fallen under zone-V (*the green part*) and rest of the part of the district is coming under zone-IV (*the orange part*). Chances of occurring landslide especially at high altitude zone are also very high because of severe earthquake or flood.

Flood is a very common phenomenon here due to geographic position and topographic variation. There are five major rivers which are the major cause of concern viz: Kaljani, Torsa, Rydak-I, Rydak-II and Sankosh. All these rivers originate from Bhutan and enter through the northern boundary of Alipurduar. Northern part of Kalchini, Kumargram and Madarihat is treated as an upper catchment area of all these rivers and prone to heavy flash flood whereas the lower portion of Kumargram, Alipurduar-I and Alipurduar-II are prone to flood, water logging situation and heavy siltation.

From flood inundation map, we have identified the vulnerable areas prone to flood by using GIS tools. All the major rivers and their tributaries remain dry throughout the year (shown in figure A) whereas they become rogue during monsoon (shown in figure B) and swell up to dangerous level. A spell of two-three hours incessant rainfall is enough to inundate the banks.

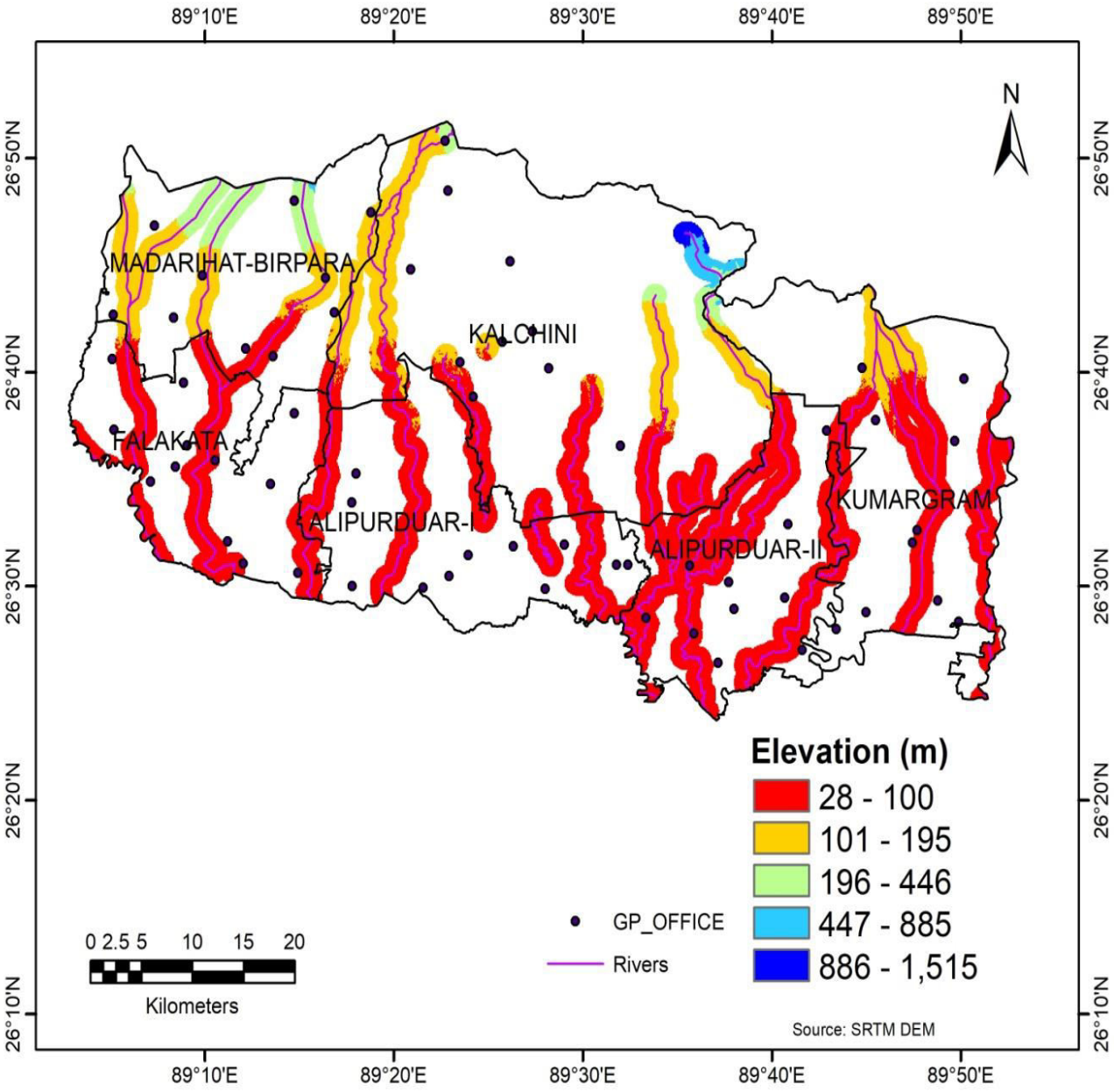

89°10'E
89°20'E
89°30'E
89°40'E
89°50'E
26°50'N
26°40'N
26°30'N
26°20'N
26°10'N
N
MADARIHAT-BIRPARA
KALCHINI
FALAKATA
ALIPURDUAR-I
ALIPURDUAR-II
KUMARGRAM
Elevation (m)
28 - 100
101 - 195
196 - 446
447 - 885
886 - 1,515
GP_OFFICE
Rivers
0 2.5 5 10 15 20
Kilometers
Source: SRTM DEM

Figure-A (rivers in normal condition)

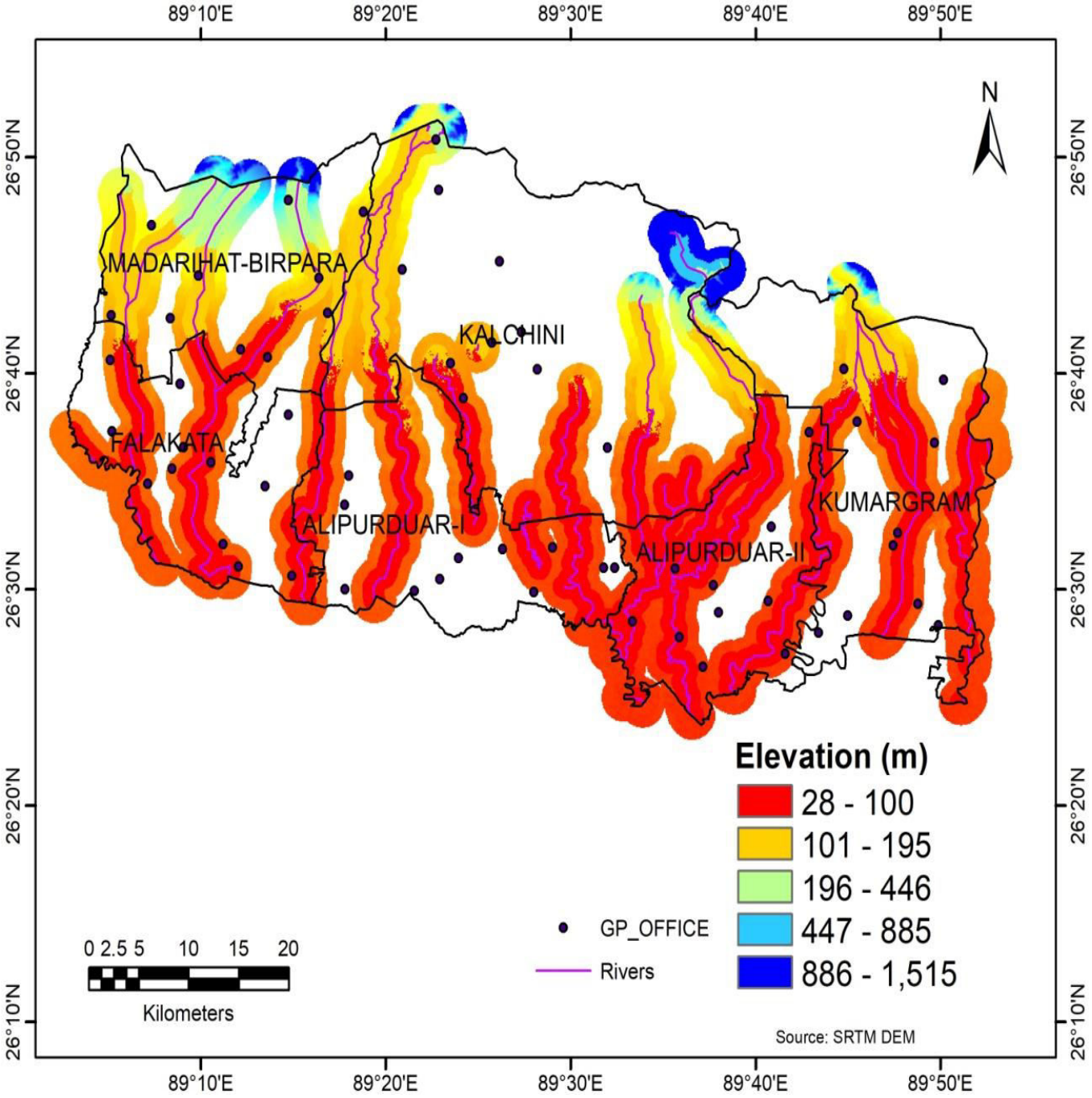


Figure-B (rivers during rainy season)

Training/ Mock Drill/Awareness

Capacity building is an essential tool to face any negative consequence and withstand disasters. This is considered to be a vital non-structural mitigation measure. There are various types of capacity building procedures (details have been discussed elaborately in chapter 6). Community awareness, mock drill, special day observance, awareness camp, training of trainers, workshop/seminar is few of them. All these trainings are regularly being conducted at Alipurduar district based on the nature and gravity of disaster. Special emphasis is given on flood, earthquake, snakebite, thunderstorm etc.

Early warning dissemination

Nothing is better than being aware about any forthcoming untoward situation well in advance. Science and technology has gone very far and some natural hazards like cyclone, heavy rainfall, thunderstorm, tsunami etc. are predictable now-a-days except earthquake which is unpredictable. We cannot prevent natural hazard but systematic approach and early warning can save our society from major damage later on. So early warning on time about any natural hazard is an essential tool for better preparedness. Various nodal agencies are responsible for early warning dissemination due to different natural hazards. The list is mentioned below:

Name of the hazard	**Nodal forecasting agency**	**Instrument used**
Heavy rainfall, cyclone, cloud burst, heat and cold waves, drought, earthquake.	IMD	INSAT image/ Doppler RADAR/ AWS
Tsunami, coastal hazard, high wave alert	INCOIS	Wave Rider Buoy
Flood and flash flood	CWC	Water level gauge
Landslide	GSI	---
Snow and avalanche	Snow and Avalanche Study Establishment	----

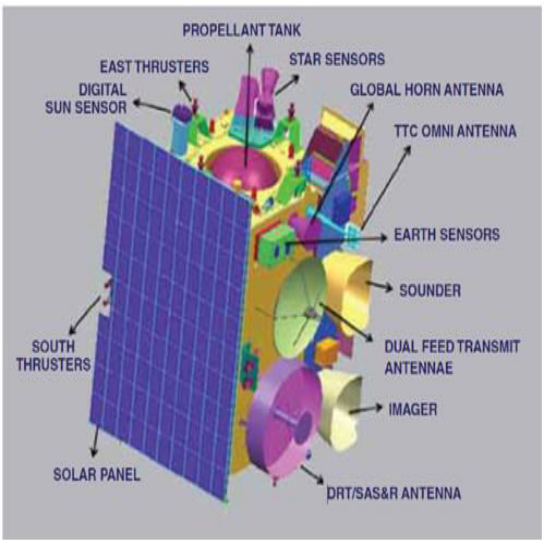
Gone are those days when we had to depend only on radio for weather forecast. Now peoples and community members are receiving warning messages in their personal mobile phone; beside

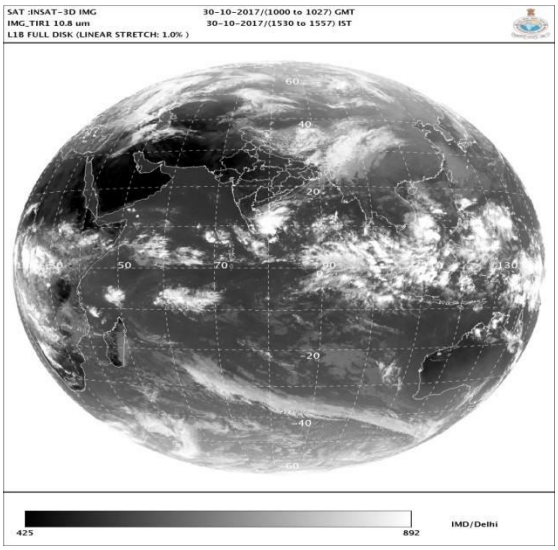
this there exist numerous android applications for weather forecasting. MOSDAC (http://www.mosdac.com) is one such authentic app, developed and maintained by SAC and NRSC.

Various scientific instruments

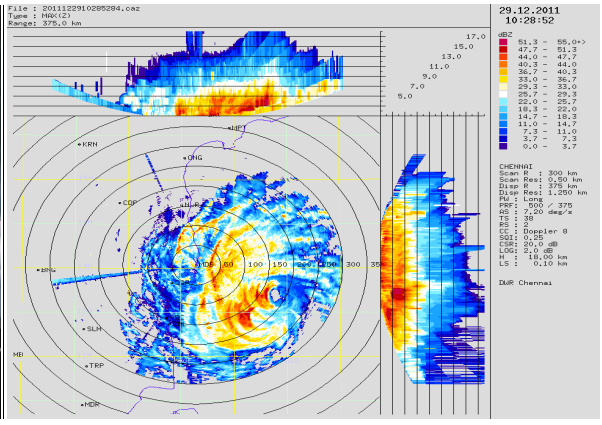
INSAT satellite

We can receive numerous information regarding weather parameters like cloud cover, relative humidity etc from INSAT satellite. Most common output is cloud patches, called INSAT 3d-image, from which we can infer the movement of cloud. It capture the images in every three hours interval.





Doppler RADAR

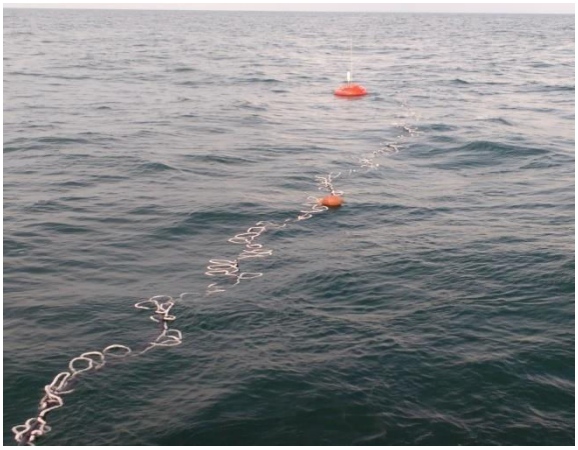


Primarily Doppler RADAR was designed for the purpose to detect and determine the range of an aircraft but because of the nature and flexibility, it is now used in storm/cyclone tracking, cloud

movement etc. An image of a cyclonic storm has been put up here for better understanding. From this image, meteorologist can predict the direction and speed of a cyclonic storm very easily. This is a very expensive and sophisticate instrument.

Wave Rider Buoy (for high wave and Tsunami alert)

Storm surge and Tsunami are completely oceanic phenomena. Tsunami happens due to underwater earthquake and storm surge occurs due to high wave in the midst of ocean. Wave rider buoy is an instrument for measuring wave height and sea surface temperature continuously; it is generally installed at the midst of ocean and the real time data is archived through HF and INSAT antenna.



Automatic weather station

AWS is a collection of sensors installed together in one go for gathering in situ atmospheric parameters like relative humidity, rainfall, wind speed and direction, soil moisture, soil salinity etc. and very easy to handle. Careful analysis of these data can tells us the characteristics of local weather pattern.


Lightning detector

Lightning is a dreadful occurrence among all natural hazards and it does not give any chance to the victim to escape. Every year a number of people die due to thunderstruck. The instrument, lightning detector can predict storm and lightning with a spatial accuracy of 200 km buffer zone and temporal accuracy of 45 minutes and by this we can save numerous lives.

Radar Tide Guage (RTG)

Tide is a deterministic coastal and estuarine phenomenon which can be detected by RTG. Fisherman community dedicatedly depends on high tide and low tide. They usually sail for venturing into the sea at the time of high tide and take rest during low tide and hence this tidal prediction is of great help to them.

West Bengal State Disaster Management Authority is instrumental to build up a robust early warning dissemination network. Endeavour has already been started towards thunderstorm and routine high wave alert warning dissemination among the officers right up to the grass root levels like panchayat members, community persons etc. Apart from this, various warning messages is received and disseminated periodically as and when required by different nodal agencies like IMD, CWC and Irrigation etc.

Mainstreaming of DRR in various flagship program

Flagship program is an initiative and ideal platform of providing government benefits to the public domain through proper channel. There are various sectors like health, education, food, environment, human resource etc. where various flagship schemes are already exists from the part of government. But if we minutely look into these schemes through the lens of disaster management, there exist lacunas and drawbacks which can be rectified only by mainstreaming.
Mainstreaming is a technique of incorporating norms and regulations into a pre-existing structure.
At Alipurduar district, flagship programs like '*Apnar Bagane Proshashon*' and '*Apnar Panchayete Proshashon*' has been started. In these initiatives, various public benefits are regularly given to the marginalized community members. From the part of disaster management, relief materials like tarpaulin, child garments, saree, dhuti etc. is distributed to the beneficiaries. These programmes have left a remarkable positive response among the masses.

Chapter 5

PREPAREDNESS MEASURE

Effect of any disaster can be reduced through proper preparedness. A better preparedness can minimize the impact of any negative consequence and save our society from major damage and loss in terms of life and property. There are several yardsticks to gauge preparedness measure of a particular place depending upon the nature and gravity of the problem. Number of hospital, mobile medical van for emergency treatment, flood shelter, helipad, school, medicine shop having anti venom for snakebite, trained civil defense volunteer for quick response team, fire station, state-of-the-art rescue equipments etc. is few of them.

There are six blocks and one sadar sub-division at Alipurduar district. Of these, three blocks viz, Kalchini, Madarihat and upper part of Kumargram is situated at the Himalayan foothill area and therefore is always under the threat of landslide and flash flood. Other three blocks namely Alipurduar-I, Alipurduar-II and Falakata is situated below the foothills and is major flood prone area due to huge siltation. Apart from this, snakebite and thunderstorm are another two issues which need special attention.

Resource Inventory

Flood Shelter

During heavy flood situation, there is always a chance of getting damage of dwelling houses and essential household items such as garments, utensils, important documents etc. due to tremendous flow of water. Under this circumstance, leading normal life for the indigent and flood affected people is practically impossible. Relief shelter is a temporary place where distressed people can stay together and survive for the time being. Daily routine activities like cooking, bathing, sleeping, defecation etc. can be carried out in these places during emergency time period. There exist various relief shelters like cyclone shelter, flood shelter etc based on the nature of the problem. As Alipurduar is always under serious threat of flood, multipurpose flood shelter is an important preparedness measure among others. There are 17 such permanent flood shelters throughout the district. Apart from these, school buildings, community hall etc. can be used as temporary shelter during emergency flood situation.

Place	***Number of permanent flood shelter***
Madarihat-Birpara Block	2
Kalchini Block	2
Falakata Block	2
Alipurduar-I Block	6
Alipurduar-II Block	2
Kumargram Block	3
Total	**17**

Details of flood shelters

Place	***Address***	***Area and capacity***	***Position***		***Photograph***
			Lon (E)	***Lat (N)***	
Kumargram	Pakriguri, Volka Barobisha GP	8136 ft^2 680 persons	$89^0 52' 14''$	$26^0 27' 21''$	
	Kumargram GP	1894 ft^2 320 persons	$89^0 49' 35''$	$26^0 27' 39''$	
	Nararthali, Khoardanga	2580 ft^2 430 persons	$89^0 46' 8''$	$26^0 30' 39''$	
Alipurduar-II	Sovaganj	2000 ft^2 150 persons	$89^0 33' 27''$	$26^0 28' 17''$	
	Kharia Basti	2400 ft^2 200 persons	$89^0 43' 45''$	$26^0 31' 30''$	
Alipurduar-I	Pararpar, Pararpar GP	1377 ft^2 400 persons	$89^0 28' 34''$	$26^0 29' 53''$	

	Badalnagar, Vivekananda-II GP	1300 ft^2 300 persons	**----**	**----**	
	Tapshikhata, Tapshikhata GP	960 ft^2 300 persons	$89^0 27' 47''$	$26^0 29' 57''$	
	Purba Kathalbari, Purba Kathalbari GP	320 ft^2 100 persons	$89^0 19' 3''$	$26^0 30' 26''$	
	West Jitpur, Vivekananda-II GP (Near Ramkrishna Ashram)	960 ft^2 300 persons	**----**	**----**	
	Chapatali, Banchukamari GP	1700 ft^2 1000 persons	$89^0 34' 4''$	$26^0 23' 35''$	
Falakata	Bhutnir Ghat High School,Bhutnir Ghat, Guabarnagar	2400 ft^2 400 persons	$89^0 6' 20''$	$26^0 34' 6''$	
	Khirerkote High School, Jateswar	2400 ft^2 400 persons	$89^0 9' 19''$	$26^0 33' 36''$	

Kalchini	Satali	914 ft^2 250 persons	$89^0$23.57'	$26^0$40.98'	
	Uttar mendabari	205 ft^2 50 persons	$89^0$24.2'	$26^0$37.24'	
Madarihat-Birpara	Khairbari High Madrasah, Islamabad,	88.56 ft^2 100 persons	$89^0$12' 51''	$26^0$40' 33''	
	Radhakrishna Pry. School,Uttar Khairbari,	2100 ft^2 200 persons	$89^0$16' 37''	$26^0$43' 31''	

Medical facility

During any disasters like flood or water logging condition, disease outbreak due to unhealthy condition is quite common. Threat of different vector borne diseases, diarrhoea, snakebite etc. is not new while staying at relief camp. Hence medical facilities like mobile medical van for immediate treatment, supplying of medical kit well in advance at the relief camp, keeping anti venom for snakebite at registered medical shop etc. are very much essential steps that can be taken to meet up any medical emergency. The number of hospitals, details of medical shop having anti venom facilities and mobile medical van at our district has been mentioned below:

Hospital

Place	***Number of Hospital***
Alipurduar Sadar Sub-division	7
Madarihat-Birpara Block	2
Kalchini Block	2
Falakata Block	3
Alipurduar-I Block	2
Alipurduar-II Block	2
Kumargram Block	2
Total	**20**

List of hospital and nursing homes with contact no

Name	Location	Contact number
Alipurduar DH	Alipurduar	9733353616
Birpara SGH	Birpara	9800784321
Madarihat BPHC	Madarihat	9732020611
Uttar Latabari BPHC	Kalchini	9830797316
Panchkolguri BPHC	Alipurduar 1	9733541776
Josadanga BPHC	Alipurduar 2	9932343817
Kamakshyaguri BPHC	Kumargram	9832317252
Falakata RH	Falakata	8967659080
Bhatibari RH	Bhatibari	9002570699
Railway Hospital APD JN	Alipurduar JN	9002052502
SAMUKTALA PHC	SAMUKTALA	9831414810
SHILBARIHAT PHC	SHILBARIHAT, Alipurduar 1	9831001626
Jaigaon PHC	Jaigaon, Kalchini	9804864917
Totopara PHC	Totopara, Madarihat	9775494334
Maa Seva Nursing & Diagnostic Centre	Alipurduar	9233474562
Greenland Nursing home Pvt. Ltd	Alipurduar	9434005116
St Mary nursing Home	Alipurduar	3564255177
Dooars Nursing Home	Birpara	9547307085
Maa Nursing Home	Birpara	8972472027
Jeevan Suraksha Nursing Home	Birpara	98326978843
Varsha Nursing Home	Falakata	8348248111

Medical Van having First Aid facility

Car Number	Area Served	Medical equipment and facility	Contact person
WB06c 7258	Madarihat	List of equipment - Examination Table with steps, Torch, Stethoscope, BP apparatus, Clinical Thermometer, Weighing machine, Knee hammer, Measuring tape, Cold storage (vaccine carrier),ENT and examination kits, First aid kit, Resuscitation kits, Heamoglobinometer, Uristix, Microscope, Disposable Syringes and needles, Suture instruments and material, needle cutter, Vaginal specula, Water storage device.	Mantu Mandol 8348587501
WB 62A-9185	Kalchini		Bijan Dey - 9735064421
WB 64D-0077	Kalchini & Madarihat		Bijan Dey - 9735064421
WB 74H-4227	Madarihat		Krishna Dey Sarkar - 9733396808
WB 74X-2929	Kumargram & APD II		Litan Saha - 9733209848

Hospitals/health centers having anti venom for snakebite

Name	Location	Contact
Alipurduar District Hospital	Alipurduar	9733353616
Birpara SGH	Birpara	9800784321
Madarihat BPHC	Madarihat	9732020611
Uttar Latabari BPHC	Kalchini	9830797316
Panchkolguri BPHC	Alipurduar 1	9733541776
Josadanga BPHC	Alipurduar 2	9932343817
Kamakshyaguri BPHC	Kumargram	9832317252
Falakata RH	Falakata	8967659080
Bhatibari RH	Bhatibari	9002570699

Quick Response Team

Rescuing people from danger is of paramount importance and is given high rank in the priority list among all disaster management activities. Different calamity is of having different nature and hence the aftermath. So the technique and procedure of response varies as per the situation. Any negligence from the end of rescue team may turn into a huge loss to the society. To execute the entire rescue procedure carefully, well-trained young volunteers are required who can response promptly with sufficient rescue materials as and when required. These groups of well trained volunteers are called quick response team. We have a total of 966 number of trained civil defence volunteers throughout the district and the distribution list is written below:

Area	**Number**
Municipality	307
Alipurduar-I	226
Alipurduar-II	149
Kumargram	125
Falakata	18
Kalchini	80
Madarihat	61

They are all diligent, energetic and enthusiastic in nature and have the basic knowledge of rescue and first aid. Among them, 31 personnel are trained SCUBA diver who can save the life of a person from drowning during water logging condition. Some of them participated in the regional fire fighting course to learn about response strategy during any fire emergency. Another set of volunteers attended refresher course at Hatikisha, Siliguri.

Rescue Equipments

Strengthening of task force is not sufficient enough to save life from danger if there is no rescue material. It is practically impossible for a person to confront any challenge in empty hand. With this intention in mind, civil defense wing has acquired various rescue equipments like life jacket, sledge hammer, rope, ladder, helmet with and without led bulb, search light, floating buoy, INF boat, country boat etc. One set of each mentioned items has also been distributed among all the Blocks well in advance. Two ASKA inflatable lights are also available for the purpose of running relief camp or any rescue operation even without power. Apart from all these we have full set of SCUBA diving sets. These are:

Full SCUBA diving set (Regulator, Pressure gauge, Depth gauge, Demand Octopus)	2
Luxfer Aluminium Tank	4
Fins (Open Heel)-Pairs	2
Mask	2
Snorkel	2
Weight Belt	2
Weights Unit	*4*
Rope-0.75 inc (Nylon) –50 mts.	*2*
Diver's knife	*2*
Mouth Piece	*20*
Face Mask Strap	*20*
Breathing Air Compressor	*2*

ASKA inflatable light

Rescue equipments

Block Disaster Management Committee

Block Disaster Management Committee is the governing body to combat any emergency situation effectively. This committee is comprised of administrative employee as well as local elected members at every Gram Panchayat. We have already formed BDMC at each block level. The complete particulars of BDMC have been written below with their contact number:

Block	**BDO**	**BDMO/Relief Clerk**	**BMOH**	**O/C Fire station**	**O/C, Police station**
Alipurduar-I	7797864100	9832442662	03566-246182	8584027269 (Alipurduar FS)	03564-255100 03564-255101
Alipurduar-II	7797864200	9749039027	9932343817	-----	9932689473 (Samukhtala PS)
Falakata	7797864000	8906464318	8967659080	9434228737/ 8348908060 (Falakata FS)	8945532739 (Falakata PS)
Kumargram	7797864300	9064754240	9832317252	9434083927 (Barobisha FS)	9733008408 (Kumargram PS)
Kalchini	9434746850	9434603948	9830797316	9475477761 (Hasimara FS)	9733306366 (Kalchini PS) 9800990408 (Jaygaon PS) 9874651548 (Hasimara PS)
Madarihat-Birpara	7797863900	9038006606	9832057061	-----	8170047558 (Birpara PS) 8768634658 (Madarihat PS)

The particulars of elected GP pradhan are written below:

Block	**Gram Panchayat**	**Contact no.**
Alipurduar-I	SALKUMAR-I	8972037100
	SALKUMAR-II	9733106850
	PURBA KATHALBARI	7584015072
	CHAKOWAKHETI	9749161590
	PATLAKHAWA	9635400607
	PARARPAR	7076461975
	MATHURA	6294847668
	BANCHUKAMARI	8637896646
	TAPSHIKHATA	9641152046
	VIVEKANANDA-I	7602208425
	VIVEKANANDA-II	9679492294
Alipurduar-II	TATPARA-I	9933504938
	TATPARA-II	7602608103

	CHAPARERPAR-I	8927699010
	CHAPARERPAR-II	9775882186
	BHATIBARI	8670481184
	MAJHERDABRI	7432995795
	PAROKATA	8972687960
	SAMUKTALA	9733070661
	KOHINOOR	8918825831
	TURTURI	7001007904/9609729012
	MAHAKALGURI	9641975488
Falakata	FALAKATA-I	9144538049
	FALAKATA-II	7430848300
	MAIRADANGA	9593351270
	PARANGERPAR	9641211497
	SALKUMAR	7548019065
	JATESWAR-I	9734961292
	JATESWAR-II	9533138198
	GUABARNAGAR	7908651857
	DALGAON	7908831337
	DEOGAON	8345879490
	DHANIRAMPUR-I	9775153715
	DHANIRAMPUR-II	9733148062
Kumargram	CHENGMARI	9093287192
	KAMAKHYAGURI-I	9093631239
	KAMAKHYAGURI-II	9378051581
	KHOURDANGA-I	8167744559
	KHOURDANGA-II	7047474299
	KUMARGRAM	9733197557
	NKS	7076515829
	RYDAK	9647586055
	TURTURI KHANDA	9382964813
	VOLKA BAROBISHA-I	7478881685
	VOLKA BAROBISHA-II	9600532216
Kalchini	JAIGAON –I	9593310241
	JAIGAON-II	9933422488
	DALSINGPARA	9647117667
	CHUAPARA	9593653897
	MALANGI	8670660827
	SATALI	9775462922
	KALCHINI	9475925478
	GAROPARA	9734875238
	MENDABARI	7872342455
	LATABARI	9474961183
	RAJABHATKHAWA	7797956340
Madarihat-Birpara	TOTOPARA-BALLALGURI	9641721772
	HANTAPARA	9734123526

	MADARIHAT	9832362179
	KHAIRBARI	7384589658
	RANGALIBAZNA	8768315908
	SISHUJHUMRA	7797072570
	BANDAPANI	8617369269
	BIRPARA-I	9635901397
	BIRPARA-II	9800119782
	LANKAPARA	9732233557

Fire Station

Fire station is a structure where various firefighting apparatus such as water tender, personal protective equipment, fire hoses and other specialized equipments are kept under safe custody to combat any fire emergency and the team who execute this task is called fire fighters. Beside fire emergency, the fire fighters are also responsible to face other type of emergency like building collapse, rescuing person from high rise building, big tree trimming etc.

There are four fire stations at different places throughout the District. The details along with contact numbers are written below:

Sl No.	Office	Phone No.	On duty Officer Mobile No.
1.	Alipurduar Fire Station	03564-255101/257503	8584027269
2.	Hasimara Fire Station	03566-240101	8972324850
3.	Falakata Fire Station	03563-260101	8584027349
4.	Barobisha Fire Station	03564-263101	8584027272

Helipad

Helipad is a platform where helicopter can land safely for a particular purpose. Helicopter can serve multiple purposes like rescuing people, supplying food and necessary relief materials etc. among distressed peoples during extreme situation without accessing roads which help immensely during the hour of need. We have two permanent helipads and numerous temporary helipads throughout the district.

Place	Size (area in mt^2)	Ownership of land	Condition of surface	No. of Heli-Circle	Location
Indira Colony, Samukhtala	3600	Govt.	Well	One	$89^0$40’10” E $26^0$32’48” N
Kunjanagar, Falakata	3600	Govt.	Well	One	$89^0$24’33” E $26^0$55’53” N

Role of various stakeholders

Tackling disaster is not possible for a single department and hence there are various line departments and other stakeholders who are assigned with different response activities during any untoward condition. The line departments are:

- Police department
- Irrigation department
- Forest department
- Electricity department
- Telephone and Telegraph department
- Agriculture department
- Fire and Emergency department
- PWD department
- Education department
- Health and Family Welfare department
- Food and Supply department
- Public Health and Engineering department
- Inter Agency Group

Stakeholder	**Responsibility**
Police	• Maintaining law and order during emergency. • Rendering special support and safety to the district authority in rescue activities. • Looking after anti social activities at the relief camp. • Managing and controlling traffic during visit of VIP persons for inspection of damage and loss.
Irrigation	• Providing protection of river bank. • Constructing Dam, reservoir, embankment or guard wall according to the necessity. • Adopting various structural mitigation measures for flood. • Keep constant watch on water level and percolating the same information throughout the district. • Preparing post disaster damage report if there is any.
Forest	• Keeping track of movement of wildlife animal. • Preparation of post disaster damage report if there is any. • Implementing various DRR schemes like afforestation smoothly under the territory of forest.
Electricity	• Immediate restoration of power supply after a catastrophe. • Providing special protection around high tension line, power grid etc.
Telephone and	• Immediate restoration of communication system after a

Telegraph	catastrophe. • Inspecting the availability of various restoration materials periodically.
Agriculture	• Conducting post disaster damage analysis properly. • Identifying flood affected beneficiaries to provide crop risk insurance.
Fire and Emergency Services	• Safekeeping of fire emergency materials properly. • Organizing fire emergency mock drill for promoting awareness. • Meeting up any emergency situation apart from fire like rescuing people from high rise building etc. using ladder/rope as and when required.
PWD	• Monitoring earthquake resilient building construction. • Supervising the condition of bridge, culvert, flyover etc. periodically. • Post disaster damage analysis if there is any.
Education	• Organizing school safety program and mock drill in order to promulgate awareness. • Making arrangements of temporary flood shelter beforehand. • Analyzing damage of schools due to any catastrophe.
Health and Family Welfare	• Raising awareness regarding any disease outbreak and health hazard. • Providing necessary medicine at relief camp as and when required. • Installing medical camp beside relief shelter if situation demand.
Food and Supply	• Earmarking of GR dealer well in advance before monsoon. • Supplying necessary food and other ancillary items in the relief camp during emergency.
Public Health Engineering	• Checking drinking water supply pipeline periodically and restoring is required. • Elevating the existing tubewell at each vulnerable panchayat area to safe drinking water. • Supplying mechanical water pouches in the relief camp on demand.
Inter Agency Group	• Identifying the gap between demand and need of relief. • Providing additional support to the district authority in relief and rescue related work. • Help in preparing damage analysis report. • Monitoring closely the distribution of relief materials reaching last mile or not.

Preparedness meeting

District level pre-monsoon preparedness meeting is a kind of last minute preparation and is essential to chalk out the entire disaster management activities all at once in the presence of various nodal officers, stakeholders and district authority. In this meeting, discussions regarding individual contingency plan of various line departments, their drawbacks and lacunas, checklists of essential items, action plan for response, earmark and authentication of storing agents for food supply etc. takes place and a resolution is prepared after completion of the meeting. In the resolution, decisions taken in the meeting is generally mentioned clearly for circulating among participants. Every year Alipurduar District arranges such meeting before commencement of monsoon to confirm and verify the entire response strategies.

Dos, Don'ts, table calendar and wall writing

Promoting awareness through various info graphics or posters or wall writing among masses is always a good practice. An info graphics is worth of thousand words. There are numerous safety issues for each and every natural hazard which can easily be followed. Various mediums are there to promulgate these awareness materials like wall writing, flex, table calendar etc. Every year disaster management department compile table calendar and distribute the same among various districts for onward transmission up to lowest administrative unit. Apart from this, the department has designed the rules and regulations to be followed against each natural hazard like heat wave, cyclone, flood, earthquake etc. in the form of Do's and Don'ts. We have already completed wall writing with those matters developed by the department at different public gathering places like bus depots, rail station, market etc.

Community preparedness

Community is defined as a group of people who stay together in a same geographical area or environment with common perspectives like language, culture, livelihood etc. As for example Bengali, Panjabi, Nepali, Oriya etc. are the community according to their language whereas farmer, fisherman or labor of a tea garden is a community according to their individual livelihood. We will concentrate only on the community as per their livelihood simply because they are the backbone of our society and first responder of any disaster. In most of the cases, in has been observed that they turn scapegoat because of their ignorance. Keeping this in mind, the concept of Community Based Disaster Management (CBDM) has been introduced for the welfare of our society. CBDM is a framework developed for safeguarding their lives, property and livelihood by involving them in different mitigation activities. Skillful persons are involved to train them regarding various natural hazards like earthquake, tsunami, landslide etc by showing videos, promulgating dos and don'ts etc.

Protocol for seeking help from other agencies

Preventing a natural hazard is next to impossible for human being and sometimes the impact is beyond the coping capacity for an institution with the help of existing resources. Under these circumstances, one can seek external help from expert group of having ample exposures of rescue activities to meet up the demand of situation. The lists of companies/agencies are written hereunder:

Name of the task force	*Administrative territory*	*Consist of*
NDRF	Central	BSF, CISF, CRPF, SSB, ITBP etc.
SDRF	State	SAP-DMG, State Police.

As mentioned, SDRF is under state authority and can be summoned as and when required depending on the situation. NDRF is under the hand of central govt. and district authority cannot deploy them directly. At first district authority should prepare a requisition for the same to the state authority informing the detail situation for onward transmission and then state authority resend the same petition to the nodal NDRF commandant assigned for deployment of company if required. We have 2nd Battalion headquartered at Kalyani, Nadia.

Knowledge management and documentation

Every disaster opens a window of opportunity, be it natural or manmade. So proper documentation of an event like lessons learnt from the catastrophe, identifying drawbacks etc. are indispensible to face any challenges more effectively if such type of situation occurs in future. This documentation should be properly written after each disaster in a systematic way and kept under safe custody for future use. A model format for event documentation has been designed at our district and written below in tabular format:

Matter	**Detail Description**	
Name of the event	Earthquake/Flood/heat wave/cyclone/chemical disaster etc.	
Details of the event	Earthquake	Magnitude, epicenter, affected places.
	Flood	Cause of flood, type and name of the water body, danger level of water.
	Cyclone	Wind speed and direction, originating place, affected area
	Heavy rainfall	Amount and duration of rainfall, name of the place.
	Chemical Disaster	Name of the chemical component, Type of industry, mane of the place.
Date of occurrence	mention the date of commencement and withdrawal if required	
Number of people died	Name, age, address, cause of death.	
Number of people affected	-----	
Number of persons rescued	-----	
Deployment of task force for rescue	Name of the company, number of persons and place of deployment.	
Relief material distributed	Type of materials, Number of materials, Area of distribution.	
Rescue equipments used	Type and Name of the equipment.	
Lessons learnt	Shortfall of resources like relief item/manpower/rescue material.	

Chapter 6

CAPACITY BUILDING AND TRAINING

As mentioned earlier, training and awareness is an integral part of Disaster Management activities. Very often we see that people fall prey because of any disaster, manmade or natural, due to lack of knowledge. That may be thunderstruck, earthquake, cyclone, flood or any other health hazard in the form of outbreak or environmental/industrial pollutions. Promoting awareness and conducting mock drill is the best remedy for reducing damage of every individual or a society. This entire process of training, workshop, awareness camp and mock drill collectively is termed as capacity building. Put another way, capacity building is the amalgamation of all strengths and resources within a community, society or organization that can reduce the level of risk. There are different types of process oriented capacity building programs like:

a) School safety program.
b) Mock drill.
c) Road show, wall writing, tableau, quiz competition etc.
d) Civil defense basic training/ fire fighting.
e) Training of trainers.
f) Institutional capacity building through workshop and seminar.

School safety program:

Schools are precious local investments of a nation and often serve multiple purposes like learning centers, gathering places for community events, meeting places for clubs and religious organizations, storage places for books and technical equipment, and public shelters in emergencies. While chances are very high of getting damaged in different ways by disaster, directly and indirectly, and in the long and short term, the vulnerability of schools can be reduced with structural and non-structural mitigation measures in a systematic manner. Some example of direct effect by disaster events on a school is something like damage of school building due to earthquake, water logging situation due to flood etc. As a consequence, school hours may be disrupted, daily routine may also be hampered and panic may be spread among students. On the other hand, indirect effect of disasters on schools can be gauged as increasing dropout rates of students. It is a common fact that students leave school after a disaster event, either because their parents need them to work for their livelihood, or because they are afraid of sending their wards back to an unsafe environment. Additionally, students may feel unable to attend classes or have problems concentrating on study due to post traumatic effect. So a safe school environment is of paramount importance to protect our local establishment as well as our future generation.
School students are quick learners who carry forward the messages to their family and local community injected by their so called teacher. Hence it is always a good opportunity to train them regarding various disaster management activities. It has been observed that children are one

of the most vulnerable groups in our society during disaster because they can be easily victimized due to lack of awareness of parents and teachers both. Child abuse and trafficking, sexual harassment etc are increasing at an alarming rate which reveals that they are not safe.

Although the risk due to any disaster persists everywhere, it amplifies the level of anxiety when students are away from home for learning. Moreover it become a matter of concern when we see that a large amount of govt. and privately owned schools are being constructed in a congested area in an unplanned way & exposed to various hazards. Inadequate infrastructure and lack of awareness from the end of school authority are the main triggering factors to fuel these issues which can be mitigated through awareness and training.

Mock drill:

Mock drill is the practice and verification of the ability of facing any negative consequence in front of expert persons by creating artificial panic and generally conducted with an intention to reduce the loss and damage if such situation occurs in reality. It is a noble platform through which we can showcase our preparedness/rescue service and unearth the drawbacks/failures very easily. Special attention should be paid on specific hazards from which a particular place suffers the most. Different disaster has different mitigation approach as well as rescue technique and hence procedure of mock drill differs from disaster to disaster. Care should be taken to save each person from any mishap during conducting mock drill.

Various activities like road show, wall writing, tableau, quiz competition:

These are another way of promoting awareness. Different peoples belong to various social statuses and identities in our society like school teachers, students, govt. officials, members of NGOs, SHG, CBO etc. are generally requested to involve in this activity and is normally performed to observe special day like NDDR, child safety week, International Women's Day, Safe Drive Safe Life week etc. By these activities, endeavor is mainly put to eradicate various man-made disasters like environmental pollution, health hazard, deforestation, killing of wildlife animal, wastage of food, child trafficking, sexual harassment, chemical pollution, communal riot etc. Keeping placard in hand, arranging street drama and road show, rally, quiz competition on climate change etc. are the procedures which are followed for this purpose. This particular type of awareness strategy always leaves a deep mark among masses because it tells the story about what is happening in our daily life like superstition, rape, sexual harassment, deforestation etc.

Civil defense basic training/ fire fighting:

No other activity is as important as to save and rescue life from natural calamity. Different calamity is of having different nature and hence the aftermath. So the technique of response and rescue varies according to the situation. Any negligence from the end of rescue team may turn into a huge loss to the society. To execute the entire rescue procedure carefully, well-trained young volunteers are required who can response promptly. Basic level training is provided to the local youth with the hope of producing a group of trained volunteers and to make the quick response team network stronger. Topics like Disaster risk management, rescue procedure from different scenario like fire, flood, earthquake etc, and providing basic first aid to the victim is

generally taught in this course curriculum. At the end of the course, they are undergone an examination and certificate is provided on successful completion of the program.

Beside this, accidental fire is as devastating as any other disaster and can be harmful in terms of damage if not handle with proper care at right time. Fire fighters are trained personnel who extinguish fire by the help of different equipments systematically, pursue fire inspection and investigation, maintain all fire fighting equipments, and provide training for these activities. There are number of issues like source of fire, area engulfed by fire and neighborhood locality which need to be understood properly before starting any fire fighting operation. Fire fighting course addresses all these issues.

Training of trainers:

This approach is adopted to train the govt. officials or school teachers who can in turn percolate the same among the persons of his/her surroundings. Administrative Training Institute (ATI), Regional Training Centre (RTC) etc. are the places where training is provided on regular basis regarding various topics like Climate Change, Post Disaster Need Analysis, Disaster Risk Reduction, Sustainable development, Incidence Response System etc.

Special day celebration:

UNISDR Day

Recent study reveals that the frequency and occurrence of disaster is increasing worldwide day by day at a rapid pace. To confront this situation, United Nations (UN), an inter-governmental organization to promote international cooperation, felt the necessity to construct a roadmap by adopting some plausible strategy to reduce the impact of any disaster. And hence in this way the concept of United Nations International Strategy for Disaster Reduction (UNISDR) came into existence. In this regard, a draft of mitigation and preventative measures has been formulated under the guidance of policy makers and board members which should be followed by UN countries. Conducting awareness camp and mock drill is one such activity under this module. India too, has no exception as well and decided 13th October to mark the day with workshop and seminar.

National Day for Disaster Risk Reduction (NDDR)

This is a decade old practice in our country to celebrate the day. Mainly school goers and panchayet members participate in this celebration with workshop, seminar and road rally.

Alipurduar district is no different than the other districts and we try to arrange various levels of training and awareness program throughout the year for different stakeholders and target groups. In the year 2018-19, our training calendar has been written below in tabular form:

Name of the training	Organizer	Target Group	Date	Remarks
Civil defense basic training at District headquarter	District authority	Young personnel (boys and girls)	21-25 May, 2018.	Strengthening QRT for search and rescue at the time of emergency.
Familiarization Exercise (FAMEX)	NDRF	School students, local CD volunteers	17-26 July, 2018.	To promote awareness among local people about area specific disasters and to showcase hands-on rescue techniques.
Joint Rapid Need Analysis (JRNA)	Inter Agency Group	Local NGO members and Govt. officials	16-17 Aug, 2018.	To discuss about the standard feedback format of post disaster damage analysis.
Mock Exercise on Earth Quake	SDMA in association with NDMA	All line departments, Rescue force, Local NGO Members.	10.10.18	Verifying the response strategies, checklist, drawbacks and co-ordination among various line departments in front of expert persons by creating artificial panic and mock scene.
NDDR observance	Kalchini Block in association with DDMA	School students, NGO panchayet members, govt. Officials.	29.10.18	Promoting awareness among masses by road rally, workshop and seminar.
ToT on School Safety	District Authority	School teachers	15-22 Nov, 2018.	To promote awareness about search and rescue technique and basic first aid among school teachers.
Tableau procession to mark Republic day	District Authority	Govt. Officials, local inhabitants, CD volunteers.	26.01.2019	Promoting awareness among masses by road rally, workshop and seminar.
Mock Drill on EQ and Bridge Collapse	District Authority	All line departments, Rescue force, Local NGO Members.	28.01.2019	Verifying the response strategies, checklist, drawbacks and co-ordination among various line departments in front of expert persons by creating artificial panic and mock scene.

Future Plan:

Village is the smallest unit where community peoples stay together and face similar type of threat. Community members are first responder of any untoward situation and hence promulgating awareness and training among them is necessary for better mitigation. There is a local steering committee named Panchayeti Raj Institution (PRI) comprised of elected peoples and village dwellers. **We want to train a person each from Gram Panchayat PRI body who in turn will provide the same at their respective villages as and when required.** We have 66 gram panchayat throughout the district and therefore 66 persons are to be trained initially in this module.

Civil Defense Basic Training








UNISDR day celebration (13.10.2017)








Seminar on Disaster Management for NSS college students


Fire fighting course






NDDR Day celebration (29.10.2017)




School Safety Drill (04.04.2017)






Mega Mock drill on Earth quake (10.10.2018)









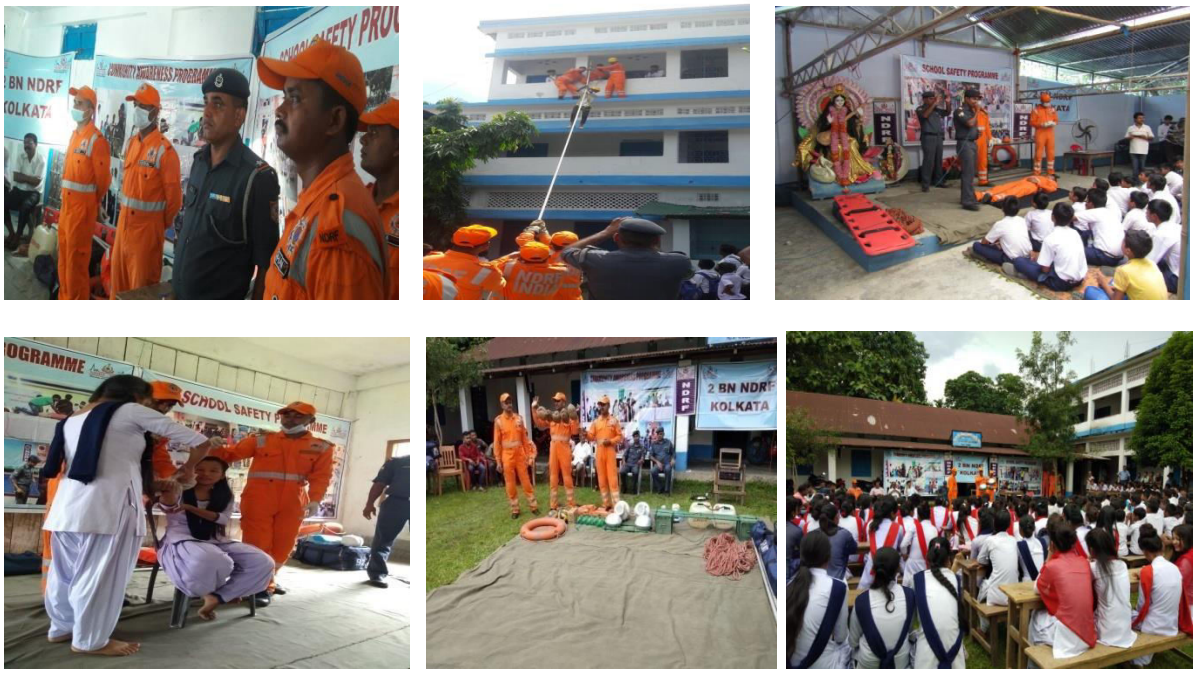







ToT on School Safety (15-22 Nov, 2018)

FAMEX by NDRF (17-26 July, 2018)







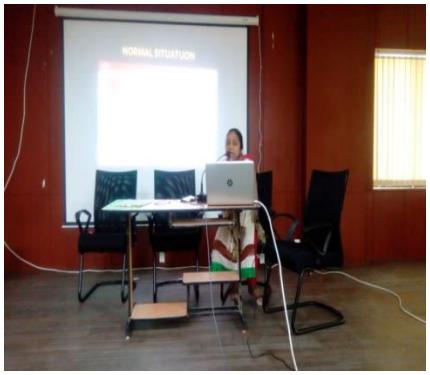
Joint Rapid Need Assessment by IAG (16-17 Aug 2018)


Community Awareness (26th Aug 2018)

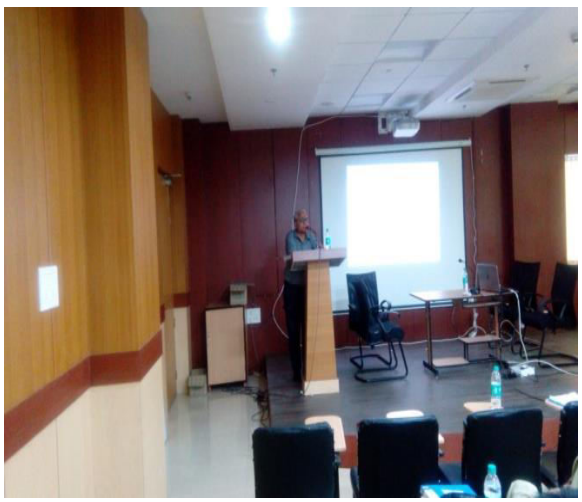




RTC training on DRR and SD (29-31 Aug 2018)






CD mock drill on EQ and Bridge Collapse (28.01.19)



Awareness camp cum Display stall at Dooars Utsav

Chapter 7

RESPONSE AND RELIEF MEASURE

Disaster Management activities are incomplete without proper relief and rescue work. Mere facts, figures and documentation are not enough to fulfill the entire gamut of disaster management if there is no relief and rescue operation reaching up to the last mile from this wing at the time of need. That can only be possible by timely response on the spot with sufficient relief and rescue items as per the gravity of the situation. For example, a task force to combat flood situation have to have wooden boat, mechanized boat and homemade floater by using rubber/plastic drum/utensils etc. Similarly, for earthquake operation, ladder, gas cutter, rope etc. are required as essential items.
During any disaster, a people may be affected by a number of factors like drowning, unsafe drinking water, food adulteration, unhygienic sanitary condition, electrocution, road accident, fallen debris etc. Emphasis should be given to support these marooned and distressed peoples to the fullest extent at any cost. Therefore relief and rescue work is the cornerstone of disaster management by which we can save thousands of lives and can solve many problems.

Response Flow Chart

A readymade flow chart of response is always helpful to tackle any emergency situation without wasting time. Two mutually exclusive catastrophes are there, one for which early warning is possible and the second one which is unpredictable. And therefore response strategies also vary from case to case.

Scenario	Example	Flow chart
Predictable disaster	Flood, Cloudburst, Cyclone, Heat wave, Thunderstorm etc.	• Early warning dissemination up to the last mile in local language through various media like local cable. • Keep watch on weather report or river water level if situation deteriorate. • Establish two way hassle free communication one is with lower administrative level like Block/ GP and other is with higher administrative level like State. • Ready with quick response team for deployment at the vulnerable areas as and when required. • Inform State authority for external support if situation demand. • Open relief camp and distribute relief items (both food and non food) properly. • Makeshift peoples in distress to the temporary shelter and open gruel kitchen if required. • Send loss and damage information to the State authority for keeping record in the form

		of CA-II report and daily situation report. • Demobilization and winding up of resources if situation becomes normal. • Circulate the withdrawal information among masses.
Unpredictable disaster	Earthquake, Landslide, Road accident, chemical and radiological disaster etc.	• Immediate deployment of task force with proper rescue equipments as per the situation. • Deployment of first aid team with specialized doctors to handle cases like cardiac arrest, head injury, burn injury, trauma etc. for providing medical support on the spot. • Keep mobile medical van and ambulance ready with medical facilities like stretcher, saline bottle etc. • Rescue victims from danger and send to the hospital if required. • Seek external help from State Authority if required. • Send situation report and damage report to the State authority for taking necessary action.

Responsibility matrix (for predictable disasters: flood due to heavy rainfall as case study)

Time	***Task***	***Department/Agency***
D-72 Hrs	Early warning dissemination	CWC, Irrigation and Disaster Management
D-48 Hrs	Round the clock surveillance and keep watch on the present situation	Irrigation and Civil Defence Control room
	Aware local people about the danger through extensive miking	CD volunteers, Police and Irrigation
	Evacuate people to safer place if required	Police Civic Volunteer
D-24 Hrs	Checklist and Response team formation for deployment	Civil Defence
D0 Hrs	DM Plan activation	Disaster Management
D+15 Min	Emergency meeting with all line departments and stakeholders for IRT Activation and rescue team	District Emergency Operation Centre

	formation		
D+30 Min	Response begin and Rescue operation start with necessary rescue items like boat, life jacket, floater etc.	Civil Defence Police Civil Emergency Force Fire and Emergency Service SSB	
D+1 Hr	Resource Mobilization and Relief Camp open for safeguarding people in distress	Disaster Management Transport Department	
D+2 Hrs	Distribute fuel like kerosin oil and food items like rice, daal, chira, gur, baby milk powder at relief camp from storing agent	Disaster Management Food and Supply	
	Open gruel kitchen for preparation of cooked meal	Self Help Group Local NGO CBO	
	Mechanical drinking water pouch distribution	PHE	
	Medical kit distribution	Health	
D+3 Hrs	Meet up the need and demand of the people staying at shelter	Local NGO and SHG	
D+24 Hrs	Winding up the process and closing of relief camp (as per the withdrawal notice of the event)	Disaster Management	
D+48 Hrs	Post Disaster Damage analysis	Cultivation field	Agriculture
		Embankment and Guard wall	Irrigation
		Road, culvert and bridge	PWD
		Fishing pond	Fisheries
D+72 Hrs	Documentation of the entire event with cumulative CA-II report	Disaster Management	

Relief measure

State authority allots various perishable and non perishable relief materials in favour of district authority through proper channel based on requirement and we receive the non perishable part from our zonal godown periodically from SDMA and keep in our district godown under safe custody. For perishable food items we have earmarked some storing agents among fair price ration dealers and recycle rice/wheat or chira/gur with them. List of all kind of relief items are written here under:

Type	Item
Non-perishable	Tarpaulin Saree Dhuti Lungi Blanket Wrapper Child garments Slawar kameez
Perishable	Special GR wheat Normal GR rice Chira Gur Baby food

We sub allot the same in turn among various blocks and sub division as per their own individual requirement. Not only that, we upkeep the materials lying with our go down on regular basis and check the stock of available relief materials for reporting the same to the SDMA on fortnightly basis. Apart from this, we have authorization of providing special relief assistance like supplying DM kits, mechanical water pouch, chira and gur, baby food etc. during any emergency to the indigent people in relief camp or flood shelter. We have our own relief godown at every individual administrative level for stock piling the materials under safe custody. There are 7 relief godowns altogether at our district all of which are in good condition.

Address	Area & Position	Picture
At-Alipurduar P.O.-Alipurduar Court Dist.-Alipurduar	1125 sq.ft.	
Kumargram B.D.O. Office premises, P.O.-Kumargram	929.66 sq.ft. $89^0$49’36’’ E $26^0$35’58’’ N	
B.D.O.Office, Falakata, Vill+P.O.-Falakata	132 sq.ft $89^0$11’40’’ E $26^0$31’38’’ N	

B.D.O.Office, Alipurduar-II , Vill+P.O. Jasodanga	900 sq.ft $89^0$37’47’’ E $26^0$30’36’’ N	
B.D.O.Office, Alipurduar –I	1200.0 Sq Ft $89^0$24’26’’ E $26^0$28’38’’ N	
B.D.O.Office, Madarihat-Birpara	1680 sq. Ft. $89^0$16’31’’ E $26^0$41’29’’ N	
B.D.O.Office, Kalchini, Vill+P.O.-Kalchini	941.50 Sq.Ft. $89^0$25’43’’ E $26^0$41’19’’ N	

Storing Agent/ G.R. Dealer at different places

Name of the Block/Municipality	Name of G.R. Dealer with contact number
Madarihat-Birpara	Maya SHG Model fair price SHOP FPS No. WB0034681998. Birpara T. G. Contact No. 9832037037
Falakata	Abul Hossain, Vill & P.O.-Moiradanga, P.S.-Falakata, Dist.-Alipurduar Contact No.-7602227104
Kalchini	J.P.Chowdhury, Kalchini Modi Line Contact No.-9434181081
Kumargram	Rabindra Nath Roy, Vill & P.O.-Kumargramduar, Dist.-Alipurduar, PIN-736203 Conact No.-9733120428
Alipurduar-I	Nirmal Kanti Das, New Town, Alipurduar. Contact No.-8016160934
Alipurduar-II	
Municipality	

Chapter 8

RECONSTRUCTION AND REHABILITATION

After any disaster, the most important task is to analyses loss and damage due to the event in terms of money for speedy recovery and to bring back the situation into normalcy at the earliest. Though the terms loss and damage may sound similar, there is a slight difference between these two. Loss is irreparable whereas damage can be recovered after a certain time period by putting effort. For example, death of a person due to any catastrophe is a loss for society but uprooting of an electric pole is a type of damage.

The sectors which may get affected due to the impact of any natural calamity are Irrigation, PWD, Agriculture, Animal Resource, Food and Supply, WBSEDCL, Telegraph etc. Few common types of losses and damages are loss of human life, building collapse, road damage, uprooting of electric pole, embankment breaching, destruction of fishing pond, demolishing of culvert and wooden bridge etc. Various departments look after their sectoral damage and prepare a report regarding the same after a major calamity takes place. The reason of carrying out damage analysis is to speedy recovery from a disastrous situation. There are various methods which are generally adopted to perform this task. Conducting meeting with all line departments and elected members, filling up questionnaire by taking the inputs from community members etc. are some traditional methods among a few. The entire task through which we can compile a damage assessment report is called Joint Rapid Need Analysis.

Department/Agency	**Responsible for the structures**
Irrigation	• Embankment • Dam • Guard wall • Sluice gate • Barrage
PWD	• Building • Road • Culvert • Bridge
WBSEDCL	• Power Grid • High tension wire • Electric pole
BSNL	• Telephone wire • Pole • Communication system
Forest	• Wildlife animal • Any establishment under their jurisdiction • Uprooting of important trees
Fisheries	• Fishing pond • Fishing farm • Carp and fishes

Agriculture	• Farm land • Paddy field • Farmers • Seasonal crops
Tourism	• Important tourist establishment
PHE	• Drinking water pipeline • Tube well • Sanitation
Animal Resource	• Livestock • Poultry and other farms
Food and supply	• Ration dealer/storing agent • Food storage go down
Disaster Management	• Relief Go down • Flood/Cyclone Shelter • Relief materials

All important lifelines have to be restored immediately after any severe catastrophe to build back better and is termed short term recovery. These are:

- Electricity and communication
- Embankment/Bridge
- Road and railway network
- Hospitals/ Nursing homes
- Office establishments like court/police station/collectorate building
- Educational institutions like school/college

A detail damage report helps immensely to identify the category of the disaster whether it is to be labeled as national level or state level disaster. And monetary assistance reaches to the place of occurrence accordingly after proper investigation. A standard damage report is something like this:

Number of persons died	
Number of persons affected/injured	
Number of cattle lost	
Number of house damage	
Number of persons lost their livelihood	
Road damage	
Bridge damage	
Number of building collapsed	
Uprooting of electric pole	
Communication tower shut down	
Damage of important establishment	
Damage of drinking water pipeline/sewage	












Chapter 9

FINANCIAL RESOURCES FOR IMPLEMENTATION OF DDMP

Monetary help to the person in need is always an important aspect of any government sector and therefore providing relief aid in terms of money or food grains or materials is a part of entire disaster management synergy. Previously emphasis were given only on relief part and hence distributing post facto gratuitous relief/grant-in-aid fund or food grains among different beneficiaries was the one and only one procedure of providing relief aid from the end of Government. But after the establishment of DM act 2005, the attention has been shifted from mere relief centric approach to holistic one. Since then, attempt has always been made to change the entire structure of financial policy from the root and as a result some new concepts has been adopted by governing body members along with all pre existing age old relief aid. In this new format, the entire financial structure has been split into two categories: Disaster Mitigation Fund and Disaster Response Fund. Expenses for the purpose like building infrastructure, early warning network, awareness and training, hiring technical persons, preparing contingency plan and vulnerability analysis etc. is fallen under the category of mitigation fund whereas various pre-existing relief aid and expenditure for the purpose of relief and rescue during any emergency situation is termed as response fund.

Disaster Mitigation Fund:

This is a type of internal fund and mostly utilized by the department itself for the purpose of different developmental activities like construction of relief go down and multipurpose relief shelter, building communication network, early warning dissemination, promulgating awareness among people, organizing workshop/seminar/mock drill, preparation of disaster management plan etc. West Bengal state disaster management authority has already implemented this scheme in various components. Expert persons has been hired and deployed in different vulnerable places for strengthening SDMA and DDMA. Early warning dissemination network setup and sending early warning messages through personal mobile phone is under process and is few steps away.
SDMA has already installed eight numbers of lightning detectors to detect thunderstorm in advance for the welfare of society. Apart from all these, every year SDMA sends allotment for conducting training program/mock drill. So far Alipurduar District has received allotments from SDMA in terms of mitigation fund for various purposes.

Scheme	**Purpose**
Setting up of District EOC	Handling emergency situation effectively.
Capacity building and training	Promoting awareness.
Strengthening DDMA	Implementing DRR activities smoothly.
Strengthening control room	Coping up with disaster
Construction of flood shelter	Minimizing loss of life
Construction of relief go down	Stock piling of non perishable relief items

Disaster Response Fund:

This is a type of emergency fund which is mostly used towards meeting up the expenses attached to various relief and rescue activities. This is grant-in-aid in nature and sanctioned prior to any occurrence to cope up with emergency situation. There exist various response funds such as relief contingency, exgratia grant, house building grant, economic rehabilitation grant etc.

Except relief contingency, all these grants are being provided to the distressed or next to keen (death case) after through scrutiny and verification of the submitted documents at each stage of administrative hierarchy. The details of these funds are written below:

Relief Contingency

During any emergency situation, prompt response with relief items and rescue materials is very much essential to save life and that is possible only by resource mobilization. Stock piling of food items like sufficient amount of rice, dal, chira, gur, baby food, drinking water pouches etc., non food items like tarpaulin, medical kit etc. at various relief shelters is of paramount importance to meet the demand of those resides at the camp. Hence, emergency flexi fund has to be made ready beforehand to meet up the expenses like hiring vehicle for keeping standby mode for immediate resource mobilization and lifting materials, fuel charges, establishment charges for hiring external company like NDRF, Army or Airforce if situation demands and goes beyond the coping capacity of existing resources. All such expenses can be borne from relief contingency fund. **In this financial year we have received Rs. 20,00,000/- (Twenty lakh only) as relief contingency.**

Exgratia grant

This is grant-in-aid fund and is provided to the next to kin of a deceased person who died due to any natural calamity like lightning, drowning, fire accident, snakebite etc. against submission of proper documents.

House building grant

Destruction of thatched or mud house by natural calamities like severe flood, storm, cyclone or fire accident is not new. To rebuild the structure, government provides monetary help to the owner of the house in the name of house building grant after proper verification.

Economic Rehabilitation grant

This is a type of social security scheme and is provided to the person in need to start up small business as their livelihood for rehabilitation of their personal family. The person may be a TB patient or any impecunious fellow who is sitting idle due to lack of money.

Name	Eligibility	Amount
Ex-gratia	Ex-Gratia Grant is paid to the next of kin of the person who suffered loss of life due to natural calamity such as flood, cyclone, earthquake, tsunami, hailstorm, drought, pest attack, avalanche, cloud-burst, and landslide as well as for accidental fire, heat wave, electrocution and snake bite.	• In case of death due to Natural Calamity (Drowning, Accidental Fire, Thunder struck)-Rs.2,00,000.00 • In case of snake bite-Rs.1,00,000.00
House Building	House Building Grant is paid to the indigent families who are living Below Poverty Line and whose total family income does not exceed Rs. 2,500/- per month, to rebuild or repair their damaged / destroyed dwelling houses as a result of natural calamities and accidental fire. No house-building grant is given to unauthorized occupiers of Government or private lands. The land on which the house existed before damage should be under authorized possession of the beneficiary.	Natural Calamity: Rs. 17,600 for fully damaged. Rs. 3800 for severely damaged. Rs. 2300 for partially damaged. Accidental Fire: Rs. 15,000/-
Economic Rehabilitation	This is a scheme for rehabilitation of individual destitute families or Ex-T.B. Patients by employment of their idle members for supplementing their income as a substitute for Normal Relief Assistance has been introduced. The scheme is designed to ensure economic rehabilitation of poor families by providing them either sewing machine or fund for starting small trades.	Rs. 10,000.00 for small trade. Rs. 5,000 for starting embroidery business. The trades, against which this particular grant is given, are: Kite Making, Saloon, Laundry, Readymade garments, Rikshaw van, Tea Stall, Thonga Making, Vegetable Selling, Book binding, Muri Making, Pan Bidi Stall, Radio repairing, Sewing Machine, Fruit Selling.
Normal relief assistance (Normal GR)	The following classes of persons shall be entitled to normal relief assistance in their villages or wards in municipal areas, provided that they have no able-bodied relatives - (a) Mentally Challenged (b) Physically Handicapped (c) Visually Handicapped (d) All persons who, from age or physical infirmity, are incapable of earning their living All persons whose attendance on the sick or on infant children in their own houses is absolutely necessary (f)Women of respectable birth who are debarred by custom from appearing in public and are in danger of starvation. (g) Such other persons who cannot work and cannot be provided with work.	Wheat @12 kg. Per month per beneficiary.
Special relief assistance (Special GR)	Distressed people.	Rice @12 kg. / Rs.120.00 per beneficiary.

L I S T O F D O C U M E N T S R E Q U I R E D F O R E X –G R A T I A G R A N T

1. Original petition.
2. Certificate of recommendation from concerned Gram Panchayet Pradhan.
3. Legal heir certificate from Pradhan.
4. No objection certificate from legal heirs other than the petitioner.
5. Death certificate(Attested).
6. Post mortem report or Medical certificate(in case of snake bite) -Attested.
7. Police report(Attested).
8. Attested copy of Ration card & EPIC of the deceased.
9. Attested copies of Ration card and EPIC of the applicant.
10. Certificate that no proposal under the personal Accident Insurance Social Security Scheme has been initiated in respect of this case and will not be initiated.
11. Enquiry Report from local officers (G.P. level/Block level)
12. Proforma Report duly recommended by Savapati & B.D.O.
13. Attested copy of Resolution of Sishu-O-Nari Unnayan, Janakalyan-O-Tran Sthayee Samity.

LIST OF DOCUMENTS REQUIRED FOR ECONOMIC REHABILITATION GRANT

1. Application form (Recommended by Pradhan)
2. Scheme
3. Xerox copy of SC/ST Certificate (in case SC/ST candidates)
4. Xerox copy of Tailoring Certificate from recognized/registered institution regarding knowledge of tailoring (in case of Sewing Machine cases).
5. Xerox copy of Physically Handicapped (for DP cases)
6. Income Certificate from Pradhan (Not exceeding Rs.2500/- per month)
7. Xerox copy of T.B.Card (in case of Ex-T.B.Patients)
8. Xerox copy of Ration card & Voter Identity Card

LIST OF DOCUMENTS REQUIRED FOR HOUSE BUILDING GRANT

1. Enquiry report of Joint Inspection Team in Form-C duly signed by the four men committee and a Technical Person (SAE/NS).

2. Detailed particulars in Form-B duly signed by the Savapati & B.D.O. (in soft copy & hard copy).
3. Photo copy of the damaged house including the house owner (soft copy/hard copy).

As of now, we have cleared the following financial cases throughout the district in the financial years 2016-17, 2017-18 and 2018-19:

Type of Grant	Financial Year	No. of cases	Details of cases					
ER Grant	2016-17	45	*Ex. TB patient*		*Disability and destitute*			
			---		45			
	2017-18	126	21		105			
	2018-19	192	61		131			
Exgratia Grant	2016-17	59	*Snakebite*	*Land collapse*	*Thunder*	*Drowning*	*Acc. fire*	*Storm*
			30	2	12	12	2	1
	2017-18	24	12	---	7	4	1	---
	2018-19	15	8	---	4	1	2	---
HB Grant	2016-17	60	*Natural calamity*		*Accidental Fire*			
			54		6			
	2017-18	10	---		10			
	2018-19	1124	1117		7			

Cash GR fund

This is another version of providing Gratuitous Relief fund among indigent people. So far we have received a sum of **Rs 2,00,000/- (Two lakh only)** year as cash GR in this financial year. We have redistributed this fund in the following manner among all the blocks and sub-division in the following way based on the availability of fund:

Name of the Block/Sub-Division	***Amount***
Sadar Sub-Division	50,000/-
Kumargram	50,000/-
Kalchini	50,000/-
Alipurduar-I	50,000/-

GR rice for TB patient

A serious problem that the local inhabitants of Alipurduar District have long been suffering is from Tuberculosis (TB) due to inhalation of Dolomite dust into their body as a consequence of dolomite mining in Bhutan border. We have identified those patients at Block level and made necessary arrangements to supply one (1) unit of GR rice per head on monthly basis. The figure (*) speaks for itself.

Name of the Block	***No. of Patients***
Kumargram	120
Kalchini	330
Madarihat	----
Falakata	175
Alipurduar-II	123
Alipurduar-I	75
Alipurduar Municipality	80

**(This list is not an exhaustive list and subject to change depending upon the cases, the old patients who has been cured may be dropped from the list and new patients may be replaced if any. So preparing the list is a continuous and dynamic approach).*

Various compensatory funds:

Apart from all these above mentioned funds, some other category of fund also exist which is called compensatory fund. In this initiative, flood affected farmers or handloom workers are provided with compensation after a careful analysis regarding damage of property to initiate their business again. This fund is provided for welfare of society with an aim to uplift the status of socially marginalized community people.

Future Plan (After approval from the department):

- **Round the clock surveillance in control room throughout the year.**
- **Installation of Automatic Weather Station for keeping record of meteorological parameters such as wind speed, temperature, rainfall etc.**
- **One disaster management activist per Gram Panchayet for better coordination.**

Chapter 10

PROCEDURE FOR EVALUATION OF DDMP

As per the section 31 of DM Act, 2005, every district should have a concrete disaster management plan and has to be compiled with proper care and analysis so that a novice person can understand it as well. NDMA has formulated a guideline of a model District Disaster Management Plan. According to the guideline, the plan should be divided into 12 separate chapters along with an annexure. Special emphasis should be given on vulnerable area identification, response technique, institutional structure, contact number of important persons, financial details, training and capacity building etc. In annexure, district profile, local climate, various maps etc. should be mentioned properly.

Monitoring of DDMP

Plan is a detail roadmap to achieve something. Compilation of a plan is a dynamic process and need to be updated periodically. Disaster Management Plan is of no exception as well. District Disaster Management Plan (DDMP) is a detail analysis of present situation of a district based on past scenario and hazard history to tackle any negative consequence in future. DDMP is generally compiled with some important line departments like PWD, Forest, Irrigation, Health, Electricity, Telephone, Fire services, PHE, Education etc. and updated annually by new checklist, number of NGOs, contact number of various nodal officers, standard operating procedures, vulnerable areas etc. It is monitored by steering committee members of District Disaster Management Authority (DDMA) and State Disaster Management Authority (SDMA) before publication. A draft copy is sent every year well in advance to the SDMA for evaluation and published after approval in both hard copy as well as soft copy.

Compilation procedure

The DDMP is compiled based on individual contingency plan which is asked to be submitted from each mentioned line departments, NGOs, and SHGs. It is generally consist of several chapters describing each and every aspect of disaster management activities.

Chapter	Description
Chapter 1	Introduction, Background, Objective and Stakeholders.
Chapter 2	Hazard, Risk and Vulnerability Analysis based on Hazard History.
Chapter 3	Institutional structure in details.
Chapter 4	Various Mitigation Techniques.
Chapter 5	Preparedness measures.
Chapter 6	Training and Mock Drill.
Chapter 7	Response and Relief.
Chapter 8	Reconstruction and Rehabilitation.
Chapter 9	Various Relief Aid and Grants.
Chapter 10	Evaluation Procedure of DM Plan.
Chapter 11	Coordination with various departments.
Chapter 12	Standard Operating Procedure.
Annexure	District Profile and various maps.

Updation of DDMP

Any plan is dynamic in nature and need to be updated periodically. Among the mentioned 12 Chapters, the most important sections are Chapter 4 to chapter 9. The portions that need to be paid special focus during updation of the plan are written below:

Chapter 4	Mentioning new structural and non-structural mitigation techniques that can be adopted to reduce disaster risk.
Chapter 5	• Number of flood shelter constructed recently. • Number of new CD volunteers that has been trained. • Number of registered medicine shop having anti venom for snakebite.
Chapter 6	• Training Calendar. • Future Plan of new training and mock drill.
Chapter 7	• New response strategies.
Chapter 8	• Budgetary plan of reconstruction of important lifeline if there is any.
Chapter 9	• New financial schemes for implementing various DRR schemes smoothly.

Circulation and Uploading of DDMP at the website of SDMA/DDMA

Plan is not made to be kept in bookshelf only. Rather it is to be reached up to the last mile and needs wide publicity among stakeholders. In order to circulate the plan, one hard copy is sent among each line departments and IAG coordinator. But hard copy is limited and can't be circulated door to door. To overcome this, the soft copy of the same is uploaded in SDMA and DDMA website which has been written below.

SDMA website	http://wbdmd.gov.in/Pages/Default.aspx
DDMA website	http://alipurduar.gov.in/

Resources of conducting various Training and Mock Drills

Training	**Resource Persons**
Calendar Mock drill twice in a year	Disaster Management Section Fire and Emergency Services Civil Defence Section Inter Agency Group Health and Family Welfare
RTC training (as per prescribed schedule by ATI)	Expert Resourceful Persons
Community Awareness	District Authority
Mega mock drill	Disaster Management Section Fire and Emergency Services Civil Defence Section

	Inter Agency Group Health and Family Welfare Forest Higher Education Irrigation PWD Municipality Office SDRF NDRF Central Para Military Force

Post Disaster Damage Analysis and Gap Evaluation

After any disaster, first and foremost duty is to evaluate loss of life and damage to societal property due to the catastrophe. Communication gap and drawbacks has to be found out and to be updated in the very next edition of the plan for the purpose of better response, rescue and recovery. In this connection, a meeting regarding loss and damage analysis is essential with all necessary line departments and sub-ordinate officers. Hazards are natural whereas disaster is manmade, in a sense it happens due to lack of proper coordination and use of existing resources properly. So lessons learned from the event have also to be mentioned clearly to tackle such type of event in future.

Chapter 11

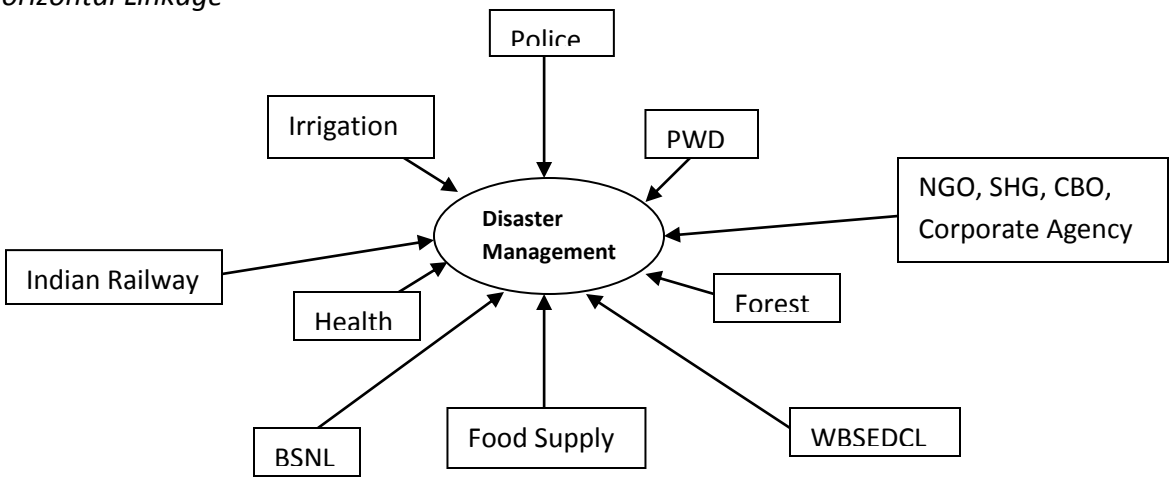
COORDINATION MECHANISM FOR IMPLEMENTATION OF DDMP

Disaster Management is incomplete without proper coordination. The purpose of compiling Disaster Management Plan is to handle any unforeseen event smoothly through proper coordination and chain of command. Two types of coordination* mechanisms are there, one is horizontal and other is vertical.

Horizontal Linkages	• Various line departments like Irrigation, PWD, Health, Police, Food and Supply etc. • NGO, SHG, CBO and Corporate Agency • Other private agencies
Vertical Linkages	• Various higher and lower authorities like NDMA at national level, SDMA at state level, BDMC at block level. • Various rescue teams like NDRF at national level, SDRF at state level.

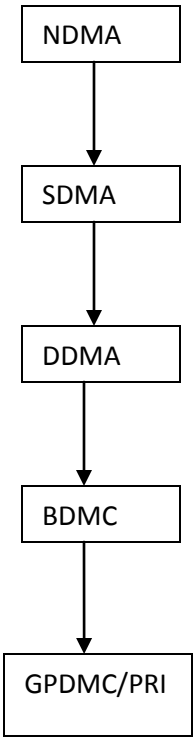
*Here coordination means coordination with district unless stated otherwise.

Horizontal Linkage

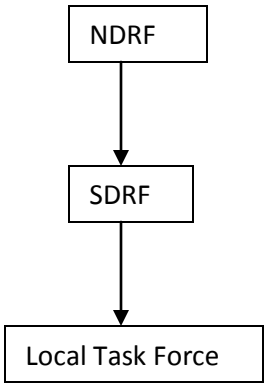


Vertical Linkage

(Administrative)



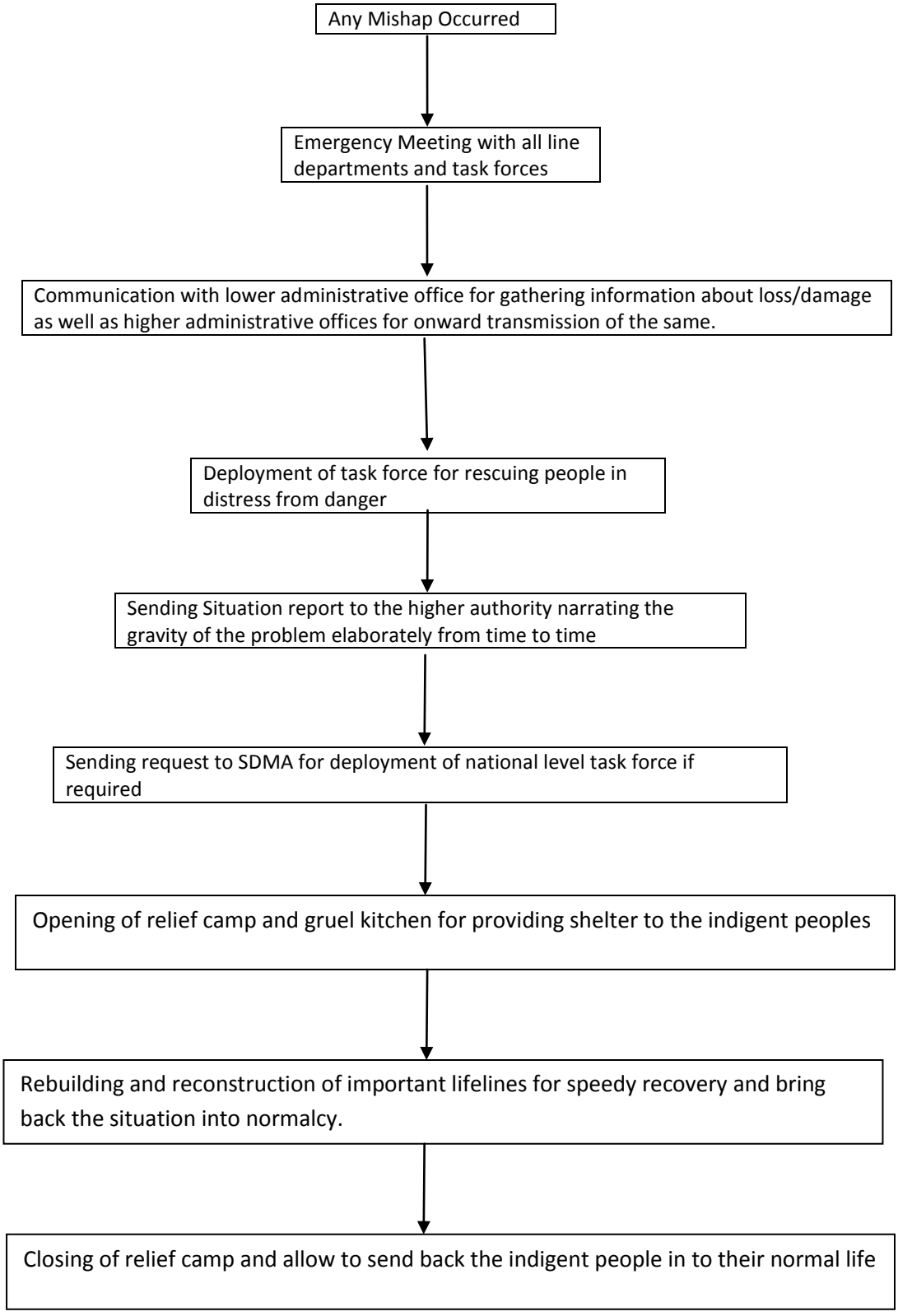
(Rescue Force)



Team wise coordination procedure for any mishap:

Team	***Responsible departments***	***Task assigned for***
Early warning Dissemination (in case if there is any early warning well in advance)	Disaster Management	Circulation of early warning messages up to the last mile
Rescue	Civil defence, SSB, Police, Fire.	Carcass removal. Debris clearing. Rescuing distressed people from collapsed building.
Relief	Health, PHE, Municipality, PRI, NGO, SHG.	Opening of relief camp. Providing shelter, Food, drinking water, medical assistance.
Assessment	PWD, Rail, WBSEDCL, BSNL, PHE, Health, Fire, School education.	Assessment of loss and damages of life and property, both public and private under the jurisdiction of individual sectors like building, bridge, road, water tank, drinking water pipe, electric pole, power grid station, telephone line connection etc.

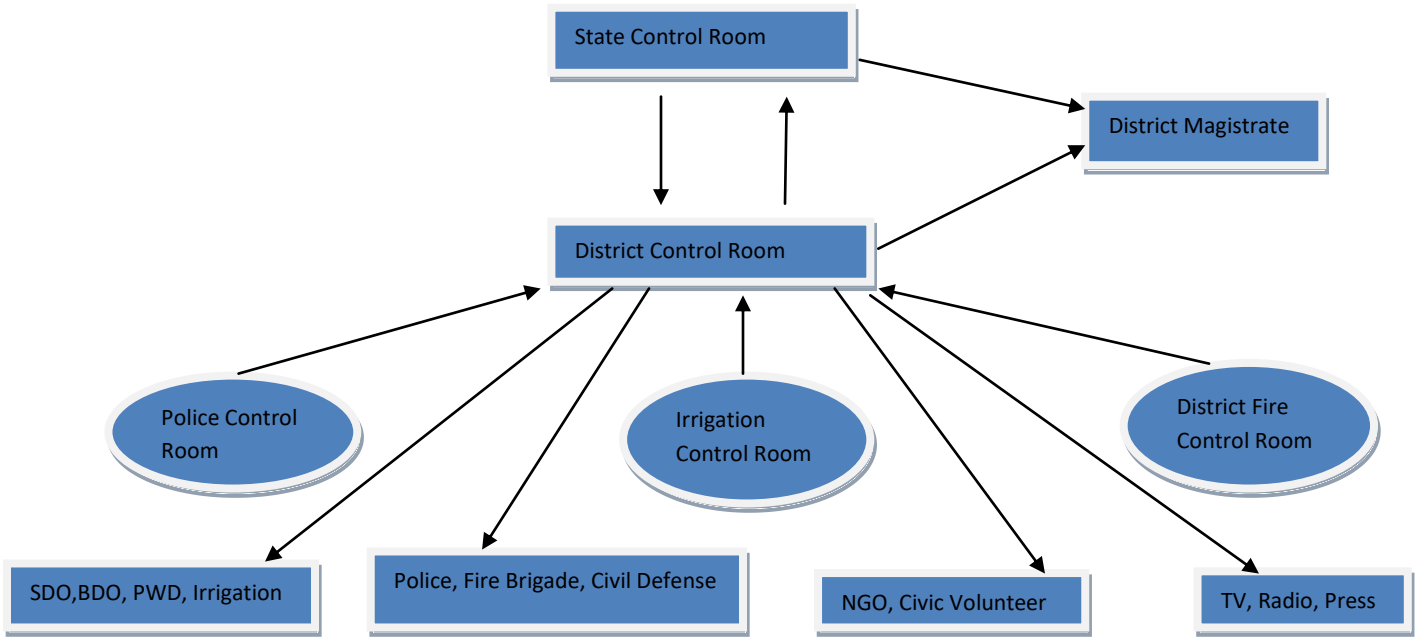
Chain of Command



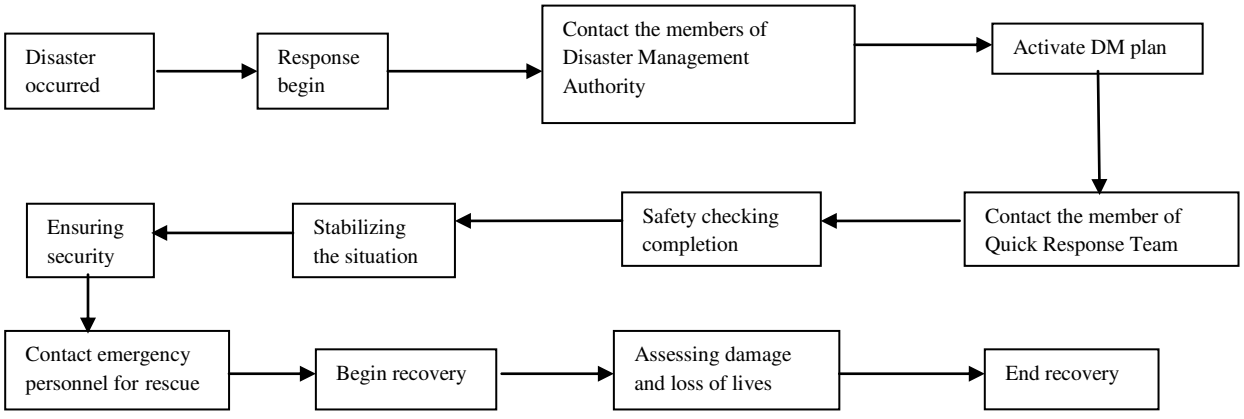
Chapter 12

STANDARD OPERATING PROCEDURE

Standard Operating Procedure (SOP) is a pre-defined framework of taking necessary action for smoothening emergency operation work without wasting time because during any crisis period, every single minute matters. And if there is no such workflow exists well in advance, people involved in this task will become clueless and lot of time will be spent only to take internal decision rather than initiating the action to tackle the situation. And by then the catastrophe may bring major damage which could be saved if a SOP would exist in advance. And hence the formulation of a SOP for each individual event is of paramount importance. Though the basic anatomy is same for every scenario, response flow chart changes as per the situation and nature of the event:



Disaster response flow chart during emergency:



Here we describe various different SOPs in details from the perspective of district level disasters.

SOP for flood:

Flash flood is a natural phenomenon whose nature cannot be predicted well in advance. It generally occurs due to land burst or sudden unprecedented rainfall within a very short span of time and causes major damage especially in the foothill area where river becomes very turbulent and rogue to carry anything whichever falls in the mouth of a particular channel at that time. According to the nature of flash flood, water flows very rapidly for first two- three hours, causing major damage and then calms down slowly and disappears by the course of time. The mentioned time threshold may vary from place to place depending on different factors like local topography, land use and land cover, habitation etc. Close watch on rainfall prediction and water level of major rivers very frequently, deployment of response teams on time as per requirement etc. are some of the few remedies for flash flood.

Alipurduar, a small district situated in the northern part of West Bengal has always been a vulnerable district with regard to flood. Flash floods especially become a major bane during the monsoons because of its geographical location and topographic feature. The rivers coming from Bhutan pose a dangerous threat to the areas of this district which fall in the Bhutan foothills. Information regarding rainfall in Bhutan does not reach to this district in adequate time due to the unavailability of any system of dissemination of rainfall data directly to the district authorities of Bhutan. This creates a major problem as pre disaster litigation is not possible to be done on time due to lack of information as to which area should be watched more clearly. Under this circumstance, flood control room of district disaster management authority has to shoulder upon all burdens to face the challenge.

Therefore, what basically happens is that the rivers which are flash flood prone swell to dangerous levels within a short span of time providing no warning to any person or animal in its way. The destruction is swift and devastating. Especially the places which are situated at low lying area are at high risk of getting damage due to tremendous river discharge. As a consequence, bridges collapse, roads get damaged and human and animal life is lost. Sometimes these rivers break through the bundhs and wreak havoc in the villages near these rivers. Kalchini and Madarihat block are the major sufferer of flash floods. Here, Jogi Jhora, a tributary of Basra River is a cause of concern. Other blocks, fallen in the low lying area of this district namely, Falakata, Alipurduar-I, Alipurduar-II and lower part of Kumargram, floods are also regularly hampering life, property, agriculture etc. The major rivers causing floods are Torsha, Kaljani, Sankosh , Rydak I & Rydak II . Among them, river Kaljani is the biggest as per the catchment area and flow through the heart of the town. River Sankosh is also very destructive and is flooded every year.

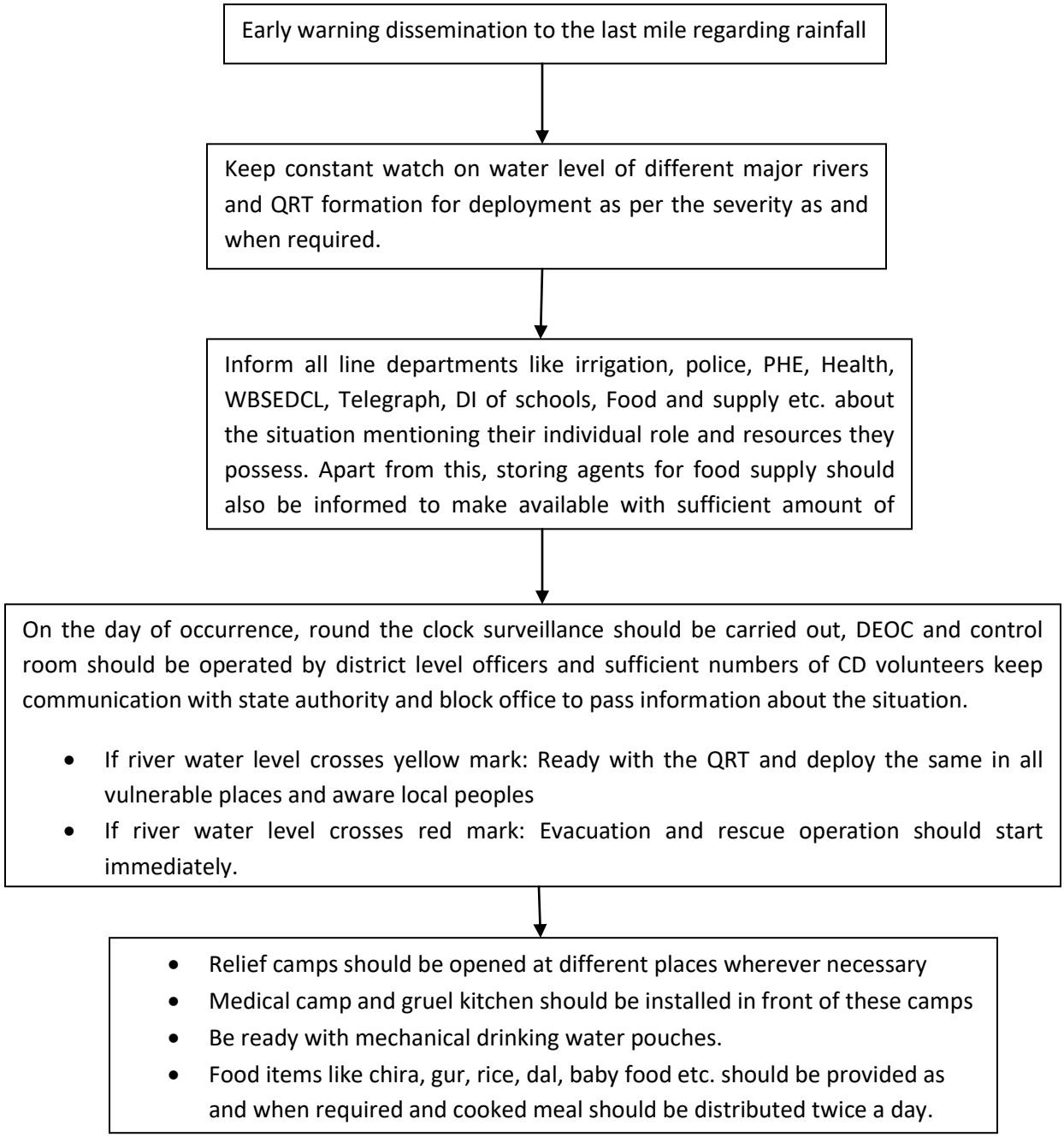
Action Taken for massive flood on 11-13 August 2017 due to incessant rainfall: as a case study

During monsoon 2017, Alipurduar was fallen at the gulp of massive flood and water logging situation during 11-13 Aug, 2017 due to unprecedented rainfall. Under this circumstance, our entire team worked in the flood control room to the fullest extent at a stretch for nearly 96 hrs. to minimize the impact. Round the clock surveillance was going on, relief camps were opened at various places to keep the marooned people under safe custody, gruel kitchen were opened to serve cooked food, medical camps were set up for providing medicine, mechanical water pouches and baby foods were distributed among people stayed at various relief camp, various QRT were deployed for rescue operation.
To bring back the situation into normalcy, Block and District administration worked hand in hand. Attention was paid especially to Kumargram, a worst affected block, during the last flood incidence. Keeping stock of necessary relief materials, patrolling the affected villages in different corner to meet the demand by formation of vigilance team, getting feedback from the indigent and distressed people etc. were the few steps taken from the end of Block administration. District authority, on the other hand, were also alert in this situation and was ready with the support team and rescue materials and was looking after the municipality area. Some initiatives has been written below elaborately,

1. At the initial stage, district EOC was ready with water wing personnel and civil defense volunteers to monitor the situation, later on local SSB wing joined in this operation.
2. Hourly water level data of major rivers like Torsa, Rydak-I, Rydak-II, Sankosh and Kaljani was being provided along with the rainfall forecast by the irrigation department.
3. A special team was deployed by the district at Kumargram Block to cope up with the crisis situation as the calamity was threatening to spiral out of control.
4. Relief camps were opened at blocks where houses were flooded and people were provided with food and other amenities.
5. In the mean time, a requisition was placed to the state authority for deployment of a NDRF team.
6. Quick Response Teams and Incident Response Teams were activated at all blocks.

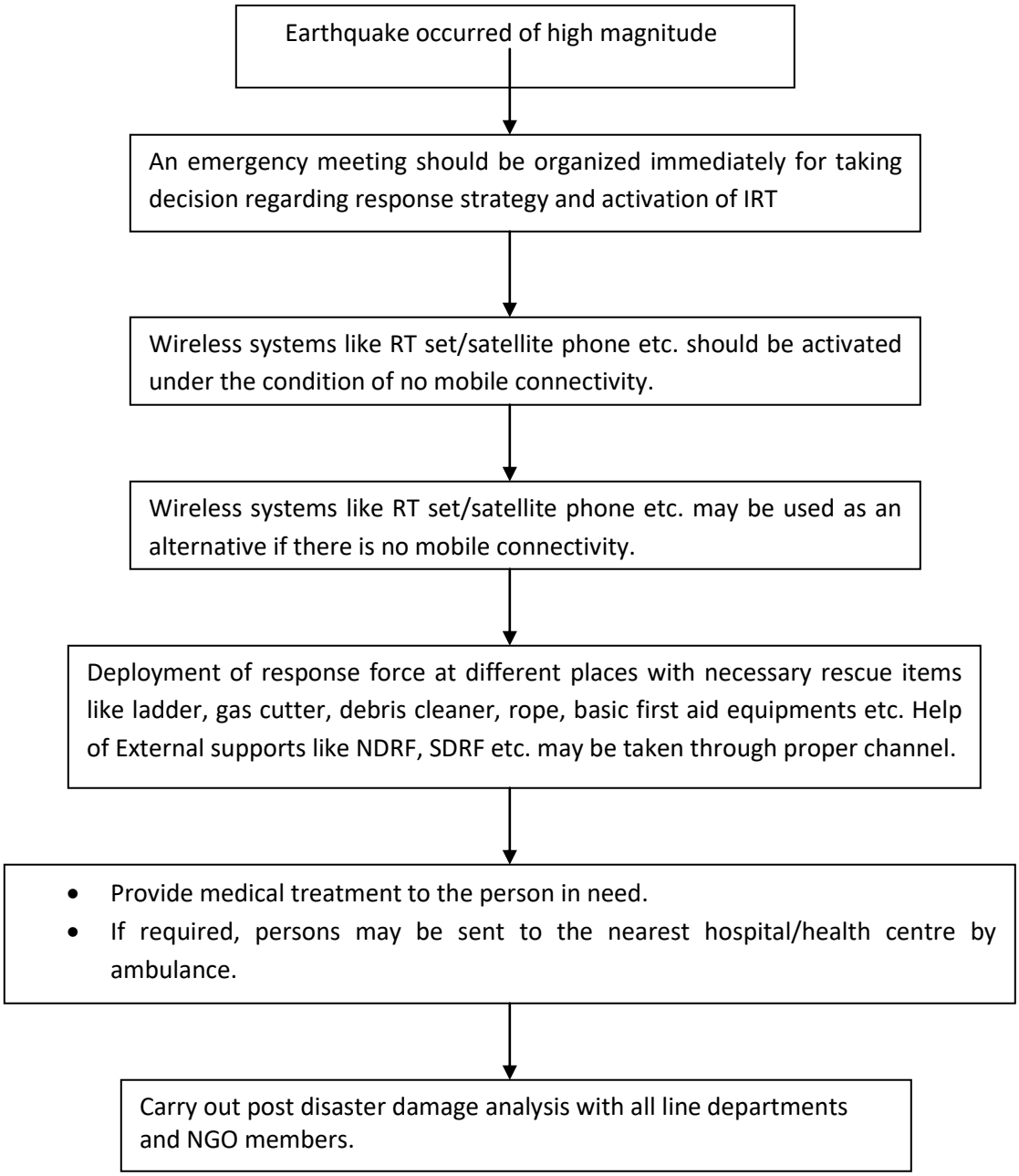
In addition to this, necessary support and assistance came from different line departments like irrigation, police, PHE, PWD, Food and Supply, health etc. Here is a closure look:

Department/Stakeholder	Phase	Activities	
Police	During Disaster	Helped in restoring law and order, maintained road traffic system properly.	
PHE	During Disaster	Supplied sufficient number of mechanical water pouch for relief camp.	
Health	During Disaster	Installed medical camp and supplied medicine to the distressed peoples at various places.	
Food and Supply	During Disaster	Kept closure watch to the stock of materials	
Civil defense	During Disaster	Deployed 18 numbers of QRT comprised of 5 CD volunteers each at different vulnerable places throughout the district.	
PWD	Post Disaster	Identified the places where damage of road and other construction took place and repaired immediately.	
Irrigation	During and Post disaster	During disaster	Supplied water level variation of different rivers
		Post disaster	Identified the places where embankment/ guard wall breached due to over topping and repaired immediately.
Block administration	Pre, during and post Disaster	Pre disaster	Helped in various training and mock drills.
		During disaster	Communicated with various stake holders and district authority to disseminate information related to emergency situation. Also helped in running flood control room at the block level successfully.
		Post Disaster	Helped in making various damage assessment reports.


Early warning dissemination to the last mile regarding rainfall
Keep constant watch on water level of different major rivers and QRT formation for deployment as per the severity as and when required.
Inform all line departments like irrigation, police, PHE, Health, WBSEDCL, Telegraph, DI of schools, Food and supply etc. about the situation mentioning their individual role and resources they possess. Apart from this, storing agents for food supply should also be informed to make available with sufficient amount of
On the day of occurrence, round the clock surveillance should be carried out, DEOC and control room should be operated by district level officers and sufficient numbers of CD volunteers keep communication with state authority and block office to pass information about the situation.
If river water level crosses yellow mark: Ready with the QRT and deploy the same in all vulnerable places and aware local peoples
If river water level crosses red mark: Evacuation and rescue operation should start immediately.
Relief camps should be opened at different places wherever necessary
Medical camp and gruel kitchen should be installed in front of these camps
Be ready with mechanical drinking water pouches.
Food items like chira, gur, rice, dal, baby food etc. should be provided as and when required and cooked meal should be distributed twice a day.

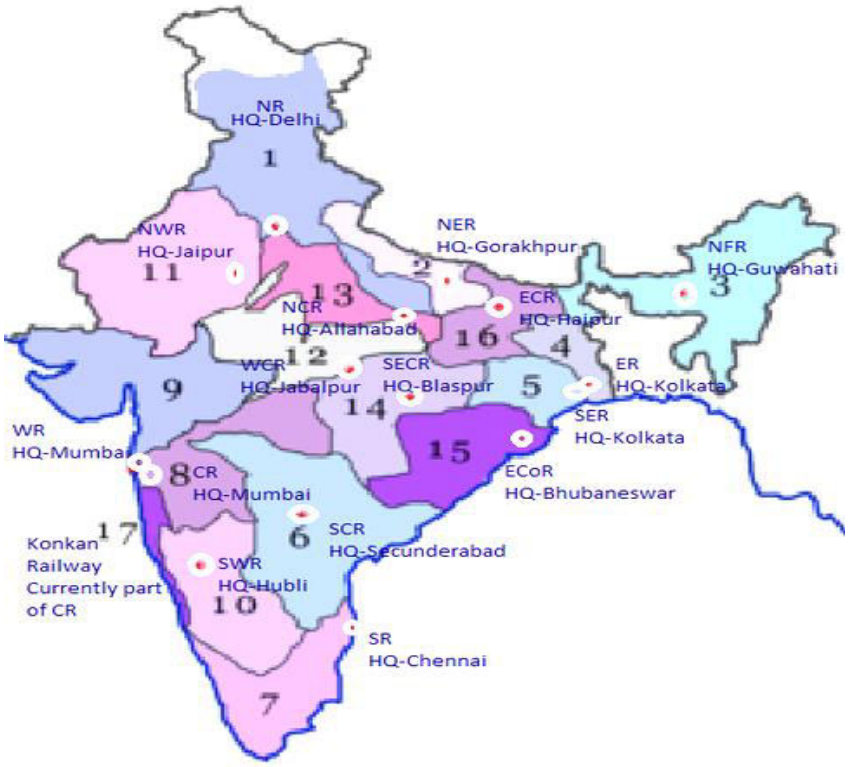
SOP for Earthquake:

Earthquake is a geo-tectonic hazard and occurs mainly due to shaking of ground because of collision of different plate movement beneath the earth. The intensity and magnitude can be measured by an instrument called seismograph. But the main obstacle of EQ is that it is unpredictable by nature and occurs suddenly without any notice. So there is no early warning as such for EQ and post disaster activities like response, rescue and rehabilitation are the only three options left to minimize loss and damage if an EQ of high intensity and magnitude occur suddenly.



Railway Disaster Management Plan:

Indian Railway is the largest communication network for transport, passengers and goods alike. Entire country has been divided into sixteen zones and each zone is further divided of several divisions.



From the picture it is cleared that Alipurduar is fallen under North Frontier Railway (NFR) Zone and is a division itself of that particular zone. Alipurduar serves as a major connecting hub between Northeast and other corner of our country and hence it is needless to say that number of important trains ranging from superfast to passenger runs through this linking hub on daily, weekly or bi-weekly basis. Rajdhani, Garib Rath, Duronto, other superfast trains are few of them. More than millions of peoples travel from different places by train and so safety is a must in Indian Railway. A details of NF Railway has been written below: (*Courtesy Wikipedia*)

Zone	Code	Zonal HQ	Route Length	Number of Stations	Passenger Carried (million)	Railway Division
Northeast Frontier Railway	NFR	Guwahati	5483	753	88	Alipurduar, Katihar, Rangiya, Lumding, Tinsukia.

The structure of safety response of Indian Railway has been briefed:

Control Room	Every division has a Control Room for train operations, where all the trains in the division are controlled and monitored. There are different types of control rooms such as engineering control, mechanical control etc. which coordinate with operating control and employees of the respective department.
Accident Relief Trains	Every division has Accident Relief Trains (ARTs), Accident Relief Medical Vans (ARMVs) and Breakdown Cranes for assisting in disaster management. These are under the supervision of the Senior Divisional Manager of Engineering (Sr. DME) of the Division, who is also the head of Division.
Maintenance of sick line	Every division has some coaching depots to maintain its passenger cars and sick lines to maintain freight cars which are found unfit at the freight examination points.

Management of Natural Disaster:

Earthquake

- When first tremors are sensed during an Earthquake, all personnel should evacuate and assemble at safe places away from structures, walls and falling objects.
- Emergency shutdown should be declared.
- Emergency response plan to be activated.
- After proper restoration, personnel should inspect all facilities for damage assessment, cleanup, restoration and recovery.

Landslide

- If there is any probability of landslide due to heavy down pour especially in the hilly region, all train services should be regulated.
- Rescue team should be rushed immediately for restoration work.

Flood

- Bridge watchman to be provided at vulnerable points to inform flow of water.
- To shift all personnel and important movable items around the bank.
- Construction of sandbag may be made if possible to ensure safe passage of trains.
- Regulate train service till flood recedes.
- Evacuate people on train at station and move them to a safer place.
- Contact Army, local Fire Brigade, air force, local boat man and arrange divers and boats.
- Keep communication with divisional control office.
- Contact St. John Ambulance Brigade, local doctors and provide medical care to the affected.

Apart from all these, there are several manmade disasters as well like fire, head-on collision, derailment, terrorism etc.

GM, AGM or CSO has been nominated by Railway Board for declaring a very serious accident or any other untoward incident as Railway Disaster. If the accident is declared as disaster, all instructions as contained here in this disaster management plan would automatically come into force, and Officers and staff or all departments would take action as laid down in this book. All Officers and supervisors concerned should be fully conversant with various duties listed there in and carry them out without fail.

GOLDEN HOUR AND EXERCISES:

If a critical trauma patient is not given definite medical care within ONE hour from the time of accident, chances of his ultimate recovery reduce drastically, even with the best of medical attention thereafter. This one hour period is generally known as GOLDEN HOUR.

During the golden hour, every effort should make to:-

a) Render definite medical care to the extent possible preferably by quality medical practitioner.
b) Stop bleeding and restore blood pressure.
c) Persons under shock should be relief of shock immediately.
d) Transport casualty to the nearest hospital, so that to reach within this golden hour period.

VARIOUS PHASES OF DISASTER MANAGEMENT:-

8.1. **Phase-I**:

In the period immediately after accident, the following action has to be taken on war footing by Railway Officials / Officers.

i) Guard, Driver, Conductor and TTEs etc. must pass on the information quickly to the nearest station or to control, about the accident. Being trained in first aid, they should simultaneously render every possible medical aid to injured people.
ii) Senior most Officer traveling by the affected train, whether on duty or on leave shall take charge at site.
iii) All Railway Officers and staff available on train must report to the Guard and work as per the directions of senior most Officers.
iv) SMs of the adjoining stations must inform Control about the happening.
v) Chief Controller of Divisional Control/APDJ shall order for immediate movement of ARME/ART after consultation with DRM/ADRM.

8.2 **Phase-II**:

8.2.1 Phase-II begins with the arrival of **Accident Relief Train (ART)**. The senior most Officers who reach the site first become the "**Accident In charge (Site)**". All staff and Officers work as per the directions of the Officer In charge (site).

8.2.2 **Site Organization**:-

i) Medical relief camp.
ii) Security of luggage.
iii) Clue preservation.
iv) Relief Rescue and Restoration.
v) Coordination with Civil & Press.
vi) Liaison with Control.
vii) Communication – STD phones, Walkie-talkies, Mobiles, FAX, Satellite Phone.
viii) Lighting arrangements.
ix) Commercial – information booth. Arrangement of Food and Water, evacuation of passengers including road vehicle, payment of ex-gratia etc. The medical team reaching the spot must comprise of adequate number of doctors and staff. The senior most Doctor & Officer at site should have all details about dead / injured and hospitals where they have been sent.

8.3 **Special Task Teams**:

i)	Medical	Medical Relief and transportation to hospitals.
ii)	Commercial	1. Catering – food and drinking water. 2. Liaison with Civil administration and Press. 3. Display the names of injured, dead on the local TV and at nearest major stations.
iii)	Commercial & RPF	Security of luggage.
iv)	Operating	Liaison with Control and arranging logistics including shunting.
v)	S&T	Establishment of communication and free telephone booths.
vi)	Mechanical	Relief operations including rescue, re-railment and preservation of clues.
vii)	Electrical	Lighting arrangement.

DUTIES AND CHECK LIST OF ACTION TO BE TAKEN BY VARIOUS OFFICIALS & DEPARTMENTS IN CASE OF DISASTER:-

10.1 **DUTIES OF GUARD**:-

a) Note the time when the mishap took place.

b) Arrange to protect the adjacent line/lines and then the same line.

c) Send information through the quickest means to the Control/SMs on either side after making a quick survey. Assistance required is to be assessed and asked for.

d) Take action to render First Aid to save lives.

e) Call for Doctors, TTEs and Volunteers travelling in the train to seek assistance.

f) Depute Railway Employee(s) to arrange the connection of field telephone to ensure regular feed of information to Control.

g) Preserve and safeguard all clues of the possible cause of accident.

h) Arrange protection of railway and public property through RPF, GRP and other available railway staff.

i) Remain in-charge till arrival of, and replacement by a senior railway official for taking over charge and shall not leave the site until permitted by a competent authority.

10.2 **DUTIES OF THE ENGINE CREW**:-

a) Switch on the flasher light of the locomotive and arrange to protect the adjacent line(s) and then also the same line according to Rules in force.

b) Arrange to advise Control/SMs on either side.

c) Take necessary precautions as deemed fit to safeguard the Loco/Train.

d) Extend all possible assistance to the guard in rendering First Aid, also assist in other respects.

e) In case the Guard is injured in such a manner that he (the Guard) is incapable to work, the duties of guard shall devolve on the Loco Pilot/Assistant Loco Pilot.

10.3 **DUTIES OF SMs/ASMs AT ADJACENT STATIONS**:-

SM/ASM of the nearest stations shall immediately do the following:-

a) Ensure that no other train enters the affected section and take other necessary measures for protecting the site.

b) Advice Control about the magnitude of the accident, type of medical and other assistance needed.

c) They shall advise all Civil Authorities such as SP, DM, etc.

d) Call for assistance locally from nearby hospitals, dispensaries and medical practitioners.

e) Call out all the off duty staff and allot them specific duties for relief and rescue.

f) Arrange to provide to the extent possible relief/assistances to the affected passengers such as catering, drinking water, issue of complimentary passes, arranging free messages to relatives.

g) Arrange for protection of the property of passengers and safeguard Railway property within the available resources.
h) Open information counters/booths for giving information to the public regarding names of the injured, dead, etc. and also regarding regulation/diversion of trains etc.
i) Preserve all possible clues for finding out the cause of accident.
j) Assist in restoration work.
k) Relay the progress of relief and restoration work from time to time and other information to Control.

DUTIES OF TTEs/TRAIN SUPERINTENDENT TRAVELLING ON THE TRAIN:-

a) Arrange to provide assistance and render all help to the affected passengers, protect luggage, give First-Aid and assist Guard.
b) Ascertain if any Doctor is traveling on the train by either seeing the reservation chart or making verbal enquiries and arrange for First Aid to the passengers.
c) Prepare lists of dead and injured with the advice of Doctor(if available), the list should be classified as under :-
   i. Dead.
   ii. Grievous injury.
   iii. Simple injury.
d) Details of the dead and injured persons should be obtained from the reservation chart, tickets holders or co-passengers. Assistance of the Police traveling in the train also may be obtained for identification.
e) The following details should be collected:-
   - Tickets of the passengers traveling (to & from)
   - Ticket numbers, class of travel.
   - Coach numbers and their positions from the engine.
   - Address of the passengers.
   - Nature of injury (Simple, Grievous).
   - Take custody of luggage and other belongings in case of injury. This should be kept by the TTE.
   - In case of death, luggage is to be handed over to GRP with full details and acknowledgement obtained.
f) TTE/TS should record evidence of passengers with full particulars, if some passengers are willing to give evidence later on, their names and addresses should be recorded.
g) TTE/TS should keep record of the number of dead and injured (Simple/Grievous), if local people already transfer them to the nearest hospital before arrival of Railway Doctor.
h) TTE/TS will not leave site till permitted to do so by competent authority.
i) On duty TTEs will report to Guard of the train.

Important Contact Number:

Name	Designation	Desk Number
Shri C.V.Raman	Divisional Railway Manager (DRM)	03564 -255273
Shri M.K.Agarwal	Chief Safety officer (CSO)	0361-2676016
Shri B.B.Misra	Inspector General cum lChief Security Commissioner (IG &CSC)	0361-2676020
Shri Raj Kumar Mangla	Chief Vigilance officer and Senior Deputy General Manager (CVO) & (SDGM)	0361-2676055
Shri Pranav Jyoti Sharma	Chief Public Relations Officer (CPRO)	0361-2676085 & 0361-2671448

SOP for Crowd Management during large crowd pulling fair:

Causes and Triggers for Crowd Disasters:

Structural

- Structure collapse of
  - Barricades/ bamboo railings/wire fence/ Metal barrier
  - Makeshift bridge.
  - Temporary structure.
  - Railings of the bridge caused by panic triggered by rumors
- Barriers on the way
- Poor guard railings, poorly lit stairwells
- Difficult terrain (famous religious sites built on top of hills that are difficult to access)
- Slippery/muddy roads
- Narrow streets with illegal vendors on sides; sloped gradient; bad weather leading to crushing
- Windowless structure, narrow stairs
- Narrow and very few entry/exits
- Absence of emergency exits
- unauthorized construction surrounded by high brick walls preventing evacuation

2.2.2. Fire/Electricity

- Fire in a makeshift facility or a shop
- Cooking in a makeshift facility
- Wooden structure/ quick burning acrylic catching fire
- Fire at illegal structure Non-availability of fire extinguisher/fire extinguishers not in working condition
- Unauthorized fireworks in enclosed places
- Inappropriate points of manufacturing and sale of fireworks
- Building and fire code violations
- Lack of adequate flood lighting of the assembly area and the path ways use by the crowd

- Electricity supply failure creating panic and triggering a sudden exodus
- Illegal electric connections
- Inappropriate fittings such as MCB, Aluminum wires instead of copper wires

etc.

- Short circuit from electrical generator, (synthetic) tent catching fire.
- Elevators catching fire, people on higher floors panic, steep stair designs

Security

- Under deployment of security personnel to regulate to control crowd.
- Lack of adequate scientific planning in making police arrangement to deal with crowd with proper sectoral deployment under an officer with adequate manpower and the each sector reporting to the senior police personnel in charge of the police arrangement.
- Lack of proper wireless deployment with clutter free call arrangement between sector in-charge and officer in-charge of the police arrangement
- Inadequate briefing of security personnel on crowd control before deployment
- Lack of adequate dress rehearsals before actual deployment
- Lack of adequate observation towers with PA system and back up force with proper wireless communication with the tower to monitor and regulate crowd
- Lack of adequate CCTV surveillance of the crowd with PA system to control monitor and guide as and when required
- Lack of adequate briefing of the personnel manning the observation towers, CCTV and PA system on dealing with problems in effective manner as and when they see and observe the crowd
- Absence of walkie-talkies for the police on duty
- Absence of public announcement systems or effective wireless system with the police

Crowd Behaviour

- A wild rush to force the way towards entrance/exits
- Crowds attempting to enter a venue after the start/closing time
- A collision between large inward flows and outward flows
- Rush during distribution of disaster relief supplies
- A large number of pilgrims trying to board a ferry for a sacred island site
- Free distribution of gifts/toys/food/Prasad/alms/blankets/cash/clothes triggering a surge and crush
- Tussle to catching a glimpse/autograph of a celebrity
- A large (much more than expected) anxious and competitive crowd gathering because of limited period promotional events at malls
- Rush to get covered/free/unnumbered seats at the venue
- Scramble to get event tickets
- Crowds trying to re-enter the venue (flows inward/outward flows mixed)

Alipurduar itself is a famous tourist spot and it is needless to say that visitors from different corner of our country converge in this exquisitely beautiful place to spend their vacation. Places like Jayanti, Buxa, Jaldapara, Holong, Jaygaon, Lepchakha, Bhutanghat etc. are always flooded with tourists throughout the year especially in the peak seasons. Apart from this, there are several below mentioned religious fairs that are taking place at our district every year where crowd pooling happen. Among them the largest fair is Dooars Utsav.

Alipurduar-I Block	• Rashmela at Baburhat and Mejbil • Gadadhar Astami Mela near Eetbhati and Kaljani • Charak Mela at Pararpar GP • Bhandari Mela a Bairiguri
Alipurduar-II Block	• Mahakal Dham er Mela at Chepani • Astami Mela at Salsalabari • Bura Majid er Mela at Majidkhana
Madarihat-Birpara Block	• **Nabi Utsav at Khaerbari GP (large crowd pulling fair)**
Kumargram Block	• Jagadhatri Mela at Kumargram • Durga Puja Astami Mela at Newland TG • Durga Puja Dashami Mela Kamakhyaguri • Kalipuja mela at Paglarhat (for 7 days) • Kalipuja Mela at Barobisha (for 11 days) • Rash Mela at Madhya Haldibari • Lakshmi puja Mela at Ghoramara (Hemaguri)
Falakata Block	• Rathayatra Mela at Purono Chowpothy • Kalipuja Mela at Madari Road (for 7 days)
Kalchini Block	• Rash Mela at Nimti More • Kali puja Mela at Hamiltongunj Kalibari • Siboratri Mela at Jayanti
Alipurduar Municipality	**Biswa Dooars Utsav (for 10 days) [large crowd pooling fair]**

All the places are properly cordoned by different task forces like Civic volunteers, CD volunteers and district police well in advance before any fair. Beside this, a certain number of volunteers are always kept in hand as back up by Authority to meet the demand of any unusual mishap. Department wise details of Crowd management activities have been written below:

District Police	• Maintaining Law and Order. • Pacifying excited mob.
Fire and Emergency	• Combating any fire emergency. • Rescuing people from drowning during holy dip in some special day.
Civil Defence	• Providing additional support to the authority in search and rescue operation.
Civic Volunteers	• Maintaining traffic and crowd at the pavement and entrance of a fair. • Protecting the hosting place from felonious and illegal entry.

SOP for Drowning Case:

Drowning is an occurrence when person die through submersion in and inhalation of water. It may occur due to heavy flood situation or inattentively taking bath in any water body such as river, pond etc. At Alipurduar, drowning is occurred here and there very often because of the presence of mountainous rivers. We generally deploy our task force from 31 trained divers for retrieving drowned body from time to time. The detail picture of drowning has been depicted below.

Date	**Place**	**Number of case**	**Remarks**
23.06.2018	Falakata and Kumargram	2	Body of casualties were retrieved by CD task force
30.07.2018	Babupara and Palashbari, Alipurduar	2	Body of casualties were retrieved by CD task force
05.08.2018	Nonai River, Alipurduar	1	Body of the casualty was retrieved by CD task force
21.08.2018	Nonai River, Alipurduar	1	Body of casualty was retrieved by CD task force
25.09.2018	Garam River, Alipurduar	1	Body of casualty was retrieved by CD task force
08.09.2018	Chilapata, Kalchini.	1	Body of casualty was retrieved by CD task force
11.09.2018	Salsalabari, Alipurduar.	2	Persons were rescued by CD task force.
15.09.2018	Bania Basti, Kalchini.	1	Body of casualty was retrieved by CD task force

CHECKLIST OF VARIOUS RESCUE EQUIPMENTS

Departments	**Equipments**
Fire and Emergency	Water Tender, 35 feet extension ladder, special rescue tools.
Municipality	JCB and dumper for garbage cleaner. Water Tank for drinking water supply.
Transport	Small breakdown Crane.
Civil Defence	Life Jacket, Gloves, Helmet with and without LED, Search light, Cutter, Hammer, Rope, Buoy, Two Full SCUBA diving set (Regulator, Pressure gauge, Depth gauge, Demand Octopus) etc.
Disaster Management	Reflective Jackets, ASKA Tower light.
Health	Mobile medical van, Ambulance.
Indian Railway	Hydraulic power pack (Petrol/Diesel), Hydraulic Cutter, Hydraulic Spreader, Hydraulic High Power hoses, Hydraulic hand Pump, Air Compressor, Air Cylinder High Pressure Lifting Air Bags.

ANNEXURE

List of Important Phone Numbers

Establishment	Department	Name	Phone number
District	------	District Magistrate, Alipurduar	03564-255286 03564-255062
		Additional District Magistrate (G)	03564-257411
		Additional District Magistrate (Dev.)	03564-257531
		Additional District Magistrate (ZP)	03564-255062
	Police	SP, Alipurduar	9083272800
		Addl. Sp, Alipurduar	9083272801
		Addl. Sp, Jaigaon	9734739928/ 7044223333
		Dy. SP, Alipurduar	9083272804
		Dy. SP, DIB, Alipurduar	9083272805
	Disaster Management & Civil Defence	Officer-in-Charge	7001150751
		DDMO	9073936733
		Sr. SOI	8972514314
		Dis. Mgmt. Professional	7596953723
	Health	CMOH, Alipurduar	9434462745
		Dy. CMOH, Alipurduar	9434326066
		ACMOH, Alipurduar	8768813914
		Superintendent, District Hospital, Alipurduar	9733353616
		Health Inspector	6295023025
	Irrigation	EE, Irrigation, Alipurduar Div.	9434347258
		Alipurduar Irrigation Sub-division	9434174248
		Alipurduar Irrigation Sub-division	9434256049
		Kamakhyaguri Irrigation Sub-Division	8918171422
	PWD	EE, PWD (Electrical)	9434429041
		EE, NH-X, Alipurduar	8826850945
		EE, PWD, Alipurduar Div.	9434170903
	Electricity	DM, WBSEDCL, Alipurduar	7449301777
	Food & supply	DCFS, Food and Supply, Alipurduar	9126010894
	Forest	AFD, Buxa East	7866047122
		AFD, Buxa West	9733037972
	Animal Resource	ARD, Animal Resource, Alipurduar	9732968094
	Telegraph	AGM, BSNL, Alipurduar	9434745400
	PHE	EE, PHE, Alipurduar	9434169001
	Agriculture	DDA, Agriculture, Alipurduar	9434413450
	Education	AI of Schools (SE), Alipurduar	9333823548
	Fire	O/C, Fire and Emergency Service	8584027269
Sadar Sub-division and Alipurduar Municipality		SDO, Alipurduar (Sadar)	8373087384
		SDPO, Alipurduar	9083272802
		SDPO, Jaigaon	9083272803
		SDDMO, Alipurduar (Sadar)	9153011461
		Municipality Office	9434004771
		Municipality Control Room	03564-255580

Block		BDO, Kumargram	7797864300
		BDO, Falakata	7797864000
		BDO, Madarihat	7797863900
		BDO, Kalchini	9434746850
		BDO, Alipurduar-I	7797864100
		BDO, Alipurduar-II	7797864200
		BDMO-in-Charge, Kumargram	9064754240
		BDMO, Falakata	8906464318
		BDMO-in-Charge, Madarihat	9038006606
		BDMO, Kalchini	9434603948
		BDMO-in-Charge, Alipurduar-I	9832442662
		BDMO, Alipurduar-II	9749039027
Various Rescue Forces and Other Departments		Major, Binnaguri Army Camp	8016367144
		Sr. DSO, North Frontier Railway, Alipurduar Jn.	9002052730
		Safety Counselor, Traffic , North Frontier Railway, Alipurduar Jn.	9002052731
		Asst. Commandant, State Armed Police (DMG), 7th Bn., Asansol.	9083269353
		CRPF, Siliguri.	7838751512
		Inter Agency Group, Alipurduar.	9733142464

GP wise contact list of elected Panchayet Prodhan

Block	**Gram Panchayat**	**Contact no.**
Alipurduar-I	SALKUMAR-I	8972037100
	SALKUMAR-II	9733106850
	PURBA KATHALBARI	7584015072
	CHAKOWAKHETI	9749161590
	PATLAKHAWA	9635400607
	PARARPAR	7076461975
	MATHURA	6294847668
	BANCHUKAMARI	8637896646
	TAPSHIKHATA	9641152046
	VIVEKANANDA-I	7602208425
	VIVEKANANDA-II	9679492294
Alipurduar-II	TATPARA-I	9933504938
	TATPARA-II	7602608103
	CHAPARERPAR-I	8927699010
	CHAPARERPAR-II	9775882186
	BHATIBARI	8670481184
	MAJHERDABRI	7432995795
	PAROKATA	8972687960
	SAMUKTALA	9733070661
	KOHINOOR	8918825831
	TURTURI	7001007904/9609729012

	MAHAKALGURI	9641975488
Falakata	FALAKATA-I	9144538049
	FALAKATA-II	7430848300
	MAIRADANGA	9593351270
	PARANGERPAR	9641211497
	SALKUMAR	7548019065
	JATESWAR-I	9734961292
	JATESWAR-II	9533138198
	GUABARNAGAR	7908651857
	DALGAON	7908831337
	DEOGAON	8345879490
	DHANIRAMPUR-I	9775153715
	DHANIRAMPUR-II	9733148062
Kumargram	CHENGMARI	9093287192
	KAMAKHYAGURI-I	9093631239
	KAMAKHYAGURI-II	9378051581
	KHOURDANGA-I	8167744559
	KHOURDANGA-II	7047474299
	KUMARGRAM	9733197557
	NKS	7076515829
	RYDAK	9647586055
	TURTURI KHANDA	9382964813
	VOLKA BAROBISHA-I	7478881685
	VOLKA BAROBISHA-II	9600532216
Kalchini	JAIGAON –I	9593310241
	JAIGAON-II	9933422488
	DALSINGPARA	9647117667
	CHUAPARA	9593653897
	MALANGI	8670660827
	SATALI	9775462922
	KALCHINI	9475925478
	GAROPARA	9734875238
	MENDABARI	7872342455
	LATABARI	9474961183
	RAJABHATKHAWA	7797956340
Madarihat-Birpara	TOTOPARA-BALLALGURI	9641721772
	HANTAPARA	9734123526
	MADARIHAT	9832362179
	KHAIRBARI	7384589658
	RANGALIBAZNA	8768315908
	SISHUJHUMRA	7797072570
	BANDAPANI	8617369269
	BIRPARA-I	9635901397
	BIRPARA-II	9800119782
	LANKAPARA	9732233557

Contact List of Nodal Officers of Various Line Departments at District Level

Department	Name	Designation	Contact No.
Police	Biplab Kumar Laskar	Inspector	9593632668
Fire and Emergency Services	Swapan Kr. Das	O/C	8918920647
Irrigation and Waterways Department	Niraj Kr. Singh	Exe. Engineer	9434347258
P.H.E.	Tarubrata Roy	Asst. Engineer	9163998548
Food and Supply	Subrata Nandi	Sub-Divisional Controller	8900431900
BSNL	D.K.Barman	AGM, CFA, Alipurduar	9434095140
Health	Dr. Dinesh Biswas	Asst. CMOH	8768813914
School Education (Secondary)	Ahasanul Karim	Addl. Dist. Inspector of School	9800858192
Civil Defence	Sri Sumitra Sen	Sr. S.O.I.	8972514314
PWD (Roads)	Sanjoy Ch. Roy	----	8697113417
PWD (cons.)	Bibhore Mazumdar	Asst. Engineer	7908069759
PWD (NH wing)	Subhayan Banerjee	Exe. Engineer	8076773137
Horticulture	Sandip Mahanta		9641582136
Agriculture	Partha Dutta	A.D.A. (SM)	8001680972

List of Sluice Gate in Alipurduar Town Protective Embankment under Alipurduar Irrigation Division

SL NO	Chainage	No of Vents (no)	Area	Word No	Name of Khalasi/Contractual Gr.D staff Engaged	Contact No
1.	780 m	3 nos	Arabindanagar	Word no-I	Pratyush Kar Choudhuri	9641082745
2.	880 m	1 no	Ghagara	Word no-I	Pratyush Kar Choudhuri	9641082745
3.	1400 m	3 nos	Kalibari	Word no-VIII	Amit Ghosh & Surajit Das	9832602706
4.	1870 m	1 no	Suryanagar	Word no-IX		8116427007
5.	2760 m	3 nos	Bidhan Pally	Word no-IX	Partha Chakroborty & Sisir Ghosh	9775933441 8768930685
6.	3000 m	1 no	Burning Ghat	Word no-X	Subhas Chandra Ghosh	9474541203
7.	3800 m	1 no	Gowala Patty	Word no-X	Santunu Das	9609958299
8.	4410 m	1 no	Hatkhola	Word no-XII	Baren Dey	9641722984
9.	4810 m	1 no	Palashbari	Word no-XI		
10.	5460 m	1 no	Babubara School	Word no-XII	Alok Barman	6295412937 7076704150
11.	6190 m	1 no	BM Club	Word no- XVIII	Prabir Roy	6296528648
12.	6220 m	2 nos	BM Club	Word no- XVIII		
13	6410 m	3 nos	Bakribari	Word no-XV	BiswanathMahato	9046619896
14.	7200 m	9nos	Subhash Pally	Gram Panchayat area Chaparerpar-I	Surajit Das & Niloy Das	9476225015 9800371955

List of Dry Food Storing Agents and Dealers

All MR Distributors under Alipurduar District are directed to maintain a rolling reserve stock of Rice at their storage points as per quantity shown as under (Orders from HQs awaited)			
Sl. No.	**Name of the M.R. Distributors**	**Location**	**Rice in Qtls**
1	Radha Distributor	Alipurduar	50.00
2	M.L Agarwalla	Alipurduar	50.00
3	S.R. Moulic & Sons	Alipurduar, Junction	50.00
4	Dhar Brothers	Alipurduar	50.00
5	Raj Trading	Salkumar	50.00
6	Ashok Stores	Samuktala	50.00
7	K.C.C.S. Ltd. Kalchini	Kalchini	50.00
8	K.C.C.S. Ltd. Hasimara	Hasimara	50.00
9	G.C. Roy	Madarihat	50.00
10	Kailash. Jindal	Birpara	50.00
11	P.B. Saha	Kamakhyaguri	50.00
12	T.P. Mukherjee	Kamakhyaguri	50.00
13	A.K Saha	Barobisha	50.00
14	H.C. Saha Roy	Falakata	50.00
15	Radha Gobinda Distributor	Alipurduar	50.00

Reserve stocks of S.K Oil

All S.K Oil Agent Alipurduar District are directed to maintain a rolling reserve of 5 K.L. of S. K.Oil (Orders from HQs awaited)			
Sl. No.	**Name of the S.K Oil Agent**	**Location**	**Contact No.**
1	M/S Banwarilal Agarwalla	Birpara	9002211211
2	M/S P.B Das	Falakata	943420769
3	M/S Bhagawan Das Agarwalla	Kalchini	943406507
4	M/S Ghanashyam Das Agarwalla	Kalchini	8906815830
5	M/S Reliable Auto Service	Madarihat	974974056

6	M/S Sew Chand Roy Satya Narayan	Satali, Old Hasimara	9434030796

Keeping of reserve stocks of Rice

All Rice wholesalers of Alipurduar Sub-Division are directed maintain a rolling reserve stock of rice at their storage points as per quantity shown as under. (Orders from HQs awaited)

Sl. No.	Name of Wholesaler	Location	Quantity in Qtls	Contact No.
1	Ramavtar Satyaprakash	Alipurduar	100.00	255071/7076643984
2	Mahabir Prasad Mohta	Alipurduar	100.00	255218/9635112847
3	Maheshwari Mill	Alipurduar	100.00	255024/9434608847
4	Ambika Traders	Alipurduar	100.00	259645/9932361350
5	Pariwal Brothers	Alipurduar	100.00	8159868033/9434002153
6	M/S Ganesh Stores	Alipurduar	100.00	9434034307
7	Ramnarayan Ramkumar	Alipurduar	100.00	9641833324
8	Ghasiram Mohanlal	Alipurduar	100.00	9476226425/9434720444
9	M/S Jay Bharat Traders	Alipurduar	100.00	03564-255737
10	M/S Sitaram Jaynarayan	Alipurduar	50.00	03564-255272
11	Parimal Prasad	Kamakhyaguri	100.00	03564-258804
12	M/S K.C.C.S. Ltd.	Kalchini	100.00	9434103813
13	M/S Mahabir Prasad Agarwalla	New Market Hasimara	100.00	9832009862
14	Sri Mohanlal Agarwalla	New Market Hasimara	100.00	9641609962
15	Sri Muridhar Jayprakash	Hasimara	100.00	9609731067
16	Sri Hemendra Chandra Saha Roy	Falakata	100.00	9832332471
17	M/S Bhanu Saha	Falakata	50.00	9832351333
18	M/S Siranjan Saha	Falakata	100.00	9734047211
19	M/S Dipak Kimar Saha	Falakata	100.00	9733083058
20	M/S Bimal Kumar Saha	Falakata	100.00	9641028899
21	M/S Sohanlal Satyaprakash	Birpara	100.00	9832029651
22	M/S Indar Sen Jindal	Birpara	100.00	9832508081

23	M/S Sohanlal Debiprasad	Birpara	100.00	03563-266104
24	M/S Kuttu Traders	Birpara	100.00	03563-266538
25	M/S Mitthal Stores	Birpara	100.00	9832079999
26	M/S Mahesh Stores	Birpara	100.00	03563-266544
27	M/S Mahabir Prasad Agarwalla	Birpara	50.00	9832009862

Contact details of Chira & Gur stockiest

Sl. No.	Name of the Stockiest	Location	Contact No.
1	M/S H.N Saha & Brothers	Alipurduar	03564-275100
2	M/S Madan Mohan Bhandar	Alipurduar	03564-255661
3	M/S Mani Paul	Alipurduar Jn.	03564-255642
4	Sri Dilip Saha	Alipuduar Jn.	03564-251091
5	M/S Maheswari Brothers	Alipurduar	03564-255214
6	M/S Kalyani Brothers	Alipurduar	03564-255365
7	Prahalad Das	Kumargram	9002670061
8	Parimal Paul	Kumargram	9593705679
9	Jay Prakash Choudhury	Birpara	8016679927
10	Punam Chand Lakhotia	Birpara	9733141006
11	M/S Mahavir Prasad Agrawalla	Birpara	9832009862

Contact details of Iodized Salt stockiest

Sl. No.	Name of Wholesaler	Location	Contact No.
1	M/S Ma Laxmi Bhandar	Alipurduar	03564-274655
2	M/S Ramkrishna Bhandar	Alipurduar	9733152395
3	M/S Raj Laxmi Trading	Alipurduar	9832635151
4	M/S Koiry Stores	Alipurduar	03564-255483
5	Sri Bivash Chandra Saha Roy	Falakata	9475385350
6	Sri Moglal Deshmukh	Falakata	9832509743

7	Sri Kali Kumar Saha	Falakata	9475809113
8	Sri Anup Kumar Saha	Falakata	9832050996
9	Sri Swadesh Dev	Kamakhyaguri	9434604551
10	Sri Suresh Kumar Goyel	Kalchini	9434807101

Contact details of Baby Food stockiest

Sl. No.	Name of Distributors	Location	Contact No.
1	M/S Sunil Agency, prop. Raj Kumar Jhawar	Alipurduar Municiaplity	9332002444
2	M/S Raj Laxmi Enterprise	Alipurduar Municiaplity	9434744485
3	Jolly , Enterprise	Alipurduar Municiaplity	9434744485
4	Maa Sankari & Sons	Alipurduar-I	9434058842
5	Joy Matadi Agency	Alipurduar-I	9832626262
6	SB Enterprise	Alipurduar-II	9933548180
7	PS Enterprise	Alipurduar-II	9800029999
8	M/S Samir Traders	Samuktala	9775888328
9	M/S Manish Enterprise	Birpara	9832392645
10	Rathi Agency	Birpara	9832456752
11	Shiv Shakti Traders	Madarihat	7407385111
12	M/S Anandamela	Hamiltonganj	9735211396
13	M/S Anjana Enterprise	Kalchini	9734944170
14	M/S KK Enterprise	Hasimara	9733303499
15	M/S KCCS Ltd	Kalchini	9434807101
16	M/S Ball Enterprise	Jateshwar	9832387064
17	Roy Enterprise	Falakata	9733195688
18	Gita Agency	Falakata	9832453341
19	Maa Durga Enterprise	Falakata	9835413019
20	M/S BP Enterprise	Kamakhyaguri	9641069685/7797200000

21	M/S Saha Agency	Barobisha	9733459101
22	M/S Mridula Enterprise	Khoardanga	9093900213
23	M/S Swami Traders	Kartika	9775888328

Contact details of H.S.D. & M S

Contact details of Distributors of H. S. D. & M. S; Alipurduar District			
Sl. No.	**Name of Dealers**	**Location**	**Contact No.**
1	M/s Roy Service Station, Sri Dwipen Roy	Falakata	9775401668
2	Anil Auto Service, Sri Anil Jain & Others	Madarihat	9832020300
3	Madarihat Service Station, Smt. Usha Devi Kalyani	Madarihat	9734927797
4	M/S Himalayan Agency, Sri Sudipto Banarjee	Madarihat	9733388868
5	M/S Nilkata Service Station, Sri Santal Agarwalla	Birpara	9434110351
6	M/S Ghosh Auto Service, Sri Sunil Kumar Ghosh	Ethelbari Birpara	O3563264136
7	Radha Gobinda Service Station, Sri Samir Ranjan Paul	Nimti Domohani	O3564275198
8	Raj Auto Service	Kalchini	973345233
9	M/S Allied Service Station, Sri Sailendra Nath Samaddar And Others	Alipurduar	9434103840
10	M/s Ma Krishna Service Station, Sri Subrata Roy	Hasimara	9800815464
11	N.R.L Automobile	Madarihat	8145791710

Sl. No.	Name of L.P.G Dealers	Location	Contact No.
1	Alipurduar Gas Service	Alipurduar	9434607738
2	Manager, N.F. Rly Emp. Co-op Society Ltd.	Alipurduar Jn.	03564-255763
3	Bharat Service C/o Sudipa Chakraborty	Subhaspally, Falakata	03563-263228
4	M/S Annapurna H.P. Gas Service	Madarihat, Falakata Road	03563-262200
5	Sumit Indane Gas Service	Ghoramor, Kamakhyaguri	03564-200388

List of Heritage Building

Heritage is deemed to mean those buildings, artifacts, structures, areas and precincts that are of historic, aesthetic, architectural or cultural significance and should include natural features within such areas or precincts of environmental significance or scenic beauty such as sacred groves, hills, hillocks, water bodies (and the areas adjoining the same), open areas, wooded areas, etc. It must be recognized that the 'cultural landscape' around a heritage site is critical for the interpretation of the site and its built heritage and thus is very much its integral part.

The conservation of built heritage is generally perceived to be in the long term interest of society. This can be better understood if categorized under 'economic', 'cultural', and 'environmental', although they are not mutually exclusive and, indeed, they are often interlocked.

Most buildings are capable of beneficial use, whether for their original purpose or for some other use. Buildings and their precincts need to be used in order to survive and such use can be made into an economically viable enterprise.

Heritage comprises archaeological sites, remains, ruins, and monuments protected by the Archaeological Survey of India (ASI) and their counterparts in the States, and also a large number of unprotected buildings, groups of buildings, neighborhoods, and public spaces including landscapes and natural features which provide character and distinctive identity to cities. Conservation plans and projects for cities must take into account both the protected and unprotected components of the heritage.

The three key concepts need to be understood to determine whether a property is worthy of listing as a Heritage are namely according to **Historic significance, Historic integrity, Historic context.**

Mere listing is of limited use unless it serves the cause of preservation and conservation of the heritage of the area. Publication of the Listing of the area does help in raising the level of awareness and public consciousness about what constitutes their heritage. However, the cause of preservation and conservation of heritage can be served only by providing statutory backing to the listing. **Only the statutory backing makes it an effective tool for conservation.**

Criteria for listing heritage building

The three key concepts need to be understood to determine whether a property is worthy of listing.

- Historic significance
- Historic integrity
- Historic context

Historic significance is the importance of a property to the history, architecture, archaeology, engineering or culture of a community, region or nation.

In selecting a building, particular attention should be paid to the following:

- Association with events, activities or patterns
- Association with important persons
- Distinctive physical characteristics of design, construction or form, representing work of a master
- Potential to yield important information such as illustrating social, economic history, such as railway stations, town halls, clubs, markets, water works, etc.
- Technological innovations such as dams, bridges, etc.
- Distinct town planning features like squares, streets, avenues

Historic integrity is the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic period. Historic integrity enables a property to illustrate significant aspects of its past. Not only must a property resemble the historic appearance but it must also retain physical materials, design features and aspects of construction dating from the period when it attained significance. Historic context is information about historic trends and properties grouped by an important theme in the history of a community, region or nation during a particular period of time. Knowledge of historic context enables listers to understand a historic property as a product of its time.

As per the above stated criteria, the district Alipurduar has only one heritage building and the description is as follows:

Name	Buxa Fort
Place	Buxa Tiger Reserve, 30 kilometers (19 mi) from Alipurduar town.
Block	Kalchini
Historical Significance	• The Bhutan King used the fort to protect the portion of famous Silk Route connecting Tibet with India, via Bhutan. • Once Netaji Subhas Ch. Bose was confined in this area.
Altitude	867 metres (2,844 ft)
Vulnerability	Prone to Earthquake and Landslide
Image	

Various Important Links

Type	Organization	Link
Research Organization	India Meteorology Department	http://www.imd.gov.in/
	Indian National Centre for Ocean Information Services	https://incois.gov.in/
	Geological Survey of India	https://www.gsi.gov.in/
	Central Water Commission	http://cwc.gov.in/
	National Institute of Hydrology	http://nihroorkee.gov.in/
	Space Application Centre	https://www.sac.gov.in/
	National Remote Sensing Centre	https://www.nrsc.gov.in/
	National Institute of Disaster Management	https://nidm.gov.in/
	Snow and Avalanche Study Establishment	https://www.drdo.gov.in/drdo/labs1/SASE
Government Organization	Ministry of Home Affairs	https://mha.gov.in/
	National Disaster Management Authority	https://ndma.gov.in
	State Disaster Management Authority-West Bengal	http://wbdmd.gov.in
Weather forecasting Android APP	MOSDAC	https://www.mosdac.gov.in/
	DAMINI	https://www.apkmonk.com/app/com.lightening.live.damini/
	SAGARVANI	https://apkpure.com/sagarvani/com.incois.gaian.incois

Important International/ National Day

Description	Date
National Youth Day	12th January
National Science Day	28th February
World Wildlife Day	3rd March
International Women's Day	8th March
International Day of Forests	21st March
World Day for Water	22nd March
World Meteorological Day	23rd March
International Day for Biological Diversity	22nd May
World TB Day	24th March
World Health Day	7th April
World anti-tobacco Day	31st May
World Environmental Day	5th June
World Ocean Day	8th June
International Day of Yoga	21st June
World Snake Day	16th July
International Youth Day	12th August
World Animal Welfare Day	4th October
International Day for Disaster Reduction-UNISDR	13th October
World Food Day	16th October
National Day for Disaster Reduction-NDDR	29th October
International Day for the Elimination of Violence against Women	25th November
National Immunization Day	9th December
National Energy Conservation Day	14th December

Various Books, Reports and Manual

Type of the document	Name of the document	Link
Departmental Manual/Act/Plan	Disaster Management Act, 2005	https://ndma.gov.in/en/disaster.html
	Disaster Management Manual	http://wbdmd.gov.in/Pages/Manual.aspx
	Disaster Management Plan, Indian Railways	http://www.indianrailways.gov.in/railwayboard/uploads/directorate/safety/pdf/2018/DM_Plan_2018.pdf
	Drought Management Plan, Department of Agriculture	http://agricoop.nic.in/sites/default/files/Drought%20Management%20Plan%20.pdf
	Chemical Disaster	https://nidm.gov.in/PDF/modules/chemical.pdf
	Hospital Safety	https://ndma.gov.in/images/pdf/NDMAhospitalsafety.pdf
	Contingency Plan on Oil Spill	https://www.indiancoastguard.gov.in/WriteReadData/bookpdf/20151228122156579312 7NOSDCPCGBR771.pdf
	Crowd Management at events	https://ndma.gov.in/images/pdf/managingcrowdsguide.pdf
	Landslide and Avalanche Plan	https://nidm.gov.in/pdf/guidelines/new/landslidessnowavalanches.pdf
	Urban Flooding	http://amrut.gov.in/writereaddata/SOP_Urbanflooding_5May2017.pdf
	Compendium of Civil Defence	https://dgcd.assam.gov.in/information-services/compendium
Research Article/ Book/Report	Storm Drainage Modeling	http://www.cityofbrookings.org/DocumentCenter/Home/View/305
	Rapid Flood Inundation Model	https://pubs.usgs.gov/of/2016/1038/ofr20161038.pdf
	Introduction to Flash Flood	http://www.wmo.int/pages/prog/hwrp/flood/ffgs/hdrffg/documents/presentations/day1/HRC_HDRFFG_09062016_RG1.pdf
	Disaster Risk Reduction: Community Resilience and Responses	https://link.springer.com/book/10.1007/978-981-10-8845-2
	Simplified Flood Inundation Mapping Based On Flood Elevation-Discharge Rating Curves Using Satellite Images in Gauged Watersheds	https://www.researchgate.net/publication/270195714_Simplified_Flood_Inundation_Mapping_Based_On_Flood_Elevation Discharge_Rating_Curves_Using_Satellite_Images_in_Gauged_Watersheds
	SPHERE Project handbook for Humanitarian Charter	*https://www.ifrc.org/PageFiles/95530/The-Sphere-Project-Handbook-20111.pdf*
	Principles of Remote Sensing	https://webapps.itc.utwente.nl/librarywww/papers_2009/general/principlesremotesensing.pdf
	Principles of Geographic Information System (GIS)	https://webapps.itc.utwente.nl/librarywww/papers_2009/general/principlesgis.pdf
	IPCC Assessment Report 5	https://ar5-syr.ipcc.ch/ipcc/ipcc/resources/pdf/IPCC_SynthesisReport.pdf
	Coastal Dynamics	https://www.nccarf.edu.au/sites/default/files/tool_downloads/IM_8_coastal%20sediments_uploaded.pdf
	Basics of Thunderstorm	https://incois.gov.in/documents/ITCOocean/OITC018/L6Part-II Thunderstorm_Naresh%20Kumar.pdf
	Air Pollution	https://www.basingstoke.gov.uk/content/page/26744/Air%20pollution%20-%20what%20it%20means%20for%20your%20health.pdf
	Atmospheric Chemistry	http://elte.prompt.hu/sites/default/files/tananyagok/AtmosphericChemistry/book.pdf
	Biogeochemistry of North Indian Ocean	https://www.researchgate.net/publication/27667310_Biogeochemistry_of_the_North_Indian_Ocean
	Mainstreaming CCA and DRR	https://www.ndmindia.nic.in/images/pdf/Mainstreaming%20Report_Final_sept7.pdf

Space for Note/Suggestion

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