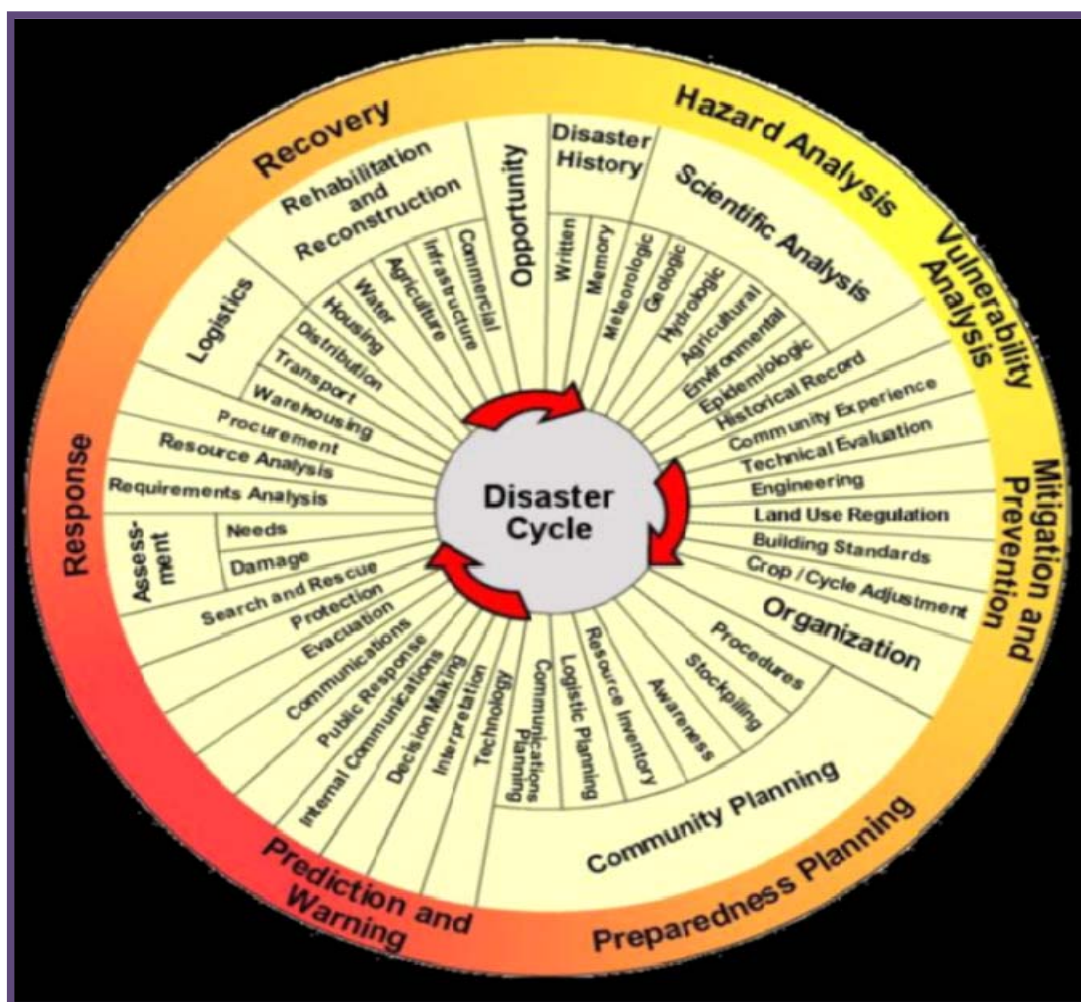




## District Disaster Management Plan-2022 Bhavnagar



**Gujarat State Disaster Management Authority  
and  
Collector Office–Bhavnagar**

## Foreword



**“Disaster Management is everybody’s business”**

**We live in a fast changing global environment where peril and risk to human society abound. Disaster has the ability to maim and kill people. They destroy property and the environment. Yet, disasters occur and re-occur with lasting detrimental consequences.**

**NDMA's guiding principles for the preparation of the Plan at district level has been to draft the Plan in a participatory approach with the preparatory process essentially strengthening the communities, elected local bodies and administration's response and preparedness.**

**I am extremely pleased with the deep involvement, support and cooperation of various stakeholders from community, line departments and other important groups in the preparation of the DDMP Bhavnagar. I am hopeful that the Bhavnagar District Disaster Management Plan and its process guidelines would inspire other Districts to follow the multistakeholder participatory approach.**

**The Plan also lays out the coordination structures at varied levels along with defined level for response as per the impact of the incident. I hope that this plan will be widely used by all the stakeholders in Bhavnagar encouraging us to make participatory multi-stakeholder plan for other districts of Gujarat as well.**

**The multi-hazard District Disaster Management plan of Bhavnagar is divided in two Parts. Part-1 is a comprehensive document covering all possible hazards, with a systematic analysis of risk and vulnerability, element at risk and level of impact through scientific method and experience, it also includes the IRS (Incident Response System). Part-2 is all about informative details of the district. Hope the updated DDMP 2022 shall be immensely useful to all departments and agencies and shall prove to be beneficial to public at large.**

**Yogesh B. Nirgude(IAS)  
Collector & District Magistrate  
Bhavnagar**

## Preface



Disaster risk reduction must be an everyday concern for everybody. Due to natural and man made disasters; people are being tested time to time. As on today, it is observed that people of gujarat are strong and bold to counteract disasters confidently. Technology is developed to work with such disasters.

Bhavnagar district is vulnerable towards multiple types of disasters. So, It is very necessary to be prepared for and respond in a timely manner to it.

Gujarat State Disaster Management Authority and Collector Office Bhavnagar prepare the communities and Government Officials from grass root level to top level for securing quick response mechanism under the Disaster Risk Management Programme. There are four DRM Components; These are Capacity Building, Awareness Generation, Mock drill and Plan Preparation. There are some other programmes like; Gujarat School Safety Programme and Apadamitra project headed by GSDMA for preparing community.

I am elated by this Bhavnagar District Disaster Management Plan as it has been developed in a consultative manner with constant inputs and feedbacks from all the stakeholders. This Plan has moved beyond the reactive relief based approach and has a concise plan of actions for different stakeholders at District level for disaster risk reduction, emergency response and recovery.

This District Disaster Management plan is a necessary document for reducing risks due to hazards and vulnerability; I hope this great document would be really helpful for protecting life and properties as well as sustainable development in the future.

**B.J.Patel (GAS)**  
**Additional District Magistrate**  
**Bhavnagar**

## **LIST OF ABBREVIATION/ACRONYMS**

GSDMA:	GUJARAT STATE DISASTER MANAGEMENT AUTHORITY
DCO:	DISTRICT COLLECTOR OFFICE
DCR:	DISTRICT CONTROL ROOM
EOC:	EMERGENCY OPERATION CENTER
BMC:	BHAVNAGAR MUNICIPAL CORPORATION
DC:	DISTRICT COLLECTOR
DDO:	DISTRICT DEVELOPMENT OFFICER
MC:	MUNICIPAL COMMISSIONER
DSP:	DISTRICT SUPRITENDENT OF POLICE
RAC:	RESIDENSIAL ADDITIONAL COLLECTOR
DRMP:	DISASTER RISK MANAGEMENT PROGRAMME
CBDM:	COMMUNITY BASED DISASTER MANAGEMENT
CBDP:	COMMUNITY BASED DISASTER PREPAREDNESS
IDRN:	INDIA DISASTER RESOURCE NETWORK
SDRN:	STATE DISASTER RESOURCE NETWORK
DDMP:	DISTRICT DISASTER MANAGEMENT PLAN
DDMC:	DISTRICT DISASTER MANAGEMENT COMMITTEE
CDMP:	CITY DISASTER MANAGEMENT PLAN
CDMC:	CITY DISASTER MANAGEMENT COMMITTEE
TDMP:	TALUKA DISASTER MANAGEMENT PLAN
TDMC:	TALUKA DISASTER MANAGEMENT COMMITTEE
VDMP:	VILLAGE DISASTER MANAGEMENT PLAN
VDMC:	VILLAGE DISASTER MANAGEMENT COMMITTEE
SDMP:	SCHOOL DISASTER MANAGEMENT PLAN
IEC:	INFORMATION EDUCATION COMMUNICATION
ICS:	INCIDENT COMMAND SYSTEM
SOP:	STANDARD OPERATING PROCEDURE
CMG:	CRISIS MANAGEMENT GROUP
NAC:	NOTIFIED AREA COUNCIL
NCC:	NATIONAL CADET CORPS
NSS:	NATIONAL SERVICE SCHEME
NGOS:	NON GOVERNMENTAL ORGANIZATION
ULB:	URBAN LOCAL BODIES
UEVRP:	URBAN EARTHQUAKE VULNERABILITY REDUCTION
PROGRAM	
AC:	AREA COMMANDER
ESF:	EMERGENCY SUPPORT STAFF
GSU:	GROUND SUPPORT UNIT
IAP:	INCIDENT ACTION PLAN
ISS:	INCIDENT STATUS SUMMARY
UC:	UNMIFIED COMMANDER
TUL:	TIME UNIT LEADER
SUL:	SITUATION UNIT LEADER
TS:	TECHNICAL SPECIALIST
TB:	TRANSPORTATION BRANCH
RO:	RESPONSIBLE OFFICER

LO:	LIAISON OFFICER
NO:	NODAL OFFICER
IRS:	INCIDENT RESPONSE SYSTEM
IRTS:	INCIDENT RESPONSE TEAM
IC:	INCIDENT COMMANDER
ICP:	INCIDENT COMMAND POST
ICS:	INCIDENT COMMAND SYSTEM
LS:	LOGISTIC SECTION
LSC:	LOGISTIC SECTION CHIEF
OS:	OPERATION SECTION
OSC:	OPERATION SECTION CHIEF
PS:	PLANNING SECTION
PSC:	PLANNING SECTION CHIEF
GSSP:	GUJARAT SCHOOL SAFETY PROGRAMME
NCRMP:	NATIONAL CYCLONE RISK MITIGATION PROGRAMME

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# Part-1

# CHAPTER – 1

## Introduction:

### What is Disaster?-

Disaster management is a process or strategy that is implemented when any type of catastrophic event takes place. Sometimes referred to as disaster recovery management, the process may be initiated when anything threatens to disrupt normal operations or puts the lives of human beings at risk. Governments on all levels as well as many businesses create some sort of disaster plan that make it possible to overcome the catastrophe and return to normal function as quickly as possible.

A disaster is an event triggered by natural manmade causes that lead to sudden disruption of normalcy causing widespread damage to life and property. The High Power Committee of Government of India has identified 30 major and minor disasters, which frequently occurs in our country. It is now a recognised fact that while natural disasters is primarily due to imbalance in the nature but losses due to them on account of human feelings. Human sufferings and misery from a large number of natural disasters can be minimised by taking timely action, preventing mechanisms and undertaking capital works of long and medium terms.

### Concept of Disaster Management-

Disaster Management is a continuous and integrated process of:

- Planning and implementing measures to mitigating or reducing the risk of disasters
- Mitigating the severity or consequence of disaster
- Preparedness for emergencies and disasters
- Assessing the effects of disasters
- Providing emergency relief and rescue and post disaster rehabilitation and reconstruction, and
- Building capacities to these ends.

The concepts of all hazard management and empowerment provide the foundation for disaster management plans and efforts. All hazards management involves considering, planning for, and taking actions to avoid or mitigate, all possible hazards, which may affect the district.

Empowerment means that each citizen is enabled, through education, training and support, to be able to address all hazards and disasters, which may threaten their lives or livelihoods. Empowerment does not transfer full responsibility for dealing with disasters to the individual, but strives to ensure each individual has the means and support needed to avoid or limit the impact of disaster.

The district and subsidiary plans seek to limit vulnerability and reinforce the resilience of communities in the face of hazards and disasters. Addressing vulnerability generally takes place before a disaster through actions to reduce the opportunities for the disasters to occur. Reinforcing the resilience occurs through actions to reduce the scale or potential impact of a disaster, and building capacities and systems that facilitates (shorten and make less costly) the recovery process.

#### Levels of Disaster (**The L Concept**)

The L concept has been developed to define the different levels of disaster in order to facilitate the assistance to State and the Centre. It has four levels which are as follows.

**L0 level:** Denotes normal times, which will be utilized for close monitoring, documentation and preparatory activities. Training of Search and Rescue teams, rehearsals, evaluation and inventory updation for response activities will be carried out during this period.

**L1 level:** Denotes when the disasters which can be managed at the District level where the State and the Centre need to be on guard in case assistance is required for disaster relief operations.

**L2 level:** Disaster situations that require assistance and active participation of State resources for management of the disaster.

**L3 level :** Disaster situation arises in case of large scale disasters that have a noticeable impact on a number of districts of states and when the State and District authorities have been overwhelmed with the disaster and require assistance from the Centre for rescue and relief operations.

### **Approach to Disaster Management-**

The Government of Gujarat takes a inclusive approach to disaster management. Disaster impact decrease is divided into two broad areas:

- Warning, Relief and recovery, focusing on plans and actions necessary to reduce the impact of quick-onset disasters or speed the response of slow- onset disaster, and,
- Mitigation, Preparedness and Prevention, focusing on plans and action to avoid or eliminate the causes or impacts of hazards or threatened disasters.

The overall approach to disaster management is based on six elements;

- Precise risk and Vulnerability assessment
- Planning and efficient allocation of resources,
- Capacity building and training
- Provision of ample resources
- The assignment of disaster management roles and responsibilities which correspond to normal roles and responsibilities (if possible) and,
- Use of diverse legal and operational mechanisms to accomplish disaster management objectives.

### **Approach to Disaster Management:-**

#### **1 Warning, Relief and Recovery**

Necessary actions are intended to eliminate the loss of life and property and hardship due to disasters. Plans and SOPs at District level should provide as seamless as possible provision of warning, relief and recovery assistance to avoid or reduce losses and hardship.

The focal point for early warning, relief and recovery is the District Collector, who directs and coordinates these efforts within the district. The Collector is also answerable for coordinating warning, relief and recovery with similar activities in neighboring districts and with the GSDMA and Revenue Department.

The Collector is further responsible for developing long term relief, recovery and rehabilitation plans during the course of a disaster. These plans will include steps to reduce disaster impact in the future and be coordinate with the GSDMA in terms of policy and implementation.

#### **2 Mitigation, Preparedness and Prevention**

Mitigation, preparedness and prevention actions are to be taken before a disaster to reduce the probability of a disaster (risk reduction) or the level of damage (vulnerability reduction) expected from a possible disaster. Vulnerability reduction is given priority over a risk reduction. The district can avail itself of four mechanisms (singularly or together) to reduce risk and vulnerability;

- Long term planning for mitigation, preparedness and prevention investments in the district,
- Enforcement of regulations, particularly building and safety codes and land use plans,
- Review and evaluation of development plans and activities to identify ways to reduce risks and vulnerability, and,

- Capacity building including warning, the provision of relief and recovery assistance and community-level identification of risk and vulnerability.

The Collector, assisted by the District Development Officer, is responsible for developing plans and activities to effect mitigation, preparedness and prevention using the mechanism noted above.

Base on the interim assessment of risk and vulnerabilities, the District will focus on the following areas for mitigation, preparedness and prevention;

- Resilience of lifeline systems (water, power and communications)
- Reduction in disaster impact on health care facilities, schools and roads
- Vulnerability reduction in flood-prone areas
- Vulnerability reduction to high winds
- Improvement of off-site Preparedness near industrial sites.

### **3 Finance**

The finance arrangement as per the fund granted by GSDMA / State nodal agencies to the district.

District Collector has authorities to distribute / impart the fund to the counter partners of Disaster management in the District as per required activities, according to the instructions of Government of Gujarat.

### **Aims and Objectives-**

In the absence of a defined plan response to a disaster would be arbitrary leading to over emphasis of some actions or other actions, which would be critical. Moreover, due to absence of a defined response structure and responsibilities allocations there would be mismanagement of resources and overlap of actions among various agencies, which may exacerbate the situation there by compounding the disaster effect.

The objectives of the disaster management plan for the Bhavnagar District should be listed covering the subject of responsibility of the District administration.



- To ascertain the status of existing resources and facilities available with the various agencies involved in the management of disaster in the District.
- Assess their adequacies and short falls if any in providing a multi- disaster response.
- Suggest institutional strengthening, technology support, up gradation of information system and data management for improving the quality of administrative responses to disaster at the district level and finally
- To evolve DDMP as an effective managerial tool.
- Defines the risks and Vulnerabilities of the citizens of the district to different disasters and Identifies the private and public sector parties with prime and supporting responsibilities to reduce or negate these vulnerabilities.
- Defines actions to be taken by these parties to avoid or mitigate the impact of possible disasters in the district.
- To prevent loss of human lives and property and effective medical response

Subsidiary plan detail the roles and responsibilities of most important and at the bottom of parties (Stake holders) in responding to definite disasters. These plans are developed

- At the Taluka level
- For location specific major industrial sites located in the district and,
- Through Standard Operation Procedures (SOPs) detailing how specific disaster response actions will be accomplished.

Developing and maintaining SOPs are the responsibility of parties with designated prime of supporting tasks assigned by this plan.

### **Evolution of the Plan-**

Gujarat Act No. 20 of 2003, THE GUJARAT STATE DISASTER MANAGEMENT ACT, 2003 clearly stated to mandatory provision of the DM plan as per the following clause & sections

Clause 15 of Chapter VI

1. The authority shall develop or cause to be developed guidelines for the preparation of disaster managements plans and strategies and keep them update and shall assist such departments of Government, local authorities and person, as may be specified by the authority in preparation of plans and strategies and coordinate them
2. The plan preparing authority while preparing the plan under subsection (1) shall make suitable provisions in the plan after considering the following namely:
  - (a) The types of disaster that may occur and their possible effects;
  - (b) The communities and property at risk;
  - (c) Provision for appropriate prevention and mitigation strategies;
  - (d) Inability to deal with disasters and promote capacity building;
  - (e) The integration of strategies for prevention of disaster and mitigation of its effects with development plans, programme and such other activities in the State;
  - (f) Provision for assessment of the nature and magnitude of the effects of a disaster;
  - (g) Contingency plans including plans for relief, rehabilitation and reconstruction in the event of a disaster, providing for-
  - (i) Allocation of responsibilities to the various stakeholders and coordination in carrying out their responsibilities;
  - (ii) Procurement of essential goods and providing essential services;
  - (iii) Establishment of strategic communication links;
  - (iv) Dissemination of information; and
  - (v) Other matters as may be provided for in the regulations.
  - (h) Any other matter required by the Authority.
- (3) The Authority shall prepare, or cause to be prepared, and maintained a master plan for the State/District

### **How to use the plan**

The present plan is not intended to provide comprehensive explanations and background information about a disaster, or serve as a training manual on how to respond to a disaster or conduct a disaster related task. The approach taken is that plans and SOPs should be limited to the minimum information need to respond to a specific disaster or undertake a disaster related task. Steps to address disaster specific requirements can be covered in procedures related to actions. This approach does require that task forces develop disaster specific procedures where appropriate.

In other words, this plan is intended for use by persons who are technically competent in the tasks or responsibilities set out in each plan. The SOPs are intended to be used by persons who are unfamiliar with disaster management topics but are intended to be task specific and not as replacements for full plans.

### **Authority for the plan-**

The requirement for district and subsidiary plans is set by the Gujarat State Disaster Management Authority (GSDMA) under the authority of the Gujarat State Disaster Management Act of 2003. The Act authorizes the collector to secure cooperation and assistance from other parties in efforts to avoid or reduce the impact of disasters.

The Collector (Specifically) and Government authorities (generally) are responsible for managing hazards and disasters, which affect a district, with support from GSDMA, the relief commissioner and other public and private parties as, may be needed. The roles, responsibilities and obligation of the Collector and other parties are set out in detail in the Act and are considered as part of this plan.

### **Stakeholders and their Responsibilities-**

At the district level, District Collector is responsible for responding any disaster situation in consultation with other line departments at district HQ are responsible to deal with all phases of disaster management within district.

Technical institutions, NGOs, Local authority, private sector, Community groups, volunteer agencies and citizens.

According to Disaster Management Act-2003 Stakeholders and their responsibilities are:

#### **District Collector:**

During the period, an area is an affected area the Collector may issue directions to the officers of the departments of the Government and the local authority in the affected area, to provide emergency relief in accordance with the disaster management plans.

The District Collector may-

1. Make arrangements for release and use of available resources
2. Control and restrict traffic to, from and within the area affected by a disaster
3. Control and restrict the entry into, movement within and departure from any disaster area or part of it
4. Remove debris
5. Conduct search and rescue operations
6. Make arrangements for the disposal of the unclaimed dead body, by appropriate means
7. Provide alternative shelter
8. Provide food, medicines and other essentials
9. Require experts and consultants in the matters relevant to the disaster to provide relief under his direction and supervision
10. To take possession and make use of any property, vehicles, equipment, buildings and means of communication on such terms and conditions as may be prescribe
11. Procure exclusive or preferential use of amenities as and when required
12. Construct temporary bridges or other structures
13. Demolish unsafe structures which may endanger the public
14. Coordinate with non-governmental organizations and ensure that such entities carry out their activities in an equitable manner
15. Disseminate information to the public to deal with the disaster
16. Direct and compel evacuation, of all or part of the population from any affected area for the purpose of preservation of life and for such evacuation, and for such evacuation use such force as may be necessary
17. authorize any person, to make any entry into any place, to open or cause to be opened, any door, gate or other barrier, if he considers such an action is necessary for preservation of life and property, if the owner or occupier is absent, or being present, refuses to open such door, gate or barrier

**The Collector may exercise the powers contained in subsection (2) to the extent only that this is necessary for the purpose of –**

- (a) Assisting and protecting the community
- (b) Providing relief to the community
- (c) Preventing or combating disruption
- (d) Dealing with the destructive and other effects of the disaster

The Collector may issue such directions to any person or government agency and take such other steps, as may be necessary to curtail the escalation of the disaster or to alleviate, contain or minimize the effects of disaster.

### **The Collector**

- Facilitate and, coordinate with, local Government bodies to ensure that pre and post - disaster management activities in the district are carried out.
- Assist community training, awareness programmers and the installation of emergency facilities with the support of local administration, non-governmental organizations, and the private sector.
- Take appropriate actions to smoothen the response and relief activities to minimize the effect of disaster.
- Recommend CoR and State Government for declaration of disaster.

### **Local Authority**

- Provide assistance to GSDMA, COR and Collector in disaster management activities.
- Ensure training of its officers and employees and maintenance of resources so as to be readily available for use in the event of a disaster.
- Ensure that all construction projects under it conform to the standards and specifications lay down.
- Each department of the Government in a district shall prepare a disaster management plan for the district. Carry out relief, rehabilitation and reconstruction activities in the affected area within its jurisdiction.

### **Private Sector**

- The private sector should ensure their active participation in the pre-disaster activities in alignment with the overall plan developed by the GSDMA or the Collector.
- They should also adhere to the relevant building codes and other specifications, as may be stipulated by relevant local authorities.

## **Community Groups and Voluntary agencies**

- Local community groups and voluntary agencies including NGOs should actively assist in prevention and mitigation activities under the overall direction and supervision of the GSDMA or the Collector.
- They should actively participate in all training activities as may be organized and should familiarize themselves with their role in disaster management

## **Citizen**

It is a duty of every citizen to assist the Collector or such other person entrusted with or engaged in disaster management whenever his aid is demanded generally for the purpose of disaster management.

## **Approval of the plan-**

The District Collector has authority to give approval to DM plan when there are any significant changes in that then it will have to be incorporated by the District Collector / District Emergency Operation Centre.

The DM Act authorizes the District Collector to secure cooperation and assistance from other parties in efforts to avoid or reduce the impact of disasters. The Collector (Specifically) and Government authorities (generally) are responsible for managing hazards and disasters which affect a district, with support from GSDMA, the relief commissioner and other public and private parties as may be needed. The roles, responsibilities and obligations of the Collector and other parties are set out in detail in the Act and are considered as part of this plan.

## **Plan Review and Updation-**

The District Collector is responsible for the preparation, revision and updation of the District Disaster Management Plan in collaboration with the line departments and other organizations in the district. The plan should be reviewed annually / half yearly and updated:

- When significant changes in the nature of any hazards
- Lessons learnt following any major disaster or
- When there is any significant change to organization or responsibility of primary members of the task forces defined in the plan.

## CHAPTER – 2

### Hazard Vulnerability and Risk Assessment:

#### ‘Hazard Risk Vulnerability Assessment- (Authority that carried out HRVA)’

Bhavnagar faces a number of hazards, which pose the threat of disaster, the threat (risk) and possible impact (vulnerability) which can be actualized from these hazards ranges from minor impacts affection one village to events impaction larger than the state alone.

The table below summarize the results of an analysis of hazard, risk and disaster impact in Bhavnagar. This analysis indicated that disaster planning at the Bhavnagar district level should first focus on the functional response to the High winds and Sea surge. The functional responses to these events have links to the response to floods, hail storms and dam failure. Typical responses to these disaster events also can apply to fire, industrial accidents, failure of critical infrastructure and building collapse.

Special plans exist for drought, oil spills and ship breaking. A separate plan for dealing with chemical and industrial accidents also exists and focuses on the technical procedures needed to avoid or address these hazards.

Hazards	Probab ility Rating	Imp act Rati ng	Vulnera bility Ranking	Vulnerable Areas / Taluka	Vulnerable Population
1	2	3	4	5	6
High Wind	4	4	16 (high)	Very high damage risk zone B (50m/s.) Bhavnagar, Ghogha , Talaja, and Mahuva	(4 taluka of the district are likely to be affected)
Sea Surge	4	4	16 (high)	Coastal Taluka i.e. Bhavnagar, Ghogha, Mahuva, Talaja	34 Coastal villages in 4 taluka are likely to be affected.
Drought	4	3	16 (high)	(4 Taluka)	



				Vallabhipur, Bhavnagar, Gariadhar and Umralla	
Fire	4	3	12 (moderate)	Mostly in urban pockets and industrial areas (including rural areas)	
Industrial Accidents	3	4	12 (moderate)	In major Industries like Excel, Nirma etc.	
Oil Spill	2	5	10 (moderate)		
Earthquake	2	5	16 (high)	Zone – III : Bhavnagar	
Heat Wave	3	2	8 (high)		

<b>Hazards</b>	<b>Probability Rating</b>	<b>Impact Rating</b>	<b>Vulnerability Ranking</b>	<b>Vulnerable Areas / Taluka</b>	<b>Vulnerable Population</b>
1	2	3	4	5	6
Rail / Road / Air Accidents	4	1	4 (high)		
Flood	4	4	4 (high)	May occur due to heavy rain fall, sea surge and dam failure	
Terrorism	1	1	1	Bhavnagar City, IOCL, along	
Failure of Critical Infrastructure	1	3	3 (Low)		
Boat Sinking	1	1	2 (Low)		
Mine Fires / Collapse	2	1	2 (Low)		
Building Collapse	1	2	2 (Low)		
Hail Storms	1	1	1 (Low)		
Land Slides /Mud Flows	1	1	1 (Low)		
Epidemics	1	1	1 (Low)		



### **List of Vulnerable Talukas and Villages (Hazard wise)**

**The Details of Coastal Villages are as under**

<b>Sr. No.</b>	<b>Name of Taluka</b>	<b>No.of Villages</b>
1	Mahuva	13
2	Talaja	10
3	Bhavnagar	8
4	Ghogha	3
<b>Total:-</b>		<b>34</b>

**Details of water logging villages are as under**

<b>Sr. No.</b>	<b>Name of the Taluka</b>	<b>No. of Village</b>
1	Mahuva	5
2	Talaja	5
3	Sihor	3
4	Gariyadhar	2
5	Bhavnagar	17
6	Umralla	4
7	Jesar	2
<b>Total :-</b>		<b>38</b>

**Details of river affected villages are as under**

<b>Sr. No.</b>	<b>Name of the Taluka</b>	<b>No. of Village</b>
1	Mahuva	6
2	Talaja	4
3	Palitana	10
4	Gariyadhar	3
5	Vallabhipur	19
6	Bhavnagar	13
7	Ghogha	4
8	Umralla	17
9	Jesar	8
<b>Total :-</b>		<b>84</b>

### **Resoure Analyses-**

#### **Equipment available with District Collector**

<b>Sr.No.</b>	<b>Item Name</b>	<b>Number of Items</b>
1	Portable inflatable Emergency Lighting System	2
2	Life Jacket	25
3	Life Buoy	25
4	PP Ropes 26 MM (100ft)	5
5	PP Ropes 26 MM (200ft)	3

### Equipment available with BMC

Sr.No.	Item Name	Number of Items
1	Mini Fire Fighter	2
2	Fire Fighter	4
3	Foam Tender	2
4	Fire Bouser	2
5	Heavy Fire Tender	2
6	Rescue Van	1
7	Rescue Van (Pick up)	2
8	Ambulance	2
9	Sab Vahini	1
10	Dharma Rath	3
11	Fire Jeep	1
12	Fire Bullet	1
13	Life Buoya	120
14	Life Jacket	120
15	PP Ropes (200ft/100ft)	30
16	Portable inflatable Emergency Lighting System	5
17	Rubber Boat	2
18	Fibre Boat	1

### Equipment available with Nagarpalika

Sr. No.	Name of Nagarpalika	Portable inflatable Emergency Lighting System	Motorcycle Mounted Water Mist	Water Browser	Mini Fire Tender	HDPE Boat
1	Gariyadhar	2	1	1	1	-
2	Mahuva	2	1	1	1	1
3	Palitana	2	1	1	1	-
4	Sihor	2	1	1	1	-
5	Talaja	2	1	1	1	-
6	Vallabhipur	2	0	1	0	-

### Equipment available with Alang Fire station

Sr.No.	Item Name	Number of Items
1	Water tander	2
2	Form tender	1
3	Bouser	4

## **Capacity Analyses -**

It is important to identify and recognize traditional coping capacity of the community to enable them to enhance their capacity to withstand disasters.

<b>Hazard</b>	<b>Early Warning</b>	<b>Preparedness</b>	<b>Early Response</b>
Flood	Monitoring of water sources through community	Identified high elevation places and rescue teams	Evacuation, Search and Rescue and First Aid support
Cyclone	Information through fisher folks	Evacuate to safe place	Search and Rescue and First aid support
Earthquake	-	Identification of Safe places	Search and Rescue and First aid support
Drought	Own assessment mechanism	Fodder storage, Food storage at individual level	Panjarapol
Tsunami	-	Evacuate to safe place	Search and Rescue and First aid support
Industrial/Chemical Hazard	Local administration	OCR, DISH and DEOC	Local response team

## **Outcome and recommendations of the Hazard, Risk, Vulnerability and Capacity Analyses**

Hazards are defined as “Phenomena that pose a threat to people, structures or economic assets and which may cause a disaster. They could be either man-made or naturally occurring in our environment.” A disaster is the product of a hazard coinciding with a vulnerable situation, which might include communities, cities or villages. Vulnerability is defined as “the extent to which a community, structure, service or geographical area is likely to be damaged or disrupted by the impact of particular hazard, on account of their nature, construction and proximity to a hazardous terrain or disaster prone area.

## **Hazard, Risk analysis:-**

A detailed analysis of the hazards likely to impact the state will be carried out by the Department of Disaster Management, in consultation with the DMC of the state H.C.M. RIPA and experts from the field. Hazard assessment is concerned with the properties of the hazard itself. The Vulnerability Atlas of Gujarat, developed by BMTPC, Govt of India, will be used as the baseline for all analyses. The State Disaster Management Authority shall take all appropriate steps to complete a comprehensive hazard assessment of the State.

### **1. Earthquake**

Bhavnagar district falls under zone-III according to the zoning map so very high possibility of failure of various infrastructures and very high chances of risk of loss of live properties too in certain highly inhabited areas of the district.

Population / Density wise area / residents details can be drawn from the CDM Plan / WDM Plan of BMC in case of city area, from TDM Plan / CDM Plan of Municipalities for urban areas of the district.

### **2. Flood**

The Climate of Bhavnagar District can be regarded as one of extreme king with hot summers & cold winters except in the coastal region, where it is generally pleasant all throughout the year. The air is humid due to coastal location.

- a. The District has no major river. There are seasonal rivers streams. Amongst these are the river Maleshri, Lakahnka, Kalubha, Ghelo, Vaigad, Manari, Kairi, Shetrunji, Kharo, Rajaval, Hanol, Khodiya, Sitapari, Sukhbhadar, Goma, Kaniyad, Rangholi, Malan, Rojki, Bagad, Bhadod, Ranaji. Flow of the river is towards the Gulf of Kutch in the north and in northwest.
- b. There is not any huge dam in Bhavnagar District, the 17 dams of Bhavnagar controlled by the Department of irrigation and 4 other dams are in the neighbor district, but affect the villages of Bhavnagar.
- c. The dams situated in Ghogha taluka; does not affect any village of Ghogha but affect the villages of Bhavnagar Taluka.
- d. Sukhsagar dam of Surendranagar district also affects the villages of Bhavnagar district.

### **3. Cyclone**

In meteorology, a cyclone is an area of closed, circular fluid motion rotating in the same direction as the Earth. This is usually characterized by inward spiraling winds that rotate counter clockwise and clockwise of the Earth. Most large-scale cyclonic circulations are centered on areas of low atmospheric pressure. The largest low-pressure systems are cold-core polar cyclones and extra tropical cyclones which lie on the synoptic scale.

Coastal areas of District like Bhavnagar, Ghogha, Mahuva and Talaja are particularly prone. Cyclones originate out at sea and become hazardous when they come ashore. They also drive the sea level up to cause coastal flooding.

At a community level, the GSDMA has proposed to provide temporary cyclone shelter. There is a identified site to construct Cyclone Shelter. This shelter will be, with built-in safety against high wind velocity and heavy rainfall and within easy reach of the people most affected. Educational buildings or places of worship may also be designed as cyclone shelter, for evacuation and temporary occupation.

**4. Drought:** probability chances are higher due to low rainfall.

### **5. Tsunami**

Tsunamis are ocean waves produced by earthquakes or underwater landslides. Tsunamis are often incorrectly referred to as tidal waves, but a tsunami is actually a series of waves that can travel at speeds averaging 450 (and up to 600) miles per hour in the open ocean. However, waves that are 10 to 20 feet high can be very destructive and cause many deaths or injuries.

Tsunamis are most often generated by earthquake-induced movement of the ocean floor. Landslides, volcanic eruptions, and even meteorites can also generate a tsunami. Areas at greatest risk are less than 25 feet above sea level and within one mile of the shoreline. So far as Bhavnagar District is concern there are 4 costal talukas and 34 villages of the same. Most deaths caused by a tsunami are because of drowning. Associated risks include flooding, contamination of drinking water, fires from ruptured tanks or gas lines, and the loss of vital community infrastructure.



## **6. Fire**

Fires may be caused due to earthquakes, explosions, electrical malfunctioning and various other causes. The State shall take up detailed assessment of fire hazards like preparation of inventories/maps of storage locations of toxic/hazardous substances, provision and regular maintenance of firefighting equipment, identification of evacuation routes, fail-safe design and operating procedures, planning inputs, transportation corridors etc.

Bhavnagar district has 5 MHA company, many cotton and oil mills and Alang Ship Breaking Yard which is most vulnerable for Fire in so fire possibility are like more.

## **7. Industrial Accident**

There are 723 factories registered under the Indian factories Act and approximately 2.00 lacks persons are employed in these factories. Besides the district is known for Diamond and Handicrafts.

There are 9651 small-scale industries registered and employing 47291 people.

Bhavnagar has 5 MAH industries. IOCL, Alang Ship Breaking Yard, Sun petrochemical provate ltd are the LPG user industries. Exel Corps ltd. using Mithenol, Toluin, Hydrogen, Solvent C-IX and Formaldehyd and Nirma Ltd. using Clorine. So District is very high chances of risk of loss of property due to leakage of gases and fire.

Industries have their own Onsite Emergency Management Plans to dealt with onsite emergencies and the other major units like IOCL, Excel crop care, Nirma and Alang etc. has developed their Disaster Management Plans.

## **8. Epidemic**

Probability is almost certain due to increase in Human Disease (Water borne disease, air borne disease and vector borne disease) along with that animal disease so impact will be very high according to that vulnerability is very high.

## Chapter – 3

### **Institutional Arrangements:**

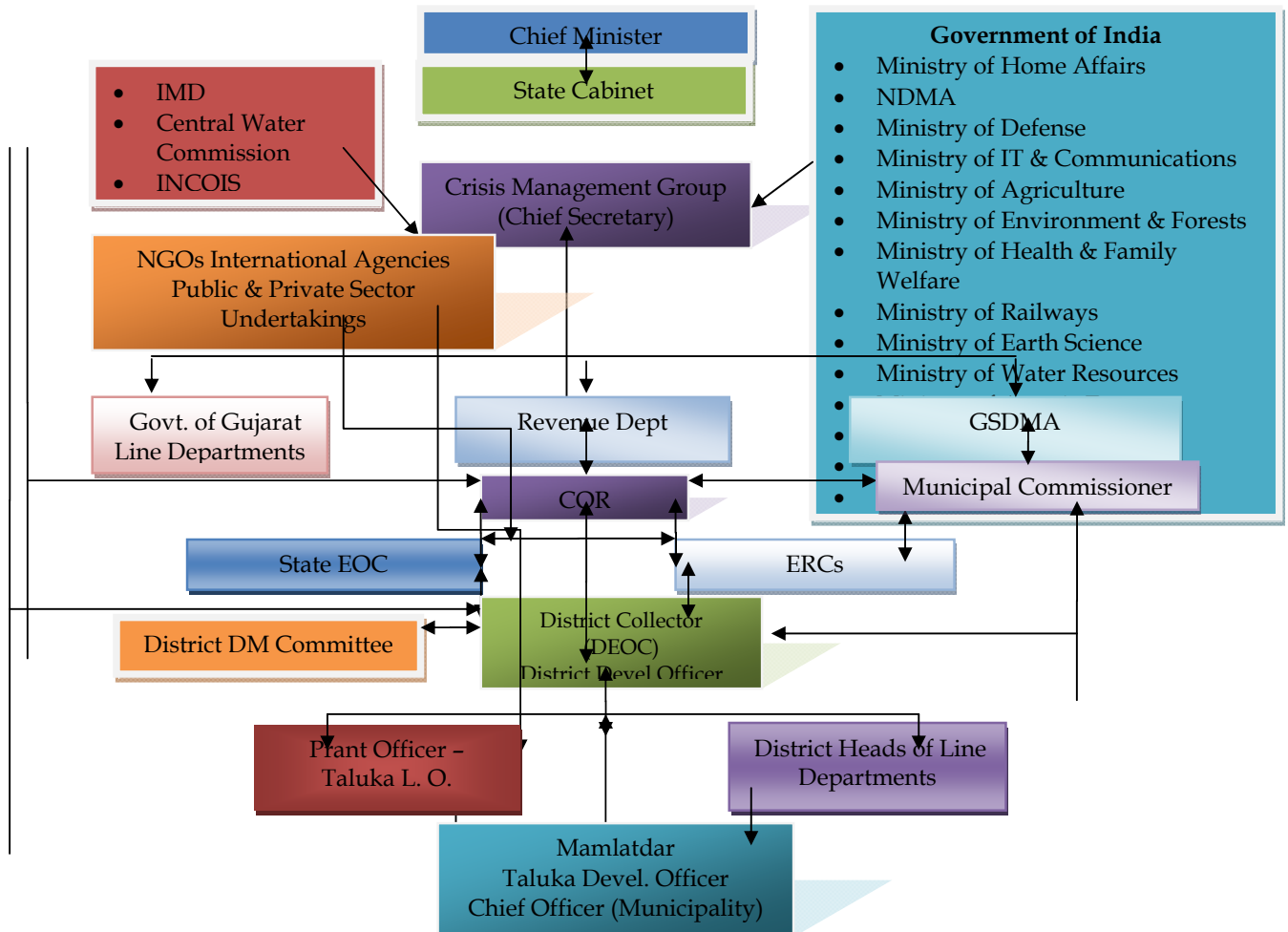
The plan incorporate multi level institutional as well as response planning mechanism at district level. That is.....

The DM structure in the State is as per the Gujarat State Disaster Management Act – 2003. The National Disaster Management Act – 2005 resembles the State Act with only a few provisions which are not a part of the State Act but are there in the Central Act. Those provisions include designating a Vice Chairman to the GSDMA, constitution of a State Executive Committee, establishment of a District Disaster Management Authority in each District and creation of a District Disaster Response & Mitigation Funds. The State has existing institutional arrangements in place for addressing the roles / responsibilities envisaged through the above provisions and hence does not find it compelling to implement the provisions afresh.

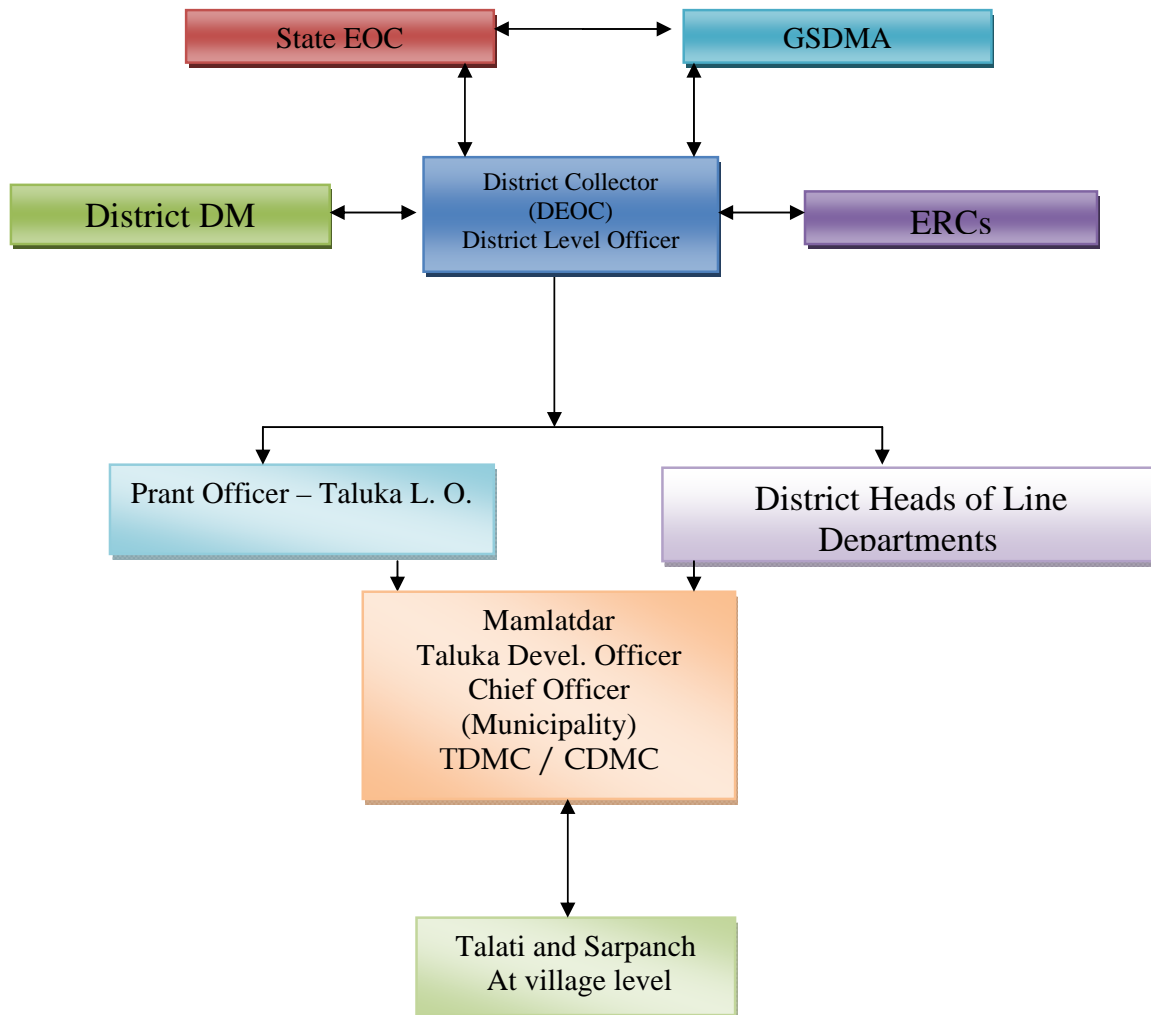
The Revenue Department of the State is the Nodal Department for controlling, monitoring and directing measures for organizing rescue, relief and rehabilitation. All other concerned line departments should extend full cooperation in all matters pertaining to the response management of the disaster whenever it occurs. The State EOC, ERCs and other control rooms at the State level as well as district control rooms should be activated with full strength. The State Government may publish a notification in the official gazette, declaring such area to be disaster-affected area under GSDMA Act (Section 32 (2) (a)).

Under this State Disaster Management Plan, all disaster specific mechanisms would come under a single umbrella allowing for attending to all kinds of disasters. The existing arrangements therefore will be strengthened by defining this administrative arrangement. This arrangement proposes Chief Secretary as the head supported by the Relief Commissioner through the branch arrangements at the Emergency Operations Centres (EOC), both at State level and at the district levels. There is a formal Incident Response System in the State. The GSDMA Act 2003 empowers Commissioner of Relief to be the Incident Commander in the State and District Collector in the respective districts.

## D.M. Organizational Structure of the State



## D.M. Organizational Structure In The District



## District Crisis Management Group (Task Force)

The District administration of Bhavnagar has identified 16 expected task forces for key response operation functions that are described below (As per the ICS manual). Additional taskforces can be added under the operations section as needed by the circumstances of a disaster. Each Taskforce is led by one organization and supported by other organizations.

Emergency Operation Taskforce	Functions
1. Coordination and Planning	Coordinate early warning, Response & Recovery Operations
2. Administration and Protocol	Support Disaster Operations by efficiently completing the paper work and other Administrative tasks needed to ensure effective and timely relief assistance
3. Warning	Collection and dissemination of warnings of potential disasters
4. Law and Order	Assure the execution of all laws and maintenance of order in the area affected by the incident.
5. Search and Rescue (including Evacuation)	Provide human and material resources needed to support local evacuation, search and rescue efforts.
6. Public Works	Provide the personnel and resources needed to support local efforts to reestablish normally operating infrastructure.
7. Water	Assure the provision of sufficient potable water for human and animal consumption (priority), and water for industrial and agricultural uses as appropriate.
8. Food and Relief Supplies	Assure the provision of basic food and other relief needs in the affected communities.
9. Power	Provide the resources to reestablish normal power supplies and systems in affected communities.
10. Public Health and sanitation (including First aid and all medical care)	Provide personnel and resources to address pressing public health problems and re-establish normal health care systems.
11. Animal Health and Welfare	Provision of health and other care to animals affected by a disaster.
12. Shelter	Provide materials and supplies to ensure temporary shelter for disaster-affected

	populations
13. Logistics	Provide Air, water and Land transport for evacuation and for the storage and delivery of relief supplies in coordination with other task forces and competent authorities.
14. Survey (Damage Assessment)	Collect and analyses data on the impact of disaster, develop estimates of resource needs and relief plans, and compile reports on the disaster as required for District and State authorities and other parties as appropriate.
15. Telecommunications	Coordinate and assure operation of all communication systems (e.g.; Radio, TV, Telephones, Wireless) required to support early warning or post disaster operations.
16. Media (Public Information)	Provide liaison with and assistance to print and electronic media on early warning and post-disaster reporting concerning the disaster.

The specific response roles and responsibilities of the taskforces indicated above is that these roles and responsibilities will be executed and coordinated through the ICS/GS system. For example, in flood, search & rescue would come under the Operations section, Transport would come under the Logistics Section and Public Information under the Public Information Unit.

### **District Disaster Management Committee (DDMC)**

The District Collector will be responsible for coordinating all disaster management activities at the district level. There shall be a District Disaster Management Authority headed by Collector. The District Disaster Management Authority shall approve a district disaster management planning and review all measures relating to preparedness and response to various hazards. The District Disaster Management Committee comprises members from Jilla Panchayat, different line departments, NGOs and others to be notified by the Department of Disaster Management from time to time. In times of disasters, Dist. Collector shall constitute a District Relief Committee to oversee management of relief. Following member should be club at district level committee.

## **DDMC**

<b>Sr. No.</b>	<b>Designation</b>	<b>Position in DDMC</b>
1	Collector/ District Magistrate	Chairman
2	District Development Officer	Member
3	District Superintend of Police	Member
4	DCF, Forest	Member
5	Residential Additional Collector	Member
6	District Supply Officer	Member
7	District HomeGuard Commandant	Member
8	Exe. Engineer-R&B State	Member
9	Exe. Engineer-R&B Panchayat	Member
10	Exe. Engineer State Irrigation	Member
11	Exe. Engineer Irrigation-Panchayat	Member
12	Exe. Engineer- Water Supply	Member
13	Superintending Engineer- PGVCL	Member
14	Superintendent Civil Hospital	Member
15	CDHO	Member
16	District Agriculture Officer	Member
17	Dy. Director Animal Husbandary	Member
18	District Primary Education officer	Member
19	District Education Officer	Member
20	Port Officer	Member
21	Airport-Director	Member
22	DRM-Railway	Member
23	Divisional Controller-State Transport	Member
24	Regional Transport Officer	Member
25	Regional Officer-GPCB	Member
26	Dy. Director-DISH	Member
27	Dy. Director-Information Department	Member
28	Dy. Controller –Civil Defense	Member
29	District Municipality Officer	Member
30	All S D M	Member



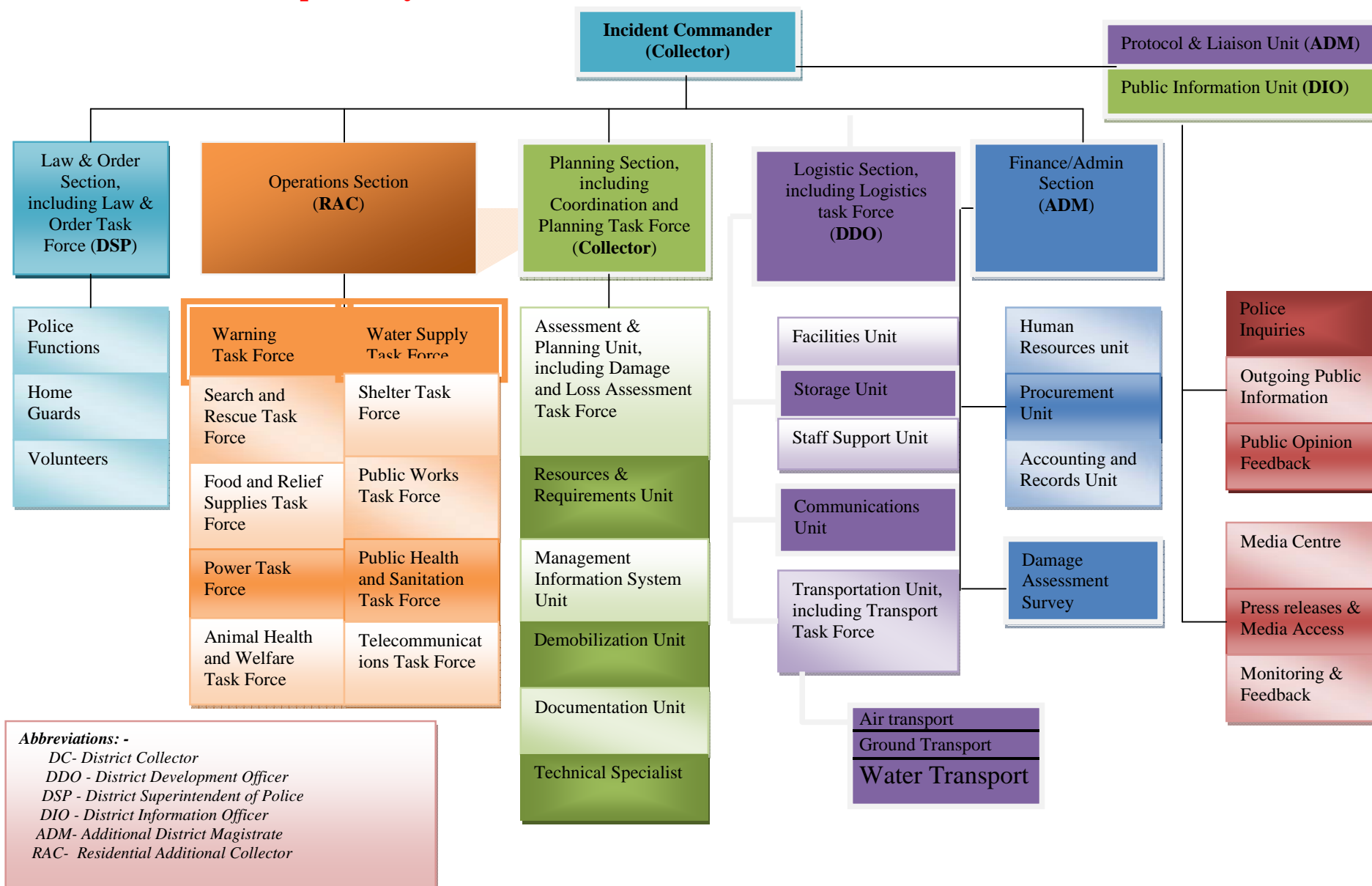
## **Insident Response System in the Distict**

The response to disasters in the district will be organized according to the Incident Command System as adopted to conditions in Gujarat State (ICS/GS). The argument for the ICS is that its fundamental elements –unity of command, clarity of objectives and efficient resource use are common to the effective response to any disaster.

In Bhavnagar district, the multi-hazard response plan focused on sector specific action plans unlike the department specific planning approach in the previous plan documents. The disaster response is led by the **District Emergency Operation Center** (EOC) under the command and control of the District Collector.

The organizational structure of the Incident command system of district and Taluka is given in the next page.

## Incident Command/Response System in the District



**Departmental Control Room and Nodal Officer**  
**Supporting department details in response**

The COMPOSITION of the TASKFORCES is given in the table below:

<b>Sr. No.</b>	<b>Task Force</b>	<b>Taskforce Leader</b>	<b>Supporting members / Organizations/Departments</b>	<b>Section / Unit</b>
1.	Planning and Coordination	Collector	DDO, DSP, Commissioner BMC, RAC and Mamlatdar	Planning
2.	Administration & Protocol	RAC	DDO, DSP, Commissioner BMC, RAC and Mamlatdar	Finance & Admin.
3	Damage Assessment/Survey	RAC	DIC, Dy. DDO, Ex. Engr., R&B, DAO, Fisheries	Planning
4	Warning	RAC	RAC, Dy. Mamlatdar, Control Room, District Information Officer (DIO)	Operation
5	Communications	RAC	Dy. Mamlatdars, Mobile Operators, TV, Radio, Port Office GMB, Police, Forests	Logistics
6	Media	District Information Officer	Information Department, Print, Media, TV, Journalists, NGOs	Public Information
7	Logistics	DDO	RTO, DSO, FPS, Private & Public sector, Municipal water supply board, Mamlatdar, Dist. Supply Mamlatdar	Logistics
8	Law & Order	DSP	Dy. SP, Home Guards Commandant, NGOs, Para-military and Armed Forces	Law & Order
9	Search & Rescue	RAC Civil Defense	Mamlatdar, TDO, Police, Executive Engr., BMC Fire & Emergency services, RTO, State Transport, Health Deptt.	Operation
10	Public Works	Ex. Engr. R&B (State)	Irrigation, Ex. Engr., Panchayat, NGOs, Water Supply Board, Municipalities, Home	Operation

			Guards, Police	
11	Shelter	Dist. Primary Education Officer	School Principal, Teachers, Health, PHC, State Transport, Water Supply, RTO, Mamlatdar, TDO.	Operation
12	Water Supply	Ex. Engr. GWSDB / Ex. Engr. Water Works VMSS	Dy. Ex. Engr., Talati, Mamlatdar, TDO, Health, Dy. Engr. BMC	Operation
13	Food & Relief Supplies	Dist. Supply Officer	FPS, PDS, Mamlatdar, NGO, RTO, State Transport, Municipality, DRDA, Police, Home guard	Logistics
14	Power	Supt. Engr. PGVCL	Ex. Engr., Dy. Engr. Technical, PGVCL, Transport	Operation
15	Public Health & sanitation	Chief district health Officer (CDHO)	Supt. GG Hospital, BMC Hospital, Municipality, Red Cross, Fire and emergency services, BMC, Civil Defense, R&B, NGOs, Doctors, TDO, Mamlatdar	Operation
16	Animal Health & Welfare	Dy. Director Animal Husbandry	Veterinary Inspector, NGOs	Operations

## **EOC setup and facilities available with the location**

### **District Emergency Operation Center (DEOC)/ District Control Room (DCR)**

The District Control Room is located in building of Collector office, Near Bhavnagar Mahanagarpalika and Jilla Panchayat office, opposite Galaxy. It is also the central point for information gathering, processing and decision making more specifically to combat the disaster. Most of the strategic decisions are taken in this control room with regard to the management of disaster based on the information gathered and processed. The Incident Commander takes charge at the District Control Room and commands the emergency operations as per the Incident Command System organizational chart.

All the task force leaders shall take position in the District Control Room along with Incident Commander to enable one point co-ordination for decision-making process.

#### **• Facilities at District Emergency Operation Centers**

The District Control Room equipped with to the following items in Table:

<b>Sr. No.</b>	<b>Item/ Facility</b>	<b>Unit/ Number of item</b>
1	Television	1
2	Telephones	3
3	Satellite Phone	1
4	Fax machine	1
5	Printer	3
6	Scanner	1
7	PC with GSWAN Internet and web site facilities	3
8	Marker board	1
9	Projector	1
10	A copy of Disaster Management Plan	5
11	Other relevant documents of district information	-
12	Chairs	30
13	Tables	5

## **Taluka Emergency Operation Centers (TEOC)**

The Taluka Emergency Operation Centers located at the Office of Mamlatdar. The Liaison Officers of the respective Talukas shall take charge of the Control Room. The respective Liaison Officers shall coordinate between the task group members working at disaster sites and TFOR for mobilization of resources and dissemination of instructions received from TFOR/DEOC.

- **Task Force Operation Room (TFOR)**

Individual Task Force function shall activate & operate their respective control rooms in their office manned by a competent person who is proficient in communication and technically capable of coordinating with Taluka Level Control Room and District Control Room and mobilize requisite resources to the disaster site.

- **Facilities at Taluka Level Control Rooms (TLCR)**

The following facilities are maintained inside TFCR:

- Telephones
- Facsimile
- Satellite Phone (desirable)
- Hand held Radios/Base Stations
- Marker board (1)
- A copy each of Disaster Management Plan and Taluka Level Plan
- Other relevant documents, if any

Responsibility of up keeping and maintenance of all the above items / facilities in the respective Control rooms is given as below.

**DCR (DEOC):** District Collector or any person nominated

**TFCR:** Respective Task Force Leader

**TLCR (TEOC):** Respective Taluka Liaison Officer

The above responsible Depts./ personnel shall carryout periodic inspection of such facilities in their respective control rooms at the frequency set by them and maintain records on the same.

## **Emergency Communication Systems**

Communication system is very crucial for effective control of any disaster. The communication philosophy adopted by Disaster Management team during the disaster is given as below:

In the event of collapse of any communication facility / Communication infrastructure as a cascading effect/consequence of disaster, Telecommunication Task Force Leader shall ensure immediate

restoration of such facility or infrastructure to ensure uninterrupted communication for effective disaster management operations.

### **Synthesized Radio Communication**

All the Control Rooms are equipped with Radio base stations and all the task force leaders and their teams are provided with hand held radio sets. The different user groups are operating at different frequency channels allotted to them for ease in communication in respective groups. The table below shows the allotted frequency channel for individual Task Force. All the sets are programme for different groups' frequencies to facilitate horizontal communication among the different task groups.

<b>Sr. No.</b>	<b>Task Force / Functional Area</b>	<b>Channel</b>
1.	DCR	
2.	Law & Order & its TFOR	
3.	Search & Rescue & its TFOR	
4.	Public Works & its TFOR	
5.	Shelter & its TFOR	
6.	Water Supply & its TFOR	
7.	Food & Social Service & its TFOR	
8.	Power & its TFOR	
9.	Public Health & Sanitation & its TFOR	
10.	Logistics & its TFOR	
11.	Animal Health & Welfare & its TFOR	
12.	Relief Supplies & its TFOR	
13.	Communication & its TFOR	
14.	Survey & its TFOR	
15	Taluka Level Control Room (TLCR)	

At present, "Hand held radio sets" are with the District Magistrate, DDO, DSP, fire Brigade and Forest department. If possible, Health Personnel may be given these sets later.

### **Telephones**

Telephones and Fax Machine had provided at DEOC and all TEOC Control Rooms.

### **Alternate EOC available and its location**

The Bhavnagar District Control Room is located in the building of Collector office near Bhavnagar Mahanagarpalika and jilla Panchayat office, opposite Galaxy. It is also the central point for information gathering, processing and decision making more specifically to combat the disaster but

when such kind of situation where DEOC will collapse so alternate EOC will started at Collector office.

### **Alternate Communication System**

There could be a situation when all the communication facilities and systems may come to halt due to collapse of communication facilities/infrastructures. In the event of such a failure, till the facility/infrastructure is restored made functional, following alternate systems shall be used based on the seriousness of the situation:

### **Satellite Communication System**

Satellite communication shall be activated once all the communication systems fail. This facility is installed at all the control rooms. The Telecommunication Task Force Leader shall ensure that this facility is resumed on all such occasions.

### **Messengers**

- Use of messengers as a last resort to carry the hand written messages to persons concerned in dealing with the disaster.
- A dedicated vehicle shall be made available by the Transport Task Force Leader upon request
- 
- 

### **Right use of Communication facility**

- The sense of urgency that every one experiences during disaster may lead to a chaotic situation if communication systems are not properly used.
- Communication shall be brief and simple.
- Telephones/ Hot Lines shall be used wherever possible to avoid congestion of Radio communication.
- All task force members shall communicate only through their allotted frequency channel to avoid congestion in the particular channel.

Personnel who use Radios should be acquainted with the operation of the equipment, various channels, code words, length of speech, etc.

### **Public and private emergency service facilities available in the district**

Bhavnagar district has a fire station of Bhavnagar Municipal Corporation and 6 Fire stations in Respective 6 Municipality and in addition



the district has a fire station in Alang as well as GMB control Room. This emergency service are fully equipped by various equipment and train personal which are use in search and rescue operation during disaster situation.

## **Forecasting and warning agencies**

### **Alert Mechanism – Early Warning**

On the receipt of warning or alert from any such agency, which is competent to issue such a warning, or on the basis of reports from District Collector of the occurrence of a disaster, the response structure of the State Government will be put into operation. The Chief Secretary/Relief Commissioner will assume the role of the Chief of Operations during the emergency. The details of agencies competent enough for issuing warning or alert pertaining to various types of disasters are given below;

<b>Sr. No.</b>	<b>Disaster</b>	<b>Agencies</b>
1	Earthquakes	IMD, ISR
2	Floods	IMD, Irrigation Department
3	Cyclones	IMD
4	Tsunami	IMD, ISR, INCOIS
5	Drought	Agriculture Department
6	Epidemics	Health & Family Welfare Department
7	Industrial & Chemical Accidents	Industry, Labor & Employment Department, DISH
8	Fire	Fire & Emergency Services

## Chapter 4

### Prevention and Mitigation Measures:

#### Prevention measures in development plans and programmes

For disaster prevention and mitigation, both structural and non-structural interventions can be planned. Structural interventions include construction of physical engineering and non engineering structures to reduce hazard risks. Non structural mitigation includes awareness and capacity building at official and community level, formulation of new plans and overall promoting a commitment for safety.

Mitigation measures can be divided in two categories:

- i) Structural measures: On site works, construction, and engineering works and
- ii) Non-structural measures: Which include studies, research, regulations, policy changes and capacity building activities that support the structural measures.

The taluka disaster management plan includes hazard specific structural and non structural mitigation plans in consultation and convergence with various Departments. For example, the MGNREGA work can take up activities on construction of embankment for flood safety or the forest department may take up mangrove plantation in the coastal areas, while the water supply department can construct hand pumps on raised platforms.

Departments shall draw out its own plan, goals and milestones and review it annually for its achievements and planning for next year.

Mitigation, preparedness and prevention actions are to be taken before a disaster to reduce the likelihood of a disaster (risk reduction) or the level of damage (vulnerability reduction) expected from a possible disaster. Vulnerability reduction is given priority over a risk reduction. The district can avail itself of four mechanisms (singularly or together) to reduce risk and vulnerability;

- Long term planning for mitigation, preparedness and prevention investments in the district,
- Enforcement of regulations, particularly building and safety codes and land use plans,
- Review and evaluation of development plans and activities to identify ways to reduce risks and vulnerability, and,

- Capacity building, including warning, the provision of relief and recovery assistance and community-level identification of risk and vulnerability.

The Collector, assisted by the District Development Officer, is responsible for developing plans and activities to effect mitigation, preparedness and prevention using the mechanism noted above.

Base on the interim assessment of risk and vulnerabilities, the District will focus on the following areas for mitigation, preparedness and prevention;

- Resilience of lifeline systems (water, power and communications)
- Reduction in disaster impact on health care facilities, schools and roads
- Vulnerability reduction in flood-prone areas
- Vulnerability reduction to high winds
- Improvement of Off-site Preparedness near Industrial sites.

## **Special Project proposed for Preventing the Disaster**

### **1. Disaster Risk Management Programme (DRMP)**

Disaster Risk Management Programme (DRM) has taken strong roots at various levels of administration in Gujarat. The Department of Revenue & Disaster Management is the nodal Department in Government of Gujarat that handles the subject with GSDMA. Disaster Management Committees are formed at various levels and are assigned the task of implementing the programme. Representation for these committees are drawn from elected representatives, officials of line departments, professional bodies, Civil Defense, NGO and CBO representatives and local opinion leaders. Major Activities are being carried out under DRM program are Plan Development at Various Levels, Emergency Resources Database maintain through SDRN / IDRN, Capacity Building through Trainings & Resource Mobilization, Disaster Awareness through Orientations, Campaigning, Media Management and IEC distribution. Coordinate District Administration for all Disaster Management Activities with expertise knowledge, logistics and fund allocation.

## **2. Gujarat School Safety Programme (GSSP)**

Gujarat State Disaster Management Authority initiates the GSSP with the help of government of Gujarat. This programme is all about promoting the idea of school safety in schools of the state. It designed for creating culture of disaster safety in schools and reduce risk through structural and non-structural measures in the schools.

### **Celebration of School Safety Week**

School safety week celebration creates awareness among the school teachers and students regarding to mitigate the risks of natural hazard as well as manmade disaster in schools.

## **3. Apada mitra project**

Community Service has always been part and parcel of culture of gujarat and community is always the first responder during any disaster. Training the community to effectively respond during a disaster would professionalize the response and reduce the impact of a disaster.

Gujarat State Disaster Management Authority undertakes various capacity building activities to mitigate the impact of disasters. As part of such capacity building measures, GSDMA is initiated a project "Aapda Mitra: on training of community volunteers in conducting basic search & rescue operations and to assists the district administration for effective disaster response.

## Hazard wise Structural and Non- structural Mitigation Measures

### Hazard: Flood

**Table No. : A1**

**Structural Mitigation Measures for Flood**  
(Identified works of concerned Departments)

<b>Probable Mitigation Measures</b>	<b>Implementing Departments</b>	<b>Convergence with Scheme/ Program</b>	<b>Time Frame</b>
Desalting and deepening of water channel (khans)	Irrigation and Rural Development, GLDC	Departmental program & MGNREGS,	Regularly
Construction of embankments/ protection wall	Rural Development, Forest	Departmental program & MGNREGS, watershed, Integrated coastal zone management programme	Regularly
Repair of embankments/ protection wall	Rural Development, R&B department	Departmental program & MGNREGS	Regularly
Repair and maintenance of Flood Channels, canals, natural drainage, storm water lines	Irrigation department Concern Municipality	Departmental or special plan	Regularly
Construction of Safe Shelters (new construction through Indira Awas, Sardar Awas and Ambedkar Awas)	Collector and R&B District Panchayat	NCRMP	Regularly
Protection wall and mangroves and vegetative cover against sea level intrusion and land erosion	Forest and Rural development department GEC	Department schemes, MGNREGS, IWMP Integrated coastal zone management	Regularly
Desalting of water bodies like river and ponds	Irrigation DDO Rural Development	MGNREGA and Land Development	Regularly

**Table No. : A2**

**Non-Structural Mitigation Measures for Flood**  
(Identified works of concerned Departments)

<b>Non-Structural measures</b>	<b>Implementing Departments</b>	<b>Convergence with agency/program</b>	<b>Time Frame</b>
Safety audit of existing and proposed housing stock in risk prone areas	DDO, Rural development	IAY, Sardar Awas and other rural housing schemes	Regularly
Promotion of Traditional, local and innovative practices like bamboo/plastic bottle rafts etc, clean city green city	DDMC, TDMC, CDMC, SHGs and youth groups, NGOs Volunteers	Training and capacity building plan for disaster management At all level	Regularly
Capacity building of volunteers and technicians	DDMC, TDMC, CDMC	Training and capacity building plan for disaster management	Regularly
Awareness generation on health and safety of livestock	veterinary officer, rural development	Departmental Scheme	Regularly

**Hazard: Cyclone****Table N.: B1****Structural Mitigation Measures for Cyclone**

<b>Structural measures</b>	<b>Identified Locations and Villages</b>	<b>Implementing Departments</b>	<b>Convergence with Scheme/Program</b>	<b>Time Frame</b>
Plantations (mangroves) and Shelter Belt in the Coastal Area	Cyclone prone 34 villages Bhavnagar district	Forest department, Port Authority, DIC, TDO, Rural development department, GEC	Departmental schemes, MGNREGA Integrated coastal zone management	Regularly
Identification and repair/retrofitting of houses and buildings unsafe for cyclone		R & B (District Panchayat)	Departmental Scheme	Regularly

**Table No.: B2****Non-Structural Mitigation Measures for Cyclone**

<b>Non-Structural measures</b>	<b>Location/ coverage area</b>	<b>Implementing Departments</b>	<b>Convergence with agency/ program</b>	<b>Time Frame</b>
Strengthening of Early warning mechanisms	Cyclone prone 72 villages In Kutch district	DDMC, TDMC	District administration Line department	Regularly
Training and awareness generation for use of safety jackets/rings/buoys/rope etc for fisher folks		DDMC, TDMC, VDMC, CDMC	TDMP, VDMC	Regularly
Enforcing strict compliance to coastal regulation zone and awareness regarding hazard		Department of Environment & Forest Depart. Fishing GEC	Integrated Coastal Zone Management CRZ Regulation	Regularly
Registration of fishing boats		Fisheries Department	CRZ Regulation	Regularly
Regulate and issue orders for poor quality hoardings/buildings or any other objects		R & B Department		Regularly



**Hazard: Earthquake****Table No. : C1****Structural Mitigation Measures for Earthquake**

<b>Structural measures</b>	<b>Identified Locations and Villages</b>	<b>Implementing Departments</b>	<b>Convergence with Scheme/ Program</b>	<b>Time Frame</b>
Retrofitting (if required) of public utility buildings like offices, schools/ banks/ markets etc	Bhavnagar direct comes under Zone-III	R & B (State and Panchayat), DDO, Rural department	DM Plan and all development plan	Regularly
Retrofitting of unsafe rural houses		DDMC, DDO, R & B State and panchayat	Rural housing schemes and departmental programs	Regularly
Identifying and safely dismantling unsafe structures		R & B department	Development plan	Regularly
Issue permission for Earthquake registrant house		Area Development Authority	TP plan	Regularly

**Table No. : C2**

**Non Structural Mitigation Measures for Earthquake**

<b>Non-Structural measures</b>	<b>Location / coverage area</b>	<b>Implementing Departments</b>	<b>Convergence with agency/ program</b>	<b>Time Frame</b>
Capacity building of architects, engineers and masons on earthquake resistant features	Bhavnagar direct comes under Zone-III	R & B (State and Panchayat) DDMC, TDMC, CDMC	DRM	Regularly
Registration of trained and certified mason		R & B (State and Panchayat), DDMC	--	Regularly
Strict enforcement of guideline pertaining to seismic safety for government rural housing, urban development structure		DDO, DDMC, CDMC, TDMC, VDMC	Rural housing schemes	Regularly
Mock-drills for Schools, Hospitals and , Public Buildings and trainings for mason, engineers and architects		DDMC, Schools	DRM	Regularly

**Hazard: Drought****Table No. : D1****Structural Mitigation Measures for Drought**

<b>Structural measures</b>	<b>Identified Locations and Villages</b>	<b>Implementing Departments</b>	<b>Convergence with Scheme/ Program</b>	<b>Time Frame</b>
Development of Pasture land in common property, seed farms and trust land		Forest, Rural Development, Panchayat	Departmental Scheme, MGNREGA	Regularly
Rain Water Harvesting storage tanks at household level and public buildings		GWSSB, (WASMO), Rural Development	MGNREGA, Swajaldhara	Regularly
Structures for water harvesting and recharging like wells, ponds, check dams, farm ponds, etc		DDO, Rural development, irrigation department	MGNREGA ,Watershed program, departmental schemes	Regularly
Development of fodder plots/banks		DDMC, Forest department , animal husbandry department	Development plan	Regularly
Repair and maintenance, de-silting of water sources, check dams, hand pumps etc.		Irrigation, Rural Development	MGNREGA, Watershed	Regularly

**Table No.: D2****Non-Structural Mitigation Measures for Drought**

<b>Non-Structural measures</b>	<b>Locations/ coverage area</b>	<b>Implementing Departments</b>	<b>Convergence with agency/ program</b>	<b>Time Frame</b>
Listing/developing shelf of work for drought proofing/scarcity works including Identification of potential sites of water bodies		Rural Development	MGNREGS	Regularly
Farmer education to practice drought resistant crops and efficient water use		Agriculture & horticulture department	Departmental schemes	Regularly
Set up control mechanism for regulated water use (ponds, small dams, check dams) on the early onset.		Panchayats		Regularly

**Hazard : Industrial (Chemical)**

**Table No. E1**

**Industrial (Chemical) Structural Measures**

<b>Structural measures</b>	<b>Activities</b>	<b>Implementing Departments</b>	<b>Convergence with agency/program</b>	<b>Time Frame</b>
Monitoring impact of industries on NRM (land, water and air)	Data collection of impact on natural resources (ground water monitoring wells, air quality test, etc)	DDMC, DCG GPCB	Environment protection act	Regular intervention
Safety assessment	Carry out structural safety inspection/audit	DISH, DCG (Asst. Director. Industrial safety and health)	Industrial act	Regular intervention
Protection wall	Build protection wall for minimize risk of disaster	Industrial unit	Industrial act	Regular intervention

**Table No.: E2**

**Industrial (Chemical) Non-Structural Measures**

<b>Non structural Measures</b>	<b>Activities</b>	<b>Implementing Departments</b>	<b>Convergence Agencies</b>	<b>Time Frame</b>
Planning	Prepare an onsite and offsite emergency plan	Occupier, DISH	Various Industrial act	-
	Conduct mock drills as per the regulations	DISH and LCG	Various Industrial act	Regular intervention
	Update the DM plan as per the requirement	Occupier, DISH	Various Industrial act	Industrial act
	Monitor similar activities in all the factories/ industries	DISH and LCG	Various Industrial act	Industrial act
Capacity Building	Develop IEC material for Publication & Distribution	TDMC	Various Industrial act	Industrial act
	Awareness generation to general public and medical professional residing near MAH factories for immediate steps	TDMC, LCG	Various Industrial act	Industrial act
	Organize training programmers, seminars and workshops (e.g. for drivers of HAZMAT transport, line departments officers, Mamlatdar etc)	TDMC, LCG	Various Industrial act	Industrial act
	List of experts/ resource person/ subject specialist (District emergency Off site plan)	TDMC, LCG	Various Industrial act	Industrial act
	Encourage disaster insurance	Labor & employment department	Various Industrial act	Industrial act
Medical	Listing of hazardous chemicals and gases.	Occupier, LCG, DISH, THO	Various Industrial act	Industrial act
	Keep check on	Occupier,	Various	Industrial

<b>Non structural Measures</b>	<b>Activities</b>	<b>Implementing Departments</b>	<b>Convergence Agencies</b>	<b>Time Frame</b>
	availability and validity of relevant antidotes for chemical hazards prevalent in Taluka	LCG, DISH, THO	Industrial act	act
	Workshops and trainings for medical professionals to handle potential chemical and industrial hazard	THO, Occupier, LCG, DISH	Various Industrial act	Regularly
Compliance	Environmental Protection Act, Factory Act, Mutual Aid SOPs	DISH , GPCB	Various Industrial act	Regular interval

At the District level, the District Crisis Management Group (DCG) is an apex body to deal with major chemical accidents and to provide expert guidance for handling them. DCG has a strength of 34 members which includes District Collector, SDM and Dy. Collector, DDO, Dy. Director – Industrial Safety & Health, DSP, PI, Fire Superintendent of the City Corporations or important Municipalities, Chief District Health Officer, Civil Surgeon, SE, Chief Officer, Dy. Chief Controller of Explosives, Commandant – SRPF, Group-I, Dy. Director – Information to name a few.

**Hazard: Tsunami****Table No. F1****Structural Mitigation Measures for Tsunami**

<b>Structural measures</b>	<b>Identified Locations and Villages</b>	<b>Implementing Departments</b>	<b>Convergence with Scheme/ Program</b>	<b>Time Frame</b>
Constructing shelter belts in coastal areas		Rural Development	Departmental programs , MGNREGA	Long term planning
Contraction Sea water brake structure		R & B State and panchayat	Departmental programs , MGNREGA	Long term planning

**Table No. : F2****Non-Structural Mitigation Measures for Tsunami**

<b>Non-Structural measures</b>	<b>Locations/ coverage area</b>	<b>Implementing Departments</b>	<b>Convergence with agency/program</b>	<b>Time frame</b>
Provisions of Coastal Regulation Zone to be effectively implemented		Department of Environment & Forest GEC	ICZMP	Long term planning
Capacity building of task forces in coastal villages		TDMC, DDMC, CDMC, VDMC,	DRM,	Periodically
Awareness activity in prone/ vulnerable area		DDMC , TDMC, CDMC, VDMC	DRM	Regularly



## **Hazard-Fire**

Over and above the softer issues highlighted above, GSDMA has provided all the existing Government schools in Gujarat with ISI marked portable Water-CO2 type of Fire Extinguisher (31746 Government schools covered of which 31336 are primary and 410 are secondary and higher secondary schools). For the necessary guidance/instruction for use of fire extinguishers, GSDMA has prepared an 18-minute short education film in Gujarati on fire safety for schools. This was shown to all government primary schools through the satellite network.

## **Specific projects for vulnerable group**

DRMP (Disaster risk management programme) is targeting the most vulnerable people or group and give the training on different subject for built their capacity. It also organized mockdrills on various subject at industry, village, Taluka, ULB, district and Municipal corporation level.

GSSP (Gujarat School Safety programme) is targeting the school students, teachers and principal as organized training, sensitization programme, mockdrills, preparing the school disaster management plan and distribute the IEC material.

Thus, DRMP and GSSP are specific project for vulnerable group.

## **Chapter 5**

### **Preparedness Measures:**

#### **Identification of Stakeholders involved in Disaster Response**

Disaster response is the most important step during disasters. Public as well as volunteers take part in the response work. There should be search and rescue, first aid and evacuation activities. In case of Search and Rescue NDRF, Fire staff, Police, Homeguard, GRD, NCC, NSS and other trained volunteers involved in Search and rescue. In case of First Aid work people from Health profession and other trained volunteers involved in First Aid activities and in case of Evacuation again Police, Fire, HG and GRD involved in the same work.

#### **Formation of Persons and Training for-**

##### **Search & rescue**

It is the duty of the DDMA to provide specialized life saving assistance to district and local authorities. In the event of a major disaster or emergency its operational activities include locating, extricating and providing on site medical treatment to victims trapped in collapsed structures. In the event of any disaster the Home Guards along with the support of the Police dept. form teams to locate injured and dead and try to rescue the ones in need. There are other bodies too that help these departments in this work, like the PWD, Health dept, Fire dept and also the people that voluntarily form teams to help the ones in need. Proper training for search and rescue process needs to be undertaken so as to minimize the time taken in rescuing someone. Also proper methodology and resources are needed to carry out a search & rescue mission.

The tactics used in the search & rescue process vary accordingly with the type of disaster that we are dealing with. In case of flood, a boat and trained swimmers are a must while in case of an earthquake sniffer dogs and cutting tools with trained manpower is a binding requirement. The household register that is maintained by the warden should be maintained for every village as it proves to be of great help in case of a disaster like an earthquake. Because in case of the aforementioned disaster people get trapped in the debris of buildings and houses and it becomes difficult to estimate how many people are present in the debris. But if a household register is maintained then the task becomes quite easy and effective to find out almost correctly that how many people would be present in any building/house at any given time. Thus the resources can be justifiably distributed and more lives can be saved. This kind of process is highly recommended in this particular district which lies in moderate earthquake prone region.

For flood it is recommended that the boats that are used should be light weight and the motor should be of 'luma' type, so that it becomes easy for the rescue team to lift the boat and carry it to the spot.

### **Search & rescue Team**

Designation of trained S&R Team member
<p><i>The Search &amp; Rescue team is formed as and when required and the members &amp; equipments are taken according to the nature of the disaster (and also on their availability).</i></p> <ul style="list-style-type: none"><li>• Police Officers (2 or more)</li><li>• Home guards (2 or more)</li><li>• Swimmers (In case of flood)</li><li>• A construction engineer (From P.W.D.)</li><li>• Driver (For Every vehicle)</li><li>• Any person with the prior experience of the disaster (From Home Guard/Police Dept.)</li><li>• A doctor or nurse or at least a person having first aid training</li><li>• A Class IV Officer (Health Dept.)</li></ul>

### **Early Warning**

The early warning systems for different disasters should be in place so that the concerned administrative machinery and the communities can initiate appropriate actions to minimize loss of life and property. These should give an indication of the level of magnitude of the mobilization required by the responders. The goal of any warning system is to maximize the number of people who take appropriate and timely action for the safety of life and property. All warning systems start with the detection of the event and with their timely evacuation. Warning systems should encompass three equally important elements viz detection and warning, dissemination of warning down to the community level and the subsequent quick response.

The State acknowledges the crucial importance of quick dissemination of early warning of impending disasters and every possible measure will be taken to utilize the lead-time provided for preparedness measures. As soon as the warning of an impending calamity is received, the EOCs at the State, District and Block levels will be on a state of alert. The Incident Commander will take charge of the EOC and oversee the dissemination of warning to the community. The District Collector will inform the District Disaster Management Committees who will alert the block and Village level DMCs and DMTs to disseminate the warning to the community. On the basis of assessment of the severity of the disaster, the State Relief Commissioner (Incident Commander) shall issue appropriate instructions on actions to be taken including evacuation to the District Collector, who will then supervise evacuation. In situations of emergency, the District Collector will use his

own discretion on the preparedness measures for facing the impending disaster.

At the village level, members of the VDMCs and DMTs or village level will coordinate the evacuation procedures to the pre-designated relief centers, taking special care of the vulnerable groups of women, children, old people etc. according to the plans laid down earlier.

## **Evacuation**

Evacuation is a risk management strategy, which may be used as a means of mitigating the effects of an emergency or disaster on a community. It involves the movement of people to a safer location. However, to be effective, it must be correctly planned and executed. The process of evacuation is usually considered to include the return of the affected community.

Shelter provides for the temporary respite to evacuees. It may be limited in facilities, but must provide protection from the elements as well as accommodate the basic personal needs, which arise at an individual level in an emergency.

The plan must allocate responsibility for management of each of the elements of shelter. Considering the wide range of services, agencies and issues to be managed, it becomes essential for 'shelter' to be managed within a structure, which facilitates the coordination of agencies and services and support of emergency workers. The following factors may need consideration:

- Identification of appropriate shelter areas based on safety, availability of facilities, capacity and number of victims
- Approaches to the shelter location in light of disruption due to hazard impact and traffic blockades
- Temporary accommodation
- Provision of essential facilities like drinking water, food, clothing, communication, medical, electrical and feeding arrangements, etc
- Security
- Financial and immediate assistance
- First-aid and counseling

## **Types of evacuation**

For planning, all evacuations may be considered to be one of two generic types:

- (a) Immediate evacuation, which allows little or no warning and limited preparation time as in the case of earthquakes and air accident

- (b) Pre-warned evacuation resulting from an event that provides adequate Warning and does not unduly limit preparation time as in the case of Flood and Cyclone.

### **Principles of Evacuation Planning**

- Establishment of a management structure for organization, implementation, coordination and monitoring of the plan
- Determination of legal or other authority to evacuate
- Clear definition of rules and responsibilities
- Development of appropriate and flexible plans
- Effective warning and information system
- Promoting awareness and encouraging self-evacuation.
- Assurance of movement capability
- Building confidence measures and seeking cooperation of the affected community.
- Availability of space for establishment of relief camps having requisite capacity and facilities
- Priority in evacuation to be accorded to special need groups like women, old and sick, handicapped and children
- For effective evacuation, organization and running of relief centers, cooperation and involvement of all agencies viz. Community, volunteers, NGOs, NCC / NSS, Home guards and civil defense, district and village bodies be ensured
- Security arrangement and protection of lives and property
- Preparation and updating of resource inventories
- Appropriate welfare measures throughout all stages
- Test exercise of prepared plans and recording of lessons learnt
- Documentation

### **Stages of Evacuation**

There are five stages of evacuation as under:

- Decision of authorities to evacuate victims
- Issue of warning and awareness
- Ensuring smooth movement of victims to designated relief camps
- Ensuring provision of all requisite facilities like security, safe-housing, feeding, drinking-water, sanitation, medical and allied facilities
- Safe return of personnel on return of normalcy

## **Decision to Evacuate**

Vulnerability analysis may indicate that for certain hazards and under certain conditions, sheltering in place could well be the best protection. Available lead-time may influence the decision to evacuate the public before the impact of emergency (e.g. floods) and reducing the risk to lives and property. Decision would also be dependent on factors like ready availability of suitable accommodation, climatic condition, and severity of likely hazard and time of the day.

The Collector would be the authoritative body to issue directions for evacuation. The OIC of DECR would convey directions to Desk Officers of concerned agencies, which are responsible to execute evacuation.

## **Basic consideration for Evacuation**

The DCG will define area to be evacuated as also the probable duration of evacuation based on meteorological observations and intimations by the concerned forecasting agencies. It should also identify number of people for evacuation, destination of evacuees, lead-time available, welfare requirements of evacuees as also identify resources to meet the needs of victims, viz. manpower, transport, supplies equipments, communications and security of the evacuated area.

The evacuating agency should set priorities for evacuation in terms of areas likely to be affected and methodology to execute evacuation:

- Delivery of warning
- Transport arrangement
- Control and timing of movement
- Fulfill welfare needs including medical treatment
- Registration of evacuees

All agencies involved in evacuation operation like Home guards, Police, PWD, PHED, etc. will coordinate in field. They will remain in touch with the Desk officials in the DECR for issuing warning, information and advise the public.

## **Evacuation Warning**

An evacuation warning must be structured to provide timely and effective information. Factors, which may influence the quality and effectiveness of warning, include time, distance, visual evidence, threat characteristic and sense of urgency e.g. the more immediate the threat, the greater the resilience of people to accept and appropriately react to the warning.

The warning should be clear and target specific. The warning statement issued to the community should be conveyed in a simple language. The statement should mention:

- The issuing authority, date and time of issue
- An accurate description of likely hazard and what is expected

- Possible impact on population, area to be in undated or affected due to earthquake
- Need to activate evacuation plan
- Do's and Don'ts to ensure appropriate response
- Advise to the people about further warnings to be issued, if any

### **Damage & Loss Assessment**

Immediately after the disaster, there is an urgent need of damage assessment in terms of loss of life, injury and loss of property. The objectives of damage assessment are to mobilize resources for better rescue and relief, to have detailed information of damage extent and severity of disaster and to develop strategies for reconstruction and restoration facilities.

Damage is assessing with regard to building stock, standing crops, agricultural area, livestock lost, forest cover decimated, vital installations etc. In damage assessment of building stock, generally three types of flags are used; green, yellow and red. The green color is given to the buildings that are safe and require 2-3 days to return to their original function. Yellow flags depict the considerable damage to the buildings and considered unsafe for living, as they require proper structural repairs and careful investigation. The red flag is assigned to buildings that are partially or completely collapsed. Immediately after a disaster event, damage assessment will be conducted in 2 phase's viz. Rapid Damage Assessment and Detailed Damage Assessment.

### **Training need analysis**

Although education about disaster mitigation and prevention and capacity building would seem to be ideal district-level efforts, the lead for both probably best rests with the state level, with districts having a facilitating role. The issue is that if 26 districts independently embark on education and capacity building it will be hard to coordinate and standardize the results across districts. A significant consequence would an inequality in capacities across districts, and thus uneven mitigation and prevention results' How to fund these activities remains open. Options range from GSDMA grants to set-asides in budget allocations. Project Impact in the US and similar programs in Australia and Canada are good models for the former approach.

## Awareness

Task	Activity	Responsibility
Information, education And communication	Advertisement, hording, booklets, leaflets, banners, shake-table, demonstration, folk dancing and music, jokes, street play, exhibition, TV Spot, radio spot, audio-visual and documentary, school campaign, Rally, - Planning and Design - Execution and Dissemination	<input type="checkbox"/> Information Dept <input type="checkbox"/> Education Dept <input type="checkbox"/> All line dept <input type="checkbox"/> Dist. Collectors <input type="checkbox"/> Chief officer <input type="checkbox"/> Other Dist. Authorities

## **Arrangements for training and capacity building**

### Training, capacity building and other proactive measures

Sr. No.	Task / Activity	Responsibility
1	Training to civil defense personal in various aspect of disaster management	Home Department
2	Training to home Guards personal in various aspect of disaster management including search and rescue	Dy. Controller Civil Defense District Home Guards Commandant
3	Training to NCC and NSS personal in various aspect of disaster management	Education Department NCC Collector Office
4	Training to educational and training institutions personal in various aspect of disaster management	DDMC
5	Training to civil society, CBOs and corporate entities in various aspect of disaster management	DDMC
6	Training to fire and emergency service personal in various aspect of disaster management	Fire Dept, CDMC DDMC
7	Training to police and traffic personal in various aspect of disaster management	DDMC Police Dept.
8	Training to media in various aspect of disaster management	DDMC Information Dept.



9	Training to govt. officials in various aspect of disaster management	DDMC
10	Training to engineers, architects, structural engineers, builders and masons in various aspect of disaster management	DDMC, R & B

## Activation of Incident Response System in the District

### Command:

This function establishes the framework within which a single leader or committee can manage the overall disaster response effort. A single Incident Commander is responsible for the successful management of the response during operational period in an area. If the incident grows in size and extends throughout many jurisdictions, multiple incident commanders can be useful with an area command authority may be established to coordinate among the incidents. Incident Commander requires the following Command Staffs to support him, which are as followings,

- Public Information Officer – the single media point of contact
- Safety Officer – Responsible for identifying safety issues and fixing them, he has the authority to halt an operation if needed.
- Liaison Officer – Point of contact for agency to agency issues.

1. **Operations:** this section carries out the response activities described in the Incident Action Plan (IAP) along with coordinating and managing the activities taken the responding agencies and officials that are directed at reducing the immediate hazard, protecting lives and properties. This section manages the tactical fieldwork and assigns most of the resources used to respond to the incident. Within operations, separate sections are established to perform different functions, such as emergency services, law enforcement, public works...etc.
2. **Planning:** this section supports the disaster management effort by collecting, evaluating, disseminating, and uses information about the development of the emergency and status of all available resources. This section creates the action plan, often called “Incident Action Plan” (IAP), which shall guide emergency operations/response by objectives.

Followings are the six primary activities performed by the planning section, including,

- Collecting, evaluating, and displaying incident intelligence and information
  - Preparing and documenting IAPs
  - Conducting long-range and contingency planning
  - Developing plans for demobilization
  - Maintaining incident documentation
  - Tracking resources documentation
3. **Logistics:** the process of response includes personnel, equipments, vehicles, facilities...etc, all of which will depend upon the acquisition, transport, and distribution of resources, the provision of food and water, and proper medical attention. The Logistic section is responsible for the mentioned process.
4. **Finance and Administration:** this section is responsible for tracking all costs associated with the response and beginning the process for reimbursement. The finance and administration section becomes very important when the national government provides emergency funds in place that guarantee local and regional response agencies that their activities, supply use, and expenditures will be covered.

A traditional command structure exists in the administrative hierarchy which manages disasters in India. It has been planned to strengthen and professionalise the same by drawing upon the principles of the ICS with suitable modifications. The ICS is essentially a management system to organise various emergency functions in a standardised manner while responding to any disaster. It will provide for specialist incident management teams with an incident commander and officers trained in different aspects of incident management, such as logistics, operations, planning, safety, media management, etc. It also aims to put in place such teams in each district by imparting training in different facets of incident management to district level functionaries. The emphasis will be on the use of technologies and contemporary systems of planning and execution with connectivity to the joint operations room at all levels.

The local authorities do not have the capacity to play an efficient role at local level to support the DEOC's requirements for field information and coordination. The DEOC will therefore need to send its own field teams and through them establish an Incident Command System. The system will comprise:

- Field command
- Field information collection

- Inter agency coordination at field level

Management of field operations, planning, logistics, finance and administration

### **Protocol to seeking help from other agencies**

As any kind of disaster happened to district which is not controllable by the district response team, collector ordered to DEOC for seeking help from ERC of Saurashtra or NDRF team and Army team to tackle the disaster situation. DEOC also informed same to SEOC.

### **Checking and certification of logistics, equipments and stores**

Bhavnagar district has various types of logistics and equipment. It should be checked and certified by concern officer periodically. Disaster Management cell is regularly monitoring this activity and got certification of this equipment. (Detail information of Equipment is given in Annexure)

### **Operational check-up of Warning System**

Warning system are checked periodically like, Satellite phone, Hot Line, Telephone connection, GSWAN connectivity etc, In Pre- monsoon meeting also give direction for checking warning system like, port signals.

### **Operational check-up for Emergency Operation Centre**

Operational checkup of Emergency Operation Centre are carried out month wise and checked all facilities and equipment in DEOC.

### **Seasonal inspection for facilities and critical infrastructure**

Before Cyclone and Monsoon, the equipments are checked, especially pre-monsoon all the equipments, other facilities and critical infrastructure checked by respective authority if it found that equipments are not in working condition, regularly follow up taken by DEOC.

## **Command and Coordination –**

### **Identification of quick response teams**

In case of any kind of disaster district collector is responsible for command all the line departments and DEOC is responsible for coordination with affected area and other stakeholders under the guidens of district collector.

During any disasters quick response is essential and Police, HG, GRD, NCC, NSS, Fire services and other volunteers are responsible to identification of quick response teams.

## **NGOs and other stakeholders coordination**

NGO and Voluntary group are doing very important activity and response during disaster. DDMA also organized capacity-building programmes, awareness programmes on Disaster Management for NGO and Voluntary group.

For arrangement of water supply, temporary sanitation facilities, search and Rescue activity, Relief distribution can be sought with help of special agencies, NGOs and CBOs. (Information of NGO and Voluntary group refer in Annexure)

## **Seasonal preparedness for Seasonal Disaster**

### **Like Flood and Cyclone-**

Whether personal or institutional, all collections are subject to risks that can seriously affect the lifetime and value of a collection. For many museums, galleries, and private collections, an essential aspect in Collection Management is maintaining a loss prevention plan for seasonal disasters.

Hazards from these storms come in many forms including high winds, tornadoes, and storm surges and flooding. Natural disasters make all of us acutely aware of our vulnerabilities to disaster. Fortunately, catastrophes of a large magnitude are rare, but disaster can strike in many ways. Large or small, natural or man-made, emergencies put collections in danger. Hazards can often be mitigated or avoided altogether by a comprehensive, emergency-preparedness plan. Such plans provide a means for recognizing and responding effectively to emergencies. The goal is to hopefully prevent damage or, at least, to limit the extent of the damage.

### **Identifying Risks**

A first step is to list geographic and climatic hazards and other risks that could jeopardize the building and collections. These might include geographical susceptibility to hurricanes, tornadoes, flash flooding,

earthquakes, or forest fires, and even the possibility of unusual hazards such as volcanic eruptions. Consider man-made disasters such as power outages, sprinkler discharges, fuel or water supply failures, chemical spills, arson, bomb threats, or other such problems. Take note of the environmental risks that surround you. Chemical industries, shipping routes for hazardous materials, and adjacent construction projects all expose you to damage. Any event that is a real possibility should be covered under your Emergency Preparedness Plan. It is also important to determine the vulnerability of the objects within the collections. What types of materials are included? Are they easily damaged? Are they particularly susceptible to certain types of damage such as moisture, fire, breakage, and the like? How and where are collections stored? Are they protected by boxes or other enclosures? Is shelving anchored to structural elements of the building? Is it stable? Are any artifacts stored directly on the floor where they could be damaged by leaks or flooding? All items should be raised at least four inches from the floor on waterproof shelves or pallets. Are materials stored under or near water sources? Analyze your security and housekeeping procedures. Do they expose collections to the dangers of theft, vandalism, or insect infestation? Consider vulnerabilities. Are your collections insured? Is there a complete and accurate inventory? Is a duplicate of the inventory located at another site? Although there may be a wide range of disaster scenarios, the most common are water, fire, physical or chemical damage, or some combination of these. The specific procedures of a disaster plan focus on the prevention and mitigation of these types of damage.

### **Decreasing Risks**

Once your hazards are specified, the disaster planner should devise a program with concrete goals, identifiable resources, and a schedule of activities for eliminating as many risks as possible. While water damage is the most common form of disaster for collections, everyone needs a good fire-protection system. Wherever possible, collections should also be protected by a fire suppression system. Preservation professionals now recommend wet-pipe sprinklers for most collections. In addition, water misting suppression systems have become available within the last several years; these can provide fire suppression using much less water than conventional sprinkler systems. Before choosing a fire-protection system, be sure to contact preservation professional or a fire-protection consultant for information about the latest developments in fire protection and for advice appropriate to your collections and situation. An inventory will provide a basic list of holdings, and will be essential for insurance purposes. Improved collection storage, such as boxing and raising materials above the floor level, will reduce or eliminate damage when emergencies occur. Comprehensive

security and housekeeping procedures will ward off emergencies such as theft, vandalism, and insect infestation. They will also ensure that fire exits are kept clear and fire hazards eliminated.

### **Identifying Resources**

An important step in writing your plan is to identify sources of assistance in a disaster. Research these services thoroughly--it is an essential part of the planning process. These can range from police, fire, and ambulance services to maintenance workers, insurance adjusters, and utility companies. If possible, invite local service providers to visit in order to become familiar with your site plan and collections in advance of an emergency. For example, you may want to provide the fire department with a list of high-priority areas to be protected from water if fire-fighting efforts permit.

Other valuable sources of assistance are local, state, or federal government Agencies.

## **Community awareness, education and preparedness**

### **Awareness Generation**

As a part of Preparedness Awareness, generation among community will be a continuous process. From District to Taluka, Village level awareness programme must be conducted with the help of Print Media, Electronic media, folk media authority can create awareness among community.

### **GSDMA DRM activities:**

Disaster Risk Management Programme (DRM) has taken strong roots at various levels of administration in Gujarat. The Department of Revenue & Disaster Management is the nodal Department in Government of Gujarat that handles the subject with GSDMA. Disaster Management Committees are formed at various levels and are assigned the task of implementing the programme. Representation for these committees are drawn from elected representatives, officials of line departments, professional bodies, Civil Defense, NGO and CBO representatives and local opinion leaders. Major Activities are being carried out under DRM program are Plan Development at Various Levels, Emergency Resources Database maintained through SDRN / IDRN, Capacity Building through Trainings & Resource Mobilization, Disaster Awareness through Orientations, Campaigning, Media Management and IEC distribution. Coordinate District Administration for all Disaster Management Activities with expertise knowledge, logistics and fund allocation.

The Disaster Risk Management Program (DRM) being implemented by Gujarat State Disaster Management Authority (GSDMA) aims to

strengthen the response, preparedness and mitigation measures of the community, local self-governments, the District administration and the State in Gujarat. Under the DRM Programme

### **District Level Process**

1. Orientation of District level officers and PRI members including line department officials
2. Formation of District Disaster Management Committee
3. Development of manuals and guidelines Capacity building of DDMC members, government officials, training institutes, other concerned organizations at district level.
4. Development of the District Disaster Management Plan
5. Use of IEC materials for awareness generation for preparedness, risk reduction and mitigation
6. Data updation on IDRN

### **Taluka level process**

1. Orientation cum sensitize Taluka level officers and PRI members.
2. Formation of Taluka Disaster Management Committee
3. Capacity building of government officials
4. Development of the TDMP
5. Use of IEC material and media sources for create awareness at taluka level
6. TDMP update on SDRN

### **City-ULB level process**

1. Orientation of City level officers, elected members & leaders.
2. Formation of CDMP
3. Capacity building of municipal official and concerned organizations at city level
4. Development of the CDMP.
5. Use of IEC material for create awareness at city level
6. CDMP updation on SDRN

### **Village Level Process**

1. Formation Cluster within 10 to 12 village and conduct cluster meetings over 10-12 villages
2. Organize Gramsabha in each village

3. Undertake PRA exercise at village level for hazard, vulnerability assessment and resource analysis
4. Facilitate the formation of the Village Disaster Management Committee (VDMC)
5. Conduct training programs for DMT and DMC Members and volunteers
6. Awareness campaigns on risk reduction mechanisms, Risk Transfer-insurance, disaster resistant construction
7. Developed Village Disaster Management Plan (VDMP)
8. Conduct mock drills for test the VDMP
9. Update VDMP twice in a year (by VDMC)

Bhavnagar district had taken the preparedness measures from village level to District level. At the villages village Task forces was formed and trained about First aid and Health, Search and Rescue and Disaster Management. Some volunteers were also trained in Disaster Management and plans like VDMP were prepared and updated. Officers reviewed the disaster preparedness of the villages and interacted with the Village level Disaster Management team members, in the pre-monsoon meeting all departments, and stakeholders were asked to get prepared departmental plan. SOP's were also discussed with them so that quick response can be assured and any kind of risk due to water lodging, flood, heavy rainfall and dam overflow can be reduced.

Prevention and Mitigation and preparedness actions are to be taken before a disaster to reduce the likelihood of a disaster (risk reduction) or the level of damage (vulnerability reduction) expected from a possible disaster. Vulnerability reduction is given priority over a risk reduction.

Base on the interim assessment of risk and vulnerabilities, certain majors for mitigation, preparedness and prevention has been taken with respect to the District. These are...

The proposed state-level disaster-planning format sets out priorities for mitigation, prevention and preparedness activities. The underlying concept is to incorporate these three types of activities into normal (developmental) policies, procedures and undertakings and targeting specific areas for concerted effort.

Complementary priorities, plans and activities need to be established at the district level. This process is complicated by five realities:

1. Developmental policies and budgets are set at the state-level and project implementation is not always under the control of district authorities



2. District authorities have limited policy and funding independence.
3. The range of possible mitigation, prevention and preparedness actions within a district is significant but can be difficult to prioritize.
4. Many activities require popular participation and should be focus on the family or community, which requires time and effort to effectively organize.
5. The local commercial sector is cost-conscious and tends to avoid investments in activities which do not immediately improve profits.

A set of possible district-level approaches to mitigation, prevention and preparedness are summarized below based on these realities. These approaches need to be reviewed at the district and state level and to the degree possible, harmonized vertically within the government structure and across public and private sector organizations and districts. At the same time, the focus of efforts can vary between and even within districts depending on their particular hazards, risks and vulnerabilities.

One approach to developing this harmonization is to hold a state-district conference on mitigation, preparedness and prevention, complemented by annual review workshop. The initial conference would define and harmonize policies, procedures and approaches vertically and horizontally. The workshop would serve to recognize progress and adjust plans to take into account changing local and state-level conditions.

## Community Warning System

It is often observed that communities living in remote and isolated locations do not receive timely and reliable warnings of impending disasters. Hence, it is necessary to have robust and effective early warning systems, which can play crucial role in saving lives and limiting the extent of damage to assets and services. Outreach and reliability of warnings are key factors for planning and implementing response measures. Post disaster advisories like information on rescue, relief and other services are important to ensure law, order, and safety of citizens.

<b>Type of Action</b>	<b>Flood</b>	<b>Cyclone</b>	<b>Chemical and industrial accidents</b>	<b>Tsunami</b>
Existing EWS	Irrigation department / dam authority/ IMD ↓ Collector ↓ Mamlatdar /TDO ↓ Villages	IMD ↓ Collector ↓ Mamlatdar/ TDO ↓ Villages	Industrial Association/industries ↓ DCG ↓ LCG ↓ Mamlatdar ↓ Villages	IMD ↓ Collector ↓ Mamlatdar /TDO ↓ Villages

Responsible Agency for warning dissemination	DDMC Mamlatdar office/TDO VDMC	DDMC Mamlatdar office/TDO VDMC	DDMC Mamlatdar office/TDO VDMC	DDMC Mamlatdar office/TDO VDMC
Trained personnel and operators available				
Villages covered	All risk prone villages			
Villages/habitat not covered or difficult to access	Communities in remote locations ( fisher folk, salt pan workers, etc) VDMC			
Measures required to improve timeliness and outreach (For example, voice enabled SMS)	Contact of communities in remote locations (fisher folk, saltpan workers etc)			

### **During and Post Disaster Advisory Action Plan**

<b>Type of Hazard</b>	<b>Flood</b>	<b>Cyclone</b>	<b>Earthquake</b>	<b>Drought</b>	<b>Chemical and industrial accidents</b>	<b>Tsunami</b>
Responsible Agency	DDMC, Mamlatdar office & TDO					
Villages covered	All risk prone villages					
Villages/habitat not covered or difficult to access	communities in remote locations ( fisher folk, salt pan workers etc)					
Measures required for outreach	Contact of communities in remote locations ( fisher folk, salt pan workers etc)					

### **Procurement various Resource**

Provide logistical support to government and agencies for procurement of relief goods, transportation, Tents, blankets, tarpaulins, equipment etc, and monitoring illegal price escalations, stocking etc. during crisis.

DDMA and other local authority should do procurement of such resource and If they have such resource so keep them in ready to use in disaster situation.

### **SDRN/IDRN data updation**

State disaster Resource network and India Disaster Resource Network is a crucial databases for response any disaster. SDRN, a decision support tool, is layered using the existing IT Wide Area Network (WAN) of the State - GSWAN. SDRN uses the map-based Geospatial Information Systems developed by the Gujarat based organization Bhaskaracharya Institute for Space Applications and Geo-Informatics (BISAG). Currently, the SDRN network is being integrated with the GIS based Decision Support System using Java, MS-Access, Visual Studio 2005 with Database SQL Server 2005. The GIS Visualize does not require any GIS software. The GIS visualize contains multi layered options depicting roads-highways, taluka, district boundaries, rivers, ports, airways, etc. SDRN and IDRN updation are regularly base work and it is updation.

IDRN, a web based information system, is a platform for managing the inventory of equipments, skilled human resources and critical supplies for emergency response. The primary focus is to enable the decision makers to find answers on availability of equipments and human resources required to combat any emergency. This database will also enable them to assess the level of preparedness for specific vulnerabilities. Total 226 technical items listed in the resource inventory. It is a nationwide district level resource database. Each user of all districts of the state has been given unique username and password through which they can perform data entry, data updation on IDRN for resources available in their district. The IDRN network has functionality of generating multiple query options based on the specific equipment, skilled human resources and critical supplies with their location and contact details.

### **Protocol and arrangement for VIP Visit**

It is important that immediately inform VIPs and VVIPs on impending disasters and current situation during and after disasters. Appeals by VIPs can help in controlling rumors and chaos during the disaster. Visits by VIPs can lift the morale of those affected by the disaster as well as those who are involved in the response. Care should be taken that VIP visits do not interrupt rescue and life saving work. Security of VIPs will be additional responsibility of local police and Special Forces. It would be desirable to restrict media coverage of such visits, in which case the police will liaise with the government press officer to keep their number to minimum.

## **Media Management/information dissemination**

The role of media, both print and electronic, in informing the people and the authorities during emergencies becomes critical, especially the ways in which media can play a vital role in public awareness and preparedness. Media through educating the public about disasters; warning of hazards; gathering and transmitting information about affected areas; alerting government officials, helping relief organizations and the public towards specific needs; and even in facilitating discussions about disaster preparedness and response. During any emergency, people seek up-to-date, reliable and detailed information.

The State Government has established an effective system of collaborating with the media during emergencies. At the State Emergency Operation Centre (SEOC), a special media cell has been created which is made operational during emergencies. Both print and electronic media are regularly briefed at predetermined time intervals about the events as they occur and the prevailing situation on ground.

## **Documentation**

Documentation is a very important activity in disaster management. DDMA also appoints duty for Documentation to the information department. Documentation should be in good manner. It can be in summary and detail form. It is reliable and authentic.

## Chapter 6

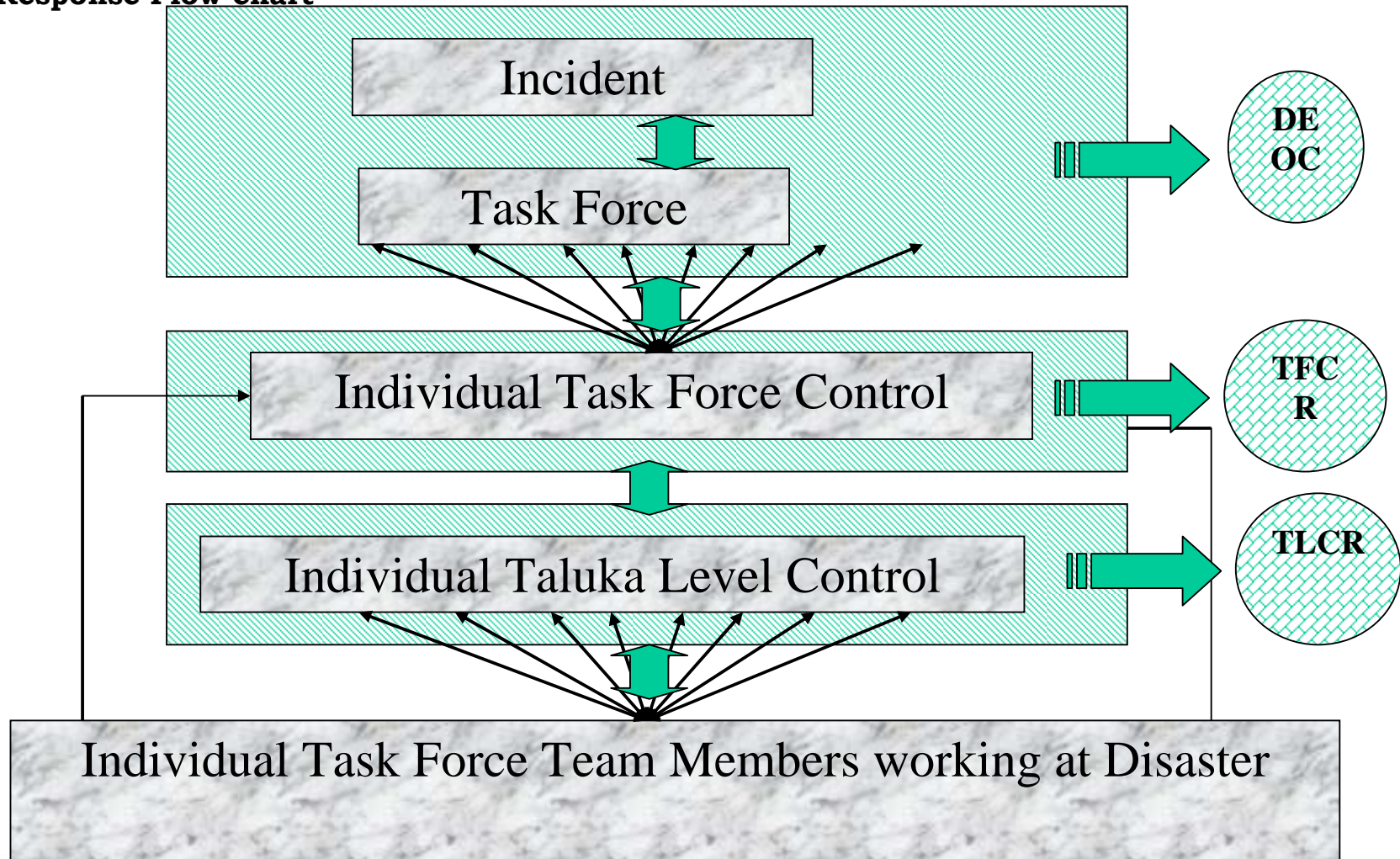
### **Response Measures (Multi-Hazard):**

Response measures are those which are taken instantly prior to, and following, a disaster aimed at limiting injuries, loss of life and damage to property and the environment and rescuing those who are affected or likely to be affected by disaster. Response process begins as soon as it becomes apparent that a disastrous event is imminent and lasts until the disaster is declared to be over. Since response is conducted during periods of high stress in a highly time-constrained environment and with limited information and recourses (in majority of the cases), it is by far, the most complex of four functions of disaster management. Response includes not only those activities that directly address the immediate needs, such as search and rescue, first aid and shelters, but also includes systems developed to coordinate and support such efforts. For effective response, all the stakeholders need to have a clear perception/vision about hazards, its consequences and actions that need to be taken in the event of it.

The Revenue Department of the State is the Nodal Department for controlling, monitoring and directing measures for organizing rescue, relief and rehabilitation. All other concerned line departments should extend full cooperation in all matters pertaining to the response management of the disaster whenever it occurs.

The District EOC, ERCs and other control rooms at the District level should be activate with full strength and begun active for search and rescue according disaster.

**Response Flow chart**



## Warning and alert dissemination

On the receipt of warning or alert from any such agency, which is competent to issue such a warning, or on the basis of reports from District Collector of the occurrence of a disaster, the response structure of the State Government will be put into operation. The Chief Secretary/Relief Commissioner will assume the role of the Chief of Operations during the emergency. The details of agencies competent enough for issuing warning or alert pertaining to various types of disasters are given below;

Sr. No.	Disaster	Agencies
1	Earthquakes	IMD/ISR
2	Floods	Meteorological Department, Irrigation
3	Tsunamis	IMD/ISR/INCOIS
4	Cyclones	IMD
5	Epidemics	Public Health Department
6	Road Accidents	Police
7	Industrial and Chemical Accidents	DISH, Police, Collector
8	Drought	Agriculture, Scarcity department
9	Fire	Fire Brigade, Police, Collector
10	Rail Accident	Railways, Police, Collector
11	Air Accident	Police, Collector, Airlines
12	Ammunition Depot-Fire	Army, Police, Collector.

**1.** Cyclone/flood forecasting is generally the responsibility of the Indian Meteorological Department (IMD). IMD is the nodal agency for providing cyclone-warning services. IMD's INSAT satellite based Cyclone Warning Dissemination System (CWDS) is one of the best currently in use in India to communicate cyclone warnings from IMD to community and important officials in areas likely to be affected directly and quickly. There are 19 CWDS stations in Gujarat.

**2.** After getting information from IMD, warning dissemination is a responsibility of State Government (COR). The COR under the Revenue Department is responsible for disseminating cyclone warnings to the public and Line Departments.

**3.** On receiving an initial warning, the office of the COR disseminates the warning to all Line Departments, the District administration and DG Police. Warning messages are transmitted through wireless to all districts and Talukas. District Collectors are provided with satellite phones and a Ham radio to maintain effective communication, even if terrestrial and cell-phone communication fails.

**4.** The state EOC and control rooms of the other line departments at the State level as well as district level also get the warnings. The control rooms are activated on receiving the warnings.

### **District CMG meeting**

At the District level, the District Crisis Management Group (DCG) is an apex body to deal with major chemical accidents, disaster and to provide expert guidance for handling them. DCG has a strength of 34 members which includes District Collector, SDM and Dy. Collector, DDO, Dy. Director – Industrial Safety & Health, DSP, PI, Fire Superintendent of the City Corporations or important Municipalities, Chief District Health Officer, Civil Surgeon, SE, Chief Officer, Dy. Chief Controller of Explosives, Commandant – SRPF, Group-I, Dy. Director – Information to name a few. At Taluka level Local Crisis Management Group (LCG) is formed for coordination of activities and executing the operations. DCGs as well as LCG. Meeting will meet periodically twice in a year.

### **Activation of EOC**

Emergency Operation Center (EOC) is a physical location and normally includes the space, facilities and protection necessary for communication, collaboration, coordination and emergency information management.

The EOC is a nodal point for the overall coordination and control of relief work. In case of a Level 1 Disaster the Local Control room will be activate, in case of a Level 2 disaster DEOC will be activated along inform with the SEOC.

### **Response planning, preparedness and assumption Quil assessment of damages and need**

#### **Agriculture**

##### **Prevention Activities:**

- Awareness generation regarding various plant diseases, alternate cropping practices in disaster-prone areas, Crop Insurance, provision of credit facilities, proper storage of seeds, etc.
- Hazard area mapping (identification of areas endemic to pest infections, drought, flood, and other hazards)
- Develop database village-wise, crop-wise, irrigation source wise, insurance details, credit etc.
- Regular monitoring at block level; the distribution and variation in rainfall
- Prepare the farmers and department officers to adopt contingency measures and take up appropriate course of action corresponding to the different emerging conditions.



- Detail response manuals to be drawn up for advising the farmers for different types of disasters, e.g., rain failure in July or September & development of a dynamic response plan taking into account weekly rainfall patterns.
- Develop IEC materials to advise the farming communities on cropping practices and precautionary measures to be undertaken during various disasters
- Improving irrigation facilities, watershed management, soil conservation and other soil, water and fertility management
- Measures keeping in mind the local agro climatic conditions and the proneness of the area to specific hazards.
- Promotion of alternative crop species and cropping patterns keeping in mind the vulnerability of areas to specific hazards
- Surveillance for pests and crop diseases and encourage early reporting.
- Encourage promotion of agro service outlets/enterprise for common facilities, seed and agro input store and crop insurance.

#### **Preparedness Activities before disaster seasons**

- Review and update precautionary measures and procedures, especially ascertain that adequate stock of seeds and other agro inputs are available in areas prone to natural calamities.
- Review the proper functioning of rain gauge stations, have stock for immediate replacement of broken / non-functioning gadgets/equipments, record on a daily basis rainfall data, evaluate the variation from the average rainfall and match it with the rainfall needs of existing crops to ensure early prediction of droughts.

#### **Response Activities:**

Management of control activities following crop damage, pest infestation and crop disease to minimize losses

1. Collection, laboratory testing and analysis of viruses to ensure their control and eradication
2. Pre-positioning of seeds and other agro inputs in strategic points so that stocks are readily available to replace damage caused by natural calamities.
3. Rapid assessment of damage to soil, crop, plantation, irrigation systems, drainage, embankment, other water bodies and storage facilities and the requirements to salvage, replant, or to compensate and report the same for ensuring early supply of seeds and other agro inputs necessary for re-initiating agricultural activities where crops have been damaged.
4. Establishment of public information centers with appropriate and modern means of communication, to assist farmers in providing information

regarding insurance, compensation, repair of agro equipments and restarting of agricultural activities at the earliest.

### **Recovery Activities**

1. Arrange for early payment of compensation and crop insurance dues.
2. Facilitate provision of seeds and other agro inputs.
3. Promotion of drought and flood tolerant seed varieties
4. Review with the community, the identified vulnerabilities and risks for crops, specific species, areas, which are vulnerable to repetitive floods, droughts, other natural hazards, water logging, increase in salinity, pest attacks etc. and draw up alternative cropping plans to minimize impacts to various risks.
5. Facilitate sanctioning of soft loans for farm implements.
6. Establishment of a larger network of soil and water testing laboratories
7. Establishment of pests and disease monitoring system
8. Training in alternative cropping techniques, mixed cropping and other agricultural practices which will minimize crop losses during future disasters

### **Health Department**

#### **Disaster Events**

#### **Prevention Activities:**

- Assess preparedness levels at State, District and Block levels.
- Identification of areas endemic to epidemics and natural disasters
- Identification of appropriate locations for testing laboratories
- Listing and networking with private health facilities
- Developing a network of volunteers for blood donation with blood grouping data
- Strengthening of disease surveillance, ensuring regular reporting from the field level workers (ANMs / LHV etc) and its compilation and analysis at the PHC and District levels, on a weekly basis (daily basis in case of an epidemic or during natural disasters), forwarding the same to the State Disease Surveillance Cell and monthly feedback from the State to the district and from the District to the PHC
- Formation of adequate number of mobile units with trained personnel, testing facilities, communication systems and emergency treatment facilities
- Identification of locations in probable disaster sites for emergency operation camps

- Awareness generation about various infectious diseases and their prevention
- Training and IEC activities
- Training of field personnel, Traditional Birth Attendants, community leaders, volunteers,
- NGOs and CBOs in first aid, measures to be taken to control outbreak of epidemics during and after a disaster, etc
- Arrangement of standby generators for every hospital
- Listing of vehicles, repair of departmental vehicles that will be requisitioned during emergencies for transport of injured

### **Preparedness Activities before Disaster Seasons**

#### **For heat wave:**

Preparation and distribution of IEC materials, distribution of ORS and other life-saving drugs, training of field personnel on measures to be taken for management of patients suspected to be suffering from heatstroke;

#### **For flood and cyclone:**

- Assessment and stock piling of essential medicines, anti snake venom, halogen tablets, bleaching powders. ORS tablets, Pre-positioning of mobile units at vulnerable and strategic points

#### **Response activities:**

Stock piling of life-saving drugs, detoxicants, anesthesia, Halogen tablets in vulnerable areas

Strengthening of drug supply system with powers for local purchase during Level-0

Situational assessment and reviewing the response mechanisms in known vulnerable pockets

Ensure adequate availability of personnel in disaster site

Review and update precautionary measures and procedures.

#### **Sanitation**

- Dispensing with post-mortem activities during L1, L2 and L3 when the relatives and/or the competent authority are satisfied about cause of death
- Disinfections of water bodies and drinking water sources
- Immunization against infectious diseases
- Ensure continuous flow of information.

#### **Recovery Activities**

- Continuation of disease surveillance and monitoring

- Continuation of treatment, monitoring and other epidemic control activities till the situation is brought under control and the epidemic eradicated
- Trauma counseling
- Treatment and socio-medical rehabilitation of injured or disabled persons
- Immunization and nutritional surveillance
- Long term plans to progressively reduce various factors that contribute to high level of vulnerability to diseases of population affected by disasters

## **Epidemics**

### **Preventive Activities:**

- Supply of safe drinking water, water quality monitoring and improved sanitation
- Vector Control programme as a part of overall community sanitation activities
- Promotion of personal and community latrines
- Sanitation of sewage and drainage systems
- Development of proper solid waste management systems
- Surveillance and spraying of water bodies for control of malaria
- Promoting and strengthening Primary Health Centers with network of paraprofessionals to improve the capacity of surveillance and control of epidemics
- Establishing testing laboratories at appropriate locations to reduce the time taken for early diagnosis and subsequent warning
- Establishing procedures and methods of coordination with the Health Department, other local authorities/departments and NGOs to ensure that adequate prevention and preparedness
- measures have been taken to prevent and / or minimize the probable outbreak of epidemics
- Identification of areas prone to certain epidemics and assessment of requirements to control and ultimately eradicate the epidemic
- Identification of appropriate locations and setting up of site operation camps for combating epidemics
- Listing and identification of vehicles to be requisitioned for transport of injured animals.
- Vaccination of the animals and identification of campsites in the probable areas
- Promotion of animal insurance
- Tagging of animals
- Arrangement of standby generators for veterinary hospitals
- Provision in each hospital for receiving large number of livestock at a time
- Training of community members in carcasses disposal

### **Preparedness activities before disaster seasons**

- Stock piling of water, fodder and animal feed
- Pre-arrangements for tie-up with fodder supply units
- Stock-piling of surgical packets
- Construction of mounds for safe shelter of animals
- Identification of various water sources to be used by animals in case of prolonged hot and dry spells
- Training of volunteers & creation of local units for carcass disposal
- Municipalities / Gram Pranchayats to be given responsibility for removing animals likely to become health hazards.

### **Response Activities:**

- Control of animal diseases, treatment of injured animals, Protection of lost cattle.
- Supply of medicines and fodder to affected areas.
- Ensure adequate availability of personnel and mobile team.
- Disposal of carcasses ensuring proper sanitation to avoid outbreak of epidemics.
- Establishment of public information centre with a means of communication, to assist in providing an organized source of information.
- Mobilizing community participation for carcass disposal.

### **Recovery Activities:**

- Assess losses of animals assets and needs of persons and communities.
- Play a facilitating role for early approval of soft loans for buying animals and ensuring insurance coverage and disaster proof housing or alternative shelters/ mounds for animals for future emergencies.
- Establishment of animal disease surveillance system

### **Water Supplies and Sanitation (GWSSB)**

#### **Prevention Activities:**

- Provision of safe water to all habitats
- Clearance of drains and sewerage systems, particularly in the urban areas
- Assess preparedness level
- Annual assessment of danger levels & wide publicity of those levels

- Identify flood prone rivers and areas and activate flood monitoring mechanisms
- Provide water level gauge at critical points along the rivers, dams and tanks
- Identify and maintain of materials/tool kits required for emergency response
- Stock-pile of sand bags and other necessary items for breach closure at the Panchayat level

### **Preparedness Activities for disaster seasons**

- Prior arrangement of water tankers and other means of distribution and storage of water.
- Prior arrangement of stand-by generators
- Adequate prior arrangements to provide water and halogen tablets at identified sites to used as relief camps or in areas with high probability to be affected by natural calamities.
- Rising of tube-well platforms, improvement in sanitation structures and other infrastructural measures to ensure least damages during future disasters
- Riser pipes to be given to villagers

### **Response Activities:**

- Disinfections and continuous monitoring of water bodies.
- Ensuring provision of water to hospitals and other vital installations.
- Provision to acquire tankers and establish other temporary means of distributing water on an emergency basis.
- Arrangement and distribution of emergency tool kits for equipments required for dismantling and assembling tube wells, etc.
- Carrying out emergency repairs of damaged water supply systems.
- Disinfection of hand pumps to be done by the communities through prior awareness activities & supply of inputs.
- Monitoring flood situation.
- Dissemination of flood warning.
- Ensure accurate dissemination of warning messages to GPs & Taluka with details of flow.
- Monitoring and protection of irrigation infrastructures.
- Inspection of bunds of dams, irrigation channels, bridges, culverts, control gates and overflow channels.
- Inspection and repair of pumps, generator, motor equipments, station buildings.
- Community mobilization in breach closure

### **Recovery Activities:**

- Strengthening of infrastructure.
- Sharing of experiences and lessons learnt.
- Training to staff, Review and documentation.
- Development of checklists and contingency plans.
- Strengthening of infrastructure and human resources.
- Review and documentation.
- Sharing of experiences and lessons learnt.
- Training of staff.
- Development of checklists and contingency plans.

## **Police:**

### **Prevention Activities:**

- Keep the force in general and the RAF in particular fighting fit for search, rescue, evacuation and other emergency operations at all times through regular drills.
- Procurement and deployment of modern emergency equipments while modernizing existing infrastructure and equipments for disaster response along with regular training and drills for effective handling of these equipments.
- Focus on better training and equipments for RAF for all types of disasters.
- Rotation of members of GSDRAF so that the force remains fighting fit.
- Ensure that all communication equipments including wireless are regularly functioning and deployment of extra wireless units in vulnerable pockets.
- Ensure inter changeability of VHF communication sets of police and GSDMA supplied units, if required.
- Keeping close contact with the District Administration & Emergency Officer.
- Superintendent of Police be made Vice Chairperson of District Natural Calamity Committee.
- Involvement of the local army units in response planning activities and during the preparation of the contingency plans, ensure logistics & other support to armed forces during emergencies.

### **Response Plan:**

- Security arrangements for relief materials in transit and in camps etc.
- Senior police officers to be deployed in control rooms at State & district levels during L 1
- Level deployment onwards.
- Deploy personnel to guard vulnerable embankments and at other risk points.
- Arrangement for the safety.

- Coordinate search, rescue and evacuation operations in coordination with the administration
- Emergency traffic management
- Maintenance of law and order in the affected areas
- Assist administration in taking necessary action against hoarders, black marketers etc.

## **Civil Defense**

### **Prevention Activities**

- Organize training programmes on first-aid, search, rescue and evacuation.
- Preparation and implementation of first aid search and rescue service plans for major public events in the State.
- Remain fit and prepared through regular drills and exercises at all times.

### **Response Activities**

- Act as Support agency for provision of first aid, search and rescue services to other emergency service agencies and the public.
- Act as support agency for movement of relief.
- Triage of casualties and provision of first aid and treatment.
- Work in co-ordination with medical assistance team.
- Help the Police for traffic management and law and order.

## **Fire Services:**

### **Prevention Activities:**

- Develop relevant legislations and regulations to enhance adoption of fire safety measures.
- Modernization of fire-fighting equipments and strengthening infrastructure.
- Identification of pockets, industry , etc. which highly susceptible to fire accidents or areas, events which might lead to fires, building collapse, etc. and educate people to adopt safety measures. Conduct training and drills to ensure higher level of prevention and preparedness.
- Building awareness in use of various fire protection and preventive systems.
- Training the communities to handle fire emergencies more effectively.
- VHF network for fire services linked with revenue & police networks.



- Training of masons & engineers in fireproof techniques.
- Making clearance of building plans by fire services mandatory.

### **Response Activities:**

- Rescue of persons trapped in burning, collapsed or damaged buildings, damaged vehicles, including motor vehicles, trains and aircrafts, industries, boilers, trenches & tunnels.
- Control of fires and minimizing damages due to explosions.
- Control of dangerous or hazardous situations such as oil, gas and hazardous materials spill.
- Protection of property and the environment from fire damage.
- Support to other agencies in the response to emergencies.
- Investigation into the causes of fire and assist in damage assessment.

### **Civil Supplies:**

#### **Preventive Activities**

- Construction and maintenance of storage goods storage at strategic locations
- Stock piling of food and essential commodities in anticipation of disaster.
- Take appropriate preservative methods to ensure that food and other relief stock are not damaged during storage, especially precautions against moisture, rodents and fungus infestation.

#### **Response Activities**

- Management of procurement
- Management of material movement
- Inventory management

#### **Recovery Activities**

Conversion of stored, unutilized relief stocks automatically into other schemes like Food for Work. Wherever, it is not done leading to damage of stock, it should be viewed seriously.

### **Public Works/ Rural Development Departments**

#### **Prevention Activities:**

- Keep a list of earth moving and clearing vehicles / equipments (available with Govt. Departments, PSUs, and private contractors, etc.) and formulate a plan to mobilize those at the earliest
- Inspection and emergency repair of roads/ bridges, public utilities and buildings

### **Response Activities**

- Clearing of roads and establish connectivity. Restore roads, bridges and where necessary make alternate arrangements to open the roads to traffic at the earliest
- Mobilization of community assistance for clearing blocked roads
- Facilitate movement of heavy vehicles carrying equipments and materials
- Identification and notification of alternative routes to strategic locations
- Filling of ditches, disposal of debris, and cutting of uprooted trees along the road
- Arrangement of emergency tool kit for every section at the divisional levels for activities like clearance (power saws), debris clearance (fork lifter) and other tools for repair and maintenance of all disaster response equipments.

### **Recovery Activities:**

- Strengthening and restoration of infrastructure with an objective to eliminate the factor(s) which caused the damage.
- Sharing of experiences and lessons learnt.
- Training to staff, Review and documentation.
- Development of checklists and contingency plans.

## **Energy: PGVCL**

### **Prevention Activities:**

- Identification of materials/tool kits required for emergency response.
- Ensure and educate the minimum safety standards to be adopted for electrical installation and equipments and organise training of electricians accordingly.
- Develop and administer regulations to ensure safety of electrical accessories and electrical installations.
- Train and have a contingency plan to ensure early electricity supply to essential services during emergencies and restoration of electric supply at an early date.
- Develop and administer code of practice for power line clearance to avoid electrocution due to broken / fallen wires.

- Strengthen high-tension cable towers to withstand high wind speed, flooding and earthquake, modernize electric installation, and strengthen electric distribution system to ensure minimum damages during natural calamities.
- Conduct public/industry awareness campaigns to prevent electric accidents during normal times and during and after a natural disaster.

### **Response Activities:**

- Disconnect electricity after receipt of warning.
- Attend sites of electrical accidents and assist in undertaking damage assessment.
- Stand-by arrangements to ensure temporary electricity supply.
- Prior planning & necessary arrangements for tapping private power plants like those belonging to ICCL, NALCO, RSP during emergencies to ensure uninterrupted power supply to the Secretariat, SRC, GSDMA, Police Headquarters, All India Radio, Doordarshan, hospitals, medical colleges, Collector Control Rooms and other vital emergency response agencies.
- Inspection and repair of high tension lines /substations/transformers/poles etc.
- Ensure the public and other agencies are safeguarded from any hazards, which may have occurred because of damage to electricity distribution systems.
- Restore electricity to the affected area as quickly as possible.
- Replace / restore of damaged poles/ salvaging of conductors and insulators.

## **Fisheries**

### **Prevention Activities**

- Registration of boats and fishermen.
- Building community awareness on weather phenomena and warning system especially on Do's and Don'ts on receipt of weather related warnings.
- Assist in providing life saving items like life jackets, hand radios, etc.
- Certifying the usability of all boats and notifying their carrying capacities.
- Capacity building of traditional fishermen and improvisation of traditional boats which can be used during emergencies.
- Train up young fishermen in search & rescue operation and hire their services during emergency

## **Response Activities**

- Ensure warning dissemination to fishing communities living in vulnerable pockets.
- Responsible for mobilizing boats during emergencies and for payment of wages to boatmen hired during emergencies.
- Support in mobilization and additional deployment of boats during emergencies.
- Assess the losses of fisheries and aquaculture assets and the needs of persons and communities affected by emergency.

## **Recovery Activities**

Provide compensations and advice to affected individuals, community.

## **Forest Department**

### **Prevention activities**

- Promotion of shelter belt plantation
- Publishing for public knowledge details of forest cover, use of land under the forest department, the rate of depletion and its causes
- Keep saws (both power and manual) in working conditions
- Provision of seedling to the community and encouraging plantation activities, promoting nurseries for providing seedlings in case of destruction of trees during natural disasters

## **Transport Department:**

### **Prevention Activities**

- Listing of vehicles which can be used for emergency operation.
- Safety accreditation, enforcement and compliance
- Ensuring vehicles follow accepted safety standards.
- Build awareness on road safety and traffic rules through awareness campaign, use of different IEC strategies and training to school children.
- Ensure proper enforcement of safety regulations Response Activities.
- Requisition vehicles, trucks, and other means of transport to help in the emergency operations.
- Participate in post impact assessment of emergency situation
- Support in search, rescue and first aid.
- Cooperate and appropriation of relief materials.

## **Recovery Activities**

- Provision of personal support services e.g. counseling.
- Repair/restoration of infrastructure e.g. roads, bridges, public amenities.
- Supporting the GPs in development of storage and in playing a key role and in the coordination of management and distribution of relief and rehabilitation materials.
- The G.P. members to be trained to act as an effective interface between the community,
- NGOs and other developmental organizations.
- Provide training so that the elected representatives can act as effective supportive agencies for reconstruction and recovery activities.

## **Panchayati Raj Institutions**

### **Preventive Activities**

- Develop prevention/mitigation strategies for risk reduction at community level.
- Training of elected representatives on various aspects of disaster management
- Public awareness on various aspects of disaster management
- Organize mock drills
- Promote and support community-based disaster management plans.
- Support strengthening response mechanisms at the G.P. level (e.g., better communication, local storage, search & rescue equipments, etc.).
- Clean drainage channels, trimming of branches before cyclone season.
- Ensure alternative routes/means of communication for movement of relief materials and personnel to marooned areas or areas likely to be marooned.
- Assist all the government departments to plan and priorities prevention and preparedness activities while ensuring active community participation.

### **Response Activities**

- Train ups the G.P. Members and Support for timely and appropriate delivery of warning to the community.
- Clearance of blocked drains and roads, including tree removal in the villages.
- Construct alternative temporary roads to restore communication to the villages.
- PRIs to be a part of the damage survey and relief distribution teams to ensure popular participation.
- Operation emergency relief centers and emergency shelter.
- Sanitation, drinking water and medical aid arrangements.

- IEC activities for greater awareness regarding the role of trees and forests for protection during emergencies and also to minimize environmental impact which results owing to deforestation like climate change, soil erosion, etc.
- Increasing involvement of the community, NGOs and CBOs in plantation, protection and other forest protection, rejuvenation and restoration activities.
- Plan for reducing the incidence, and minimize the impact of forest fire.

#### **Response Activities:**

- Assist in road clearance.
- Provision of tree cutting equipments
- Units for tree cutting and disposal to be put under the control of GSDMA, SRC, Collector during Level 1.
- Provision of building materials such as bamboos etc for construction of shelters

#### **Recovery Activities:**

Take up plantation to make good the damage caused to tree cover.

### **Information & Public Relations Department**

#### **Prevention Activities**

- Creation of public awareness regarding various types of disasters through media campaigns.
- Dissemination of information to public and others concerned regarding do's and don'ts of various disasters
- Regular Liasoning with the media

#### **Response Activities**

- Setting up of a control room to provide authentic information to public regarding impending emergencies
- Daily press briefings at fixed times at district level to provide official version
- Media report & feedback to field officials on a daily basis from Level 1 onwards
- Keep the public informed about the latest emergency situation (area affected, lives lost, etc).

- Keep the public informed about various post-disaster assistances and recovery programmers.

### **Revenue Department**

- Co-ordination with Govt. of Gujarat Secretariat and Officers of Govt. of India
- Overall control & supervision
- Damage assessment, finalization of reports and declaration of Level 1/Level 2 disasters
- Mobilization of finance

### **Home Department**

- Requisition, deployment and providing necessary logistic support to the armed forces
- Provide maps for air dropping, etc.

### **Gujarat Disaster Rapid Action Force**

#### **Response**

- To be trained and equipped as an elite force within the Police Department and have the capacity to immediately respond to any emergency.
- Unit to be equipped with life saving, search & rescue equipments, medical supplies, security arrangements, communication facilities and emergency rations and be self-sufficient.
- Trained in latest techniques of search, rescue and communication in collaboration with international agencies

### **Warning dissemination**

An early warning system can be implemented as a chain of information communication systems and comprises sensors, event detection, decision subsystems. They work together to forecast and signal disturbances that adversely affect the stability of the physical world, providing time for the response system to prepare for the adverse event and to minimize its impact.

#### **EWS Observer Controller Model and the Subsystem**

It prevents loss of life and reduces the economic and material impact of disasters. To be effective, early warning systems need to actively involve the communities at risk, facilitate public education and awareness of risks, effectively disseminate alerts, and warnings and ensure there is constant state of preparedness. A complete and effective early warning system supports four main functions: risk analysis, monitoring and warning; dissemination and communication; and a response capability.

## **Resource Mobilization**

Any disaster happens in district so resources are very important for response disaster. Resource mobilization is one of most important crucial activity. As mentioned above about IDRN and SDRN portal are have information regarding which kind of resource are available and location of its. IDRN and SDRN should use for resource mobilization. DDMC, TDMC, CDMC and VDMC should be update regularly.

## **Seeking external Help for assistance**

In case of very big disaster, it is need to take help from external authority like, other district, state government and central government

## **First Assessment Report**

It is very important to report on time in any kind of disasters; natural disasters as well as manmade disasters.

## **Media Management/Coordination/Information dissemination**

The role of media, both print and electronic, in informing the people and the authorities during emergencies becomes critical, especially the ways in which media can play a vital role in public awareness and preparedness through educating the public about disasters; warning of hazards; gathering and transmitting information about affected areas; alerting government officials, helping relief organizations and the public towards specific needs; and even in facilitating discussions about disaster preparedness and response. During any emergency, people seek up-to-date, reliable and detailed information.

The State Government has established an effective system of collaborating with the media during emergencies. At the State Emergency Operation Centre (SEOC), a special media cell has been created which is made operational during emergencies. Both print and electronic media is regularly briefed at predetermined time intervals about the events as they occur and the prevailing situation on ground.

## **Emergency Response Functions**

Responsible for assuring specific operations according to objectives and plans to address the immediate impacts of the incident. Taskforces under the operation section will deal with specific functional tasks, such as search and



rescue, the provision of water or shelter. The composition and size of these taskforces depends on the nature of the incident.

The District administration of Bhavnagar has identified 16 expected task forces for key response operation functions that are describe below. Additional taskforces can be added under the operations section as needed by the circumstances of a disaster. Each Taskforce is led by one organization and supporter by other organizations.

### **Emergency Operation Taskforce Functions**

<b>Sr. No.</b>	<b>Emergency Operation Taskforce</b>	<b>Functions</b>
1	Coordination and Planning	Coordinate early warning, Response & Recovery Operations
2	Administration and Protocol	Support Disaster Operations by efficiently completing the paper work and other Administrative tasks needed to ensure effective and timely relief assistance
3	Warning	Collection and dissemination of warnings of potential disasters
4	Law and Order	Assure the execution of all laws and maintenance of order in the area affected by the incident.
5	Search and Rescue (including Evacuation)	Provide human and material resources needed to support local evacuation, search and rescue efforts.
6	Public Works	Provide the personnel and resources needed to support local efforts to reestablish normally operating infrastructure.
7	Water	Assure the provision of sufficient potable water for human and animal consumption (priority), and water for industrial and agricultural uses as appropriate.
8	Food and Relief Supplies	Assure the provision of basic food and other relief needs in the affected communities.
9	Power	Provide the resources to reestablish normal power supplies and systems in affected communities.
10	Public Health and sanitation	Provide personnel and resources to address pressing public health problems and re-establish normal health care systems.
11	Animal Health and Welfare	Provision of health and other care to animals affected by a disaster
12	Shelter	Provide materials and supplies to ensure

		temporary shelter for disaster-affected populations
13	Logistics	Provide Air, water and Land transport for evacuation and for the storage and delivery of relief supplies in coordination with other task forces and competent authorities.
14	Survey (Damage Assessment)	Collect and analysis data on the impact of disaster, develop estimates of resource needs and relief plans, and compile reports on the disaster as required for District and State authorities and other parties as appropriate.
15	Telecommunications	Coordinate and assure operation of all communication systems (e.g; Radio, TV, Telephones, Wireless) required to support early warning or post disaster operations.
16	Media (Public Information)	Provide liaison with and assistance to print and electronic media on early warning and post-disaster reporting concerning the disaster.

The specific response roles and responsibilities of the taskforces indicated above is that these roles and responsibilities will be execute and coordinated through the ICS/GS system. For example, in flood, search & rescue would come under the Operations section, Transport would come under the Logistics Section and Public Information under the Public Information Unit.

### **Humanitarian Relief and Assistance**

Response defines provision for assistance/ intervention during and after emergency. Response plan includes clear Incident Command System (ICS) operated through emergency operation centers (EOCs) with effective 3 C (Command, Control and Communication) mechanism. ICS covers early warning, search and rescue, humanitarian assistance, Food, medical response, relief, temporary shelter, water and sanitation, law and order, animal care, public grievance, recovery and rehabilitation.

Specific Task Forces should be formed for Food distribution, drinking water management, medicine and health related facility, clothes distribution, other essential needs and shelter related work. It is also essential to repair and restoration of basic animinities and management of VIP visits.

## Helpline

Establish Information/ reception centers and setting up telephone helpline numbers for public utility. True information must be release by media to the concerned person and in case of rescue activity public can call on help line number. in that point of view help line must be activate at DEOC.

## Reporting

Disasters include natural events such as earthquakes, volcanic eruptions and hurricanes, and situations sparked by human actions, such as oil spills, radiation leaks and chemical accidents.

There are two main phases to disaster reporting

- The initial period
- The longer-term aftermath

It is useful to report the chronology of events to create an accurate picture of what has happened, and it is important to avoid laying the blame for any disaster without having strong reasons to do so.

## Information Management

### **Taskforce Leader: District Information Officer**

*Note: As per the above format the Media taskforce of the district will prepare its taskforce action plan.*

### **Activation of the Plan**

The District Disaster Response structure is activated on warning or occurrence of a disaster. Task Forces are activate on a specific request of the District Collector or according to pre-determined SOPs, as appropriate for the nature of the hazard or disaster. Activation can be:

In anticipation of a District level disaster, or

Occur in response to a specific event or problem in the district.

On activation, coordination of warning and response efforts will operate from the District Control Room and Information Centre (DCIC). The DCIC operations plan and SOPs are providing in Annexure.

To activate a task force, the Collector or designated Incident Commander will issue an activation order. This order will indicate:

The nature of needs to be addressed

The type of assistance to be provided

The time limit within which assistance is needed

The District or other contacts for the provision of the assistance

Other Task Forces with which coordination should take place, and

Financial resources available for task force operations.

Special powers are conferred on Incident Controller during disasters. The Principle organization leading each task force is responsible for alerting the appropriate authority when use of these special powers is required to accomplish warning, relief or recovery objectives give to a task force.

### **Situation Report**

Information department is also responsible for giving current situation report in any kind of disasters.

### **Media release**

Media can play crucial role during response time. Media management to ensure precise communication of the impact of disaster and relief measures being taken and generate goodwill among community and other stakeholders.

### **Demobilization and winding up**

The end of emergency shall be declared through an ALL CLEAR siren/message. The Incident Controller in consultation with the ICS GROUP leaders shall declare the same once the situation is totally controlled and normalcy is restore and after any kind of disasters proper documentation of the event, success stories and lessons for future is also essential.

## Chapter-7

### Recovery Measures:

Recovery is defined as decisions and actions taken after a disaster with a view to “restoring or improving life and assets of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery and reconstruction (R&R) or comprehensive rehabilitation is the last step in cycle of disaster management. In addition, this is the phase of new cycle, where the opportunity to reconstruction and rehabilitation should be utilized for building a better and more safe and resilient society.

Strategies for restoring physical infrastructure and lifeline services may be:

#### General policy guidelines

##### Build Back Better

This ensures greater resilience, preparedness; and minimum loss in an event of future disaster.

##### Participatory Planning

Infrastructure improvement measures need to be balanced with, or at least be in line with, the social and cultural needs and preferences of beneficiaries

##### Coordination

A plan of recovery will help better coordination between various development agencies.

Damage Assessment and Needs Assessment shall be the basis of recovery planning Various Sectors for recovery process may be Essential Services- Power, Water, Communication, Transport, Sanitation, Health Infrastructural: Housing, Public Building and Roads Livelihood: Employment , Agriculture, Cottage Industry, Shops and Establishments Basic services such as power, water supply, sanitation, wastewater disposal etc. should be restored in shortest possible time. Alternate arrangement of water supply, temporary sanitation facilities can be sought with help of special agencies.

Special arrangements for provision of essential services should be ensured. It can include creating temporary infrastructure for storage and distribution of water supply, running tankers, and power supply and sanitation facilities.

## Detailed damage and loss assessment

### Restoration of Essential Services and Infrastructure

Following tables are to be filled after an event of disaster

**Table No. 7.1**

#### Power

Item/ Services	No. of unit damag ed	No of village s affect ed	Popul ation affect ed	Recovery measures	Implem enting agency	Tentative Duration (Months)	Budget
Feeder							
Transformer s							
HT Lines							
LT Lines							
Electric Poles							

**Note:** To be planned after initial damage assessment by departments

**Table No. 7.2**

#### Health

Item/ Services	PHC (village name)	CHC	Sub Centre	Drug Store	Recover y Measure s	Implementi ng agency	Tentativ e Duratio n (Months)	Budge t
No of buildings damaged								
No of health centres inaccessib le								
Refrigerati on and other vital equipment for storage								
Drugs and medicines	(Locatio n and							

perished	qty)							
No of Ambulance damaged								

**Note:** To be planned after initial damage assessment by departments

**Table No. 7.3**  
**Social**

**People in need of immediate rehabilitation including psychosocial support (due to disaster)**

Village	Men	Women	Children	Total	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget

**Table No. : 7.4**  
**Water Supply**

Type	Village	No. of unit affected	Faliya/ Population affected	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget
Well							
Bore wells							
Pond							
Water Supply Disrupted							
Contamination							
ESR damaged							
GLR Damaged							
Sump							

Type	Village	No. of unit affected	Faliya/ Population affected	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget
damaged							
Pipe lines damaged							
Stand post damaged							
Cattle trough damaged							
Hand pump							

**Table No. 7.5**  
**Road and Transport**

Road damage	Location	Severity	Km	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget
Panchayat							
State Roads							
National Highway							
Nagar Palika							

Item/ services	Village /Ward	Population	Alternative road/route	Recovery Measures	Implementing Agency	Tentative Duration (Months)	Budget
Road Cut off							
Rail Connectivity							



**Table No. : 7.6**  
**Communication**

<b>Type</b>	<b>Office/Tower Damaged</b>	<b>Villages affected</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
Landline connectivity	(No. of unit and location)					
Mobile connectivity						
Wireless Tower						
Radio						

**Table No. : 7.7**

**Food Supply**

**List of village affected by disruption in food supply**

<b>Type</b>	<b>No. of godown damage</b>	<b>Type of grains perished (Ton)</b>	<b>Qty of grain perished (Ton)</b>	<b>Qty of grain at risk (Ton)</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
Civil Supply								
APMC								
Other								

**Table No. : 7.8**

**Housing**

<b>Partial Damage</b>		<b>Fully Damaged / Collapsed</b>		<b>Recovery Measures</b>	<b>Prog. / Scheme</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
<b>Kucha</b>	<b>Pucca</b>	<b>Kucha</b>	<b>Pucca</b>					

**Table No. : 7.9**  
**Public Utilities**

<b>Public Buildings</b>	<b>Partial damage (No. of units)</b>	<b>Fully Damaged / Collapse d (No. of Unit)</b>	<b>Recovery Measures</b>	<b>Prog/ Scheme</b>	<b>Implementi ng Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
Panchayat							
Educational Buildings							
Aanganwadi							
Hospitals							
Office Buildings							
Market							
Police station							
Community Halls/ Function plots							

**Table No. : 7.10**  
**Restoration of Livelihood**  
**Provisioning of Employment**

<b>Occupational category</b>	<b>No. of workers</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
Skilled laborers				
Unskilled and , Agricultural laborers				
Small and marginal farmers				
Construction workers				
Salt pan workers				
Fisher folk				
Weavers				
Other artisans				

**Table No. : 7.11**  
**Land Improvement**

<b>Land erosion / siltation (Hectare)</b>	<b>HHs affected</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>

**Table No.:7. 12**  
**Agricultural**

<b>Crop failure (Hectare)</b>	<b>HHs affected</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>

**Table No. : 7.13**  
**Nonfarm livelihood**

<b>Cottage Industry</b>	<b>Extent of damage/disruption</b>		<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
	<b>Tools and equipment (Specify no. and type)</b>	<b>Goods and material (Specify type and qty)</b>				
Handloom						
Pottery						
Food Processing						
Diamond sorting etc						
Printing/ Dying						
Other						

**Table No. :7.15**  
**Shops and establishment**

Extent of damage/disruption			Recovery Measures	Implementing Agency	Tentative Duration (Months)	Budget
Building (No. and location)	Tools and equipments (Specify no. and type)	Goods and materials (Specify type and qty)				

### **Long-term recovery programme**

Disaster recovery typically occurs in phases, with initial efforts dedicated to helping those affected meet immediate needs for housing, food and water. As homes and businesses are repaired, people return to work and communities continue with cleanup and rebuilding efforts. Many government agencies, voluntary organizations, and the private sector cooperate to provide assistance and support.

Some individuals, families and communities that are especially hard hit by a disaster may need more time and specialized assistance to recover, and a more formalized structure to support them. Specialized assistance may be needed to address unique needs that are not satisfied by routine disaster assistance programs. It may also be required for very complex restoration or rebuilding challenges. Community recovery addresses these ongoing needs by taking a holistic, long-term view of critical recovery needs, and coordinating the mobilization of resources at the, and community levels.

Oftentimes, committees, task forces or other means of collaboration formed with the goals of developing specific plans for Community recovery, identifying and addressing unmet or specialized needs of individuals and families, locating funding sources, and providing coordination of the many sources of help that may be available to assist. Some collaboration focuses on the community level and relies on the expertise of community planning and economic development professionals. Other collaborations focus on individual and family recovery and are coordinate by social service and volunteer groups. All such efforts hope to lay

the groundwork for wise decisions about the appropriate use of resources and rebuilding efforts.

Under the National Response Framework, Emergency Support Function (ESF) #14 Community Recovery coordinates the resources of federal departments and agencies to support the long-term recovery of States and communities, and to reduce or eliminate risk from future incidents. While consideration of long-term recovery is imbedded in the routine administration of the disaster assistance and mitigation programs, some incidents, due to the severity of the impacts and the complexity of the recovery, will require considerable interagency coordination and technical support.

ESF #14 efforts are driven by State/local priorities, focusing on permanent restoration of infrastructure, housing, and the local economy. When activated, ESF #14 provides the coordination mechanisms for the Federal government to:

- Assess the social and economic consequences in the impacted area and coordinate Federal efforts to address Community recovery issues resulting from an Incident of National Significance;

- Advise on the Community recovery implications of response activities, the transition from response to recovery in field operations, and facilitate recovery decision-making across ESFs;

- Work with State, local, and tribal governments; NGOs; and private-sector organizations to conduct comprehensive market disruption and loss analysis and develop a forward looking market-based comprehensive long-term recovery plan for the affected community;

- Identify appropriate Federal programs and agencies to support implementation of the Community recovery plan, ensure coordination, and identify gaps in resources available;

- Avoid duplication of assistance, coordinate to the extent possible program application processes and planning requirements to streamline assistance, and identify and coordinate resolution of policy and program issues; and

- Determine/identify responsibilities for recovery activities, and provide a vehicle to maintain continuity in program delivery among Federal departments and agencies, and with State, local, and tribal governments and other involved parties, to ensure follow-through of recovery and hazard mitigation efforts.

### **Grievance Redressed System**

Grievance redressed is important aspect in the context of providing need based assistance to affected communities with transparency and accountability. It is also ensures the protection of their rights and entitlements for disaster response services.

## Grievance Redressed System

No.	Key Person/ Establishment	Contact No	Address
1	DEOC/ RAC	0278- 2521554/55	Collector Office-District Emergency Operation centre
2	DDO	0278- 2426810	District Panchayat
3	Police	0278- 2520050	S.P. Office, Bhavnagar

## Matrix form of Sort term and long-term recovery programme

Disaster recovery has three distinct but interrelated meanings. First, it is a goal that involves the restoration of normal community activities that were disrupted by disaster impacts – in most people’s minds, exactly as they were before the disaster struck. Second, it is a phase in the emergency management cycle that begins with stabilization of the disaster conditions (the end of the emergency response phase) and ends when the community has returned to its normal routines. Third, it is a process by which the community achieves the goal normal life.

### SHORT TERM AND LONG TERM RECOVERY TIME TABLE

#### Recovery and Reconstruction

Activity/Action	Estimate of Duration	Estimate of Duration
Period	Short-Term	Long-Term
Warning	Hours to a few days	
Response/Operations	Ongoing	Ongoing
Emergency	1-15 days	1-60 days
Preparation of damage assessment	1-4 days	4-8 days
Disaster declaration (state or federal)	1-10 days	0-30 days
Federal/State mitigation Strategy	1-15 days	15-30 days
Recovery	7-150 days	150-365 days
Temporary building moratorium	<=30 days	<=60 days
Letter of intent to submit HM Grant	<=60 days	<=60 days
Short-term reconstruction	<= 1 year	200-365 days
State mitigation	<= 180 days	365 days
HMGP proposal	70-200 days	200-365 days
Long-term reconstruction	100 days to 5 years	5 to 10 years

## **Chapter-8**

### **Financial Arrangement**

#### **Financial resources for implementation of plan**

To ensure the long-term sustenance and permanency of the organization funds would be generated and deployed on an ongoing basis. There are different ways to raise the fund in the State as described below

#### **National and state disaster Response fund**

To carry out Emergency Response & Relief activities after any disaster the State Disaster Response Fund is making available to Commissioner of Relief, Revenue Department under which the Central Government will share 75% and the Govt. of Gujarat has to share 25% as per the recommendation of 13th Finance Commission.

#### **National and state disaster mitigation fund**

The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was set in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur.

#### **State Budget**

The Authority, submit to the State Government for approval a budget in the prescribed form for the next financial year, showing the estimated receipts and expenditure, and the sums which would be required from the State Government during that financial year. As per the provisions of The Gujarat State Disaster Management Act, 2003 the Authority may accept grants, subventions, donations and gifts from the Central or State Government or a local authority or any individual or body, whether incorporated or not.

## Centrally Sponsored Scheme

Name	Purpose	Finance Arrangements	Activities that can be take under scheme	Nodal Agency
NDRF (NCCF)	Relief Assistance	100% Central Govt	Cash and kind relief	Revenue Department
SDRF (CRF)	Relief Assistance	75% Centre, 25% State	Cash and kind relief	Revenue Department
Planning Commission (13 Finance commission) Year 2011-15	Capacity Building	100% Centre	Trainings Awareness Generation IEC material Mock drills	Revenue Department

## District Planning Fund

For preparedness, mitigation, capacity building and recovery fund can be raised from MP or MLA grant as received for developmental work. also from departmentally arrangement.

## Partnerships

There are projects/schemes in which funding can be done by a public sector authority and a private party in partnership (also called on PPP mode funding). In this State Govt. along with Private organizations and with Central Govt., share their part.

## Disaster Insurance

### Risk Transfer / Risk Distribution

Risk transfer or risk distribution refers to compensation cover against loss of life or assets in case of any disaster event. Insurance and reinsurance mechanisms and products against natural and manmade disasters have rapidly evolved in last decade. According to UNISDR, "Insurance is a well-known form of risk transfer, where coverage of a risk is obtained from an insurer in exchange for ongoing premiums paid to the insurer. Risk transfer can occur informally within family and community networks where there are reciprocal expectations of mutual aid by means of gifts or credit, as well as formally, where governments, insurers, multi-lateral banks and other large risk-bearing entities establish mechanisms to help cope with losses in major events. Such mechanisms include insurance and re-



insurance contracts, catastrophe bonds, contingent credit facilities and reserve funds, where the costs are covered by premiums, investor contributions, interest rates and past savings. Linkages with government insurance schemes like Rashtriya Swasthya Bima Yojana, Aam Admi Bima Yojana can be extensively taken up for risk transfer. Linkages can be done for teaching staff and children with existing insurance schemes. Livestock insurance can also be taken up through animal husbandry department. Coverage of crop insurance should be increased specifically for small and marginal farmers. Weather/rainfall insurance can also be explored with various existing schemes.

*(DDMC should draw up their own risk transfer/distribution framework and action plan in this regard)*

### **Micro financing**

Microfinance has proven to be an essential element for people in disaster situations, enabling them to start to rebuild their lives and improve their living conditions. However, in recent times there have been crisis situations where massive injections of donor funding—including capital for microfinance operations—have not achieved their intended purpose, largely because there was insufficient local capacity to deliver services in a timely and appropriate manner.

## Chapter-9

### Maintenance of Plan

DDMC shall compile its learning and proposed new mechanisms for improvement of the capacity to deal with disasters.

#### Schedule for updation of plan

District Disaster Management Plan (DDMP) updated by Disaster management cell, collector office in the month of May-June every year as a part of pre monsoon preparedness.

#### Schedule for revision of plan

DDMP revises in the month of October-November every year by the Disaster Management Cell of collector office.

#### Schedule for Mockdrills

Plan Maintenance is a dynamic process of updating plan on a periodic basis. It is based on learning and from the last disaster (As per under Mention) and mock drill exercise.

Major Learning based on experience of last disasters and mock drills (on planning/implementation/compliance)	Revisions adopted/proposed	Remarks
Flood	May-June	Highly affected area of the district
Chemical disaster	Jan, Feb	Due to MAH unit (Under Factory act-1947)
Tsunami	June, Oct	Due to coastal belt
Cyclone	May- June and Oct. Nov.	Due to Coastline

Certified/ Approved By \_\_\_\_\_ Collector Bhavnagar

# Chapter-10

## Incident Response System

### Introduction:

The Incident Response System (IRS) is a system of management by objectives through Incident Action Plan (IAP). It takes care of any expanding incident through an organisational structure of Command Staff, Sections, Branches, Divisions, Groups, Units, resources and span of control, called Incident Response Team (IRT)

As per NDMA's IRS guidelines, IRT at District, Sub-Division, Tehsil and Block level should be constituted under the written directives of District Magistrate (DM). These teams will include experienced officers / employees at all levels and respond to all natural and man-made disasters. The lowest administrative unit (Sub-Division, Tehsil or Block) will be the first responder as the case may be. IRT at all levels will have same structure, i.e. IC supported with Operations, Planning and Logistics Sections. The IRTs are to be pre- designated at all levels.

### Incident Response System

#### Operations Section (OS)

The OS deals with all types of field level tactical operations directly applicable to the management of an incident. This section is headed by an Operation Section Chief (OSC). In addition, a deputy may be appointed to assist the OSC for discharging his functions depending on the magnitude of the work load. OS is further sub-divided into Branches, Divisions and Groups which assist the OSC / IC in the execution of the field operations.

#### Operations Section Chief (OSC)

On activation of the OS, the OSC will assume command of all the field operations and will be fully responsible for directing all tactical actions to meet the incident objectives.

The OSC will report to the IC. He will be responsible for activation, deployment and expansion of his Section as per IAP. As the operational activities increase and because of geographical reasons, the OSC will introduce or activate and expand the Branch into Divisions for proper span of control and effective supervision.

## **Roles and Responsibilities of Operations Section Chief (OSC)**

### **The Operations Section Chief will:**

1. Coordinate with the activated Section Chiefs;
2. Manage all field operations for the accomplishment of the incident objectives;
3. Ensure the overall safety of personnel involved in the OS and the affected communities;
4. Deploy, activate, expand and supervise organizational elements (Branch, Division, Group, etc,) in his Section in consultation with IC and in accordance with the IAP;
5. Assign appropriate personnel, keeping their capabilities for the task in mind and maintain On Duty Officers list (IRS Form-007) for the day as enclosed in Annexure-VII;
6. Request IC for providing a Deputy OSC for assistance, if required;
7. Brief the personnel in OS at the beginning of each operational period;
8. Ensure resolution of all conflicts, information sharing, coordination and cooperation between the various Branches of his Section;
9. Prepare Section Operational Plan in accordance with the IAP; if required;
10. Suggest expedient changes in the IAP to the IC;
11. Consult the IC from time-to-time and keep him fully briefed;
12. Determine the need for additional resources and place demands accordingly and ensure their arrival;
13. Ensure record of various activities performed (IRS Form-004 enclosed in Annexure-IV) by members of Branches, Divisions; Units/Groups are collected and maintained in the Unit Log IRS Form-003

## **Planning Section (PS)**

The PS deals with all matters relating to the planning of the incident response. It is headed by the Planning Section Chief (PSC). This section helps the IC in determining the objectives and strategies for the response. It works out the requirements for resources, their allocation and subsequent utilization. It maintains up-to-date information about the ongoing response and prepares IAP. For the closing phase of the Operations, this Section also prepares the Incident Demobilization Plan (IDP).

## **Planning Section Chief (PSC)**

The Planning Section Chief is responsible for collection, evaluation, dissemination and use of information. It keeps track of the developing scenario and status of the resources. In case of need, the PS may also have Technical Specialist for addressing the technical planning matters in the management of an incident.

A list of such specialists will be kept available in the PS. The PSC reports to the IC and will be responsible for the activation of Units and deployment of personnel in his Section as per requirement.

## **Roles and Responsibilities of Planning Section Chief**

### **The Planning Section Chief will:**

1. Coordinate with the activated Section Chiefs for planning and preparation of IAP in consultation with IC.
2. Ensure that decisions taken and directions issued in case of sudden disasters when the PS had not been activated are obtained from the IMO (Command Staff) and incorporated in the IAP.
3. Ensure collection, evaluation, and dissemination of information about the incidents including weather, environment toxicity, availability of resources etc. from concerned Composition of Planning Section Technical Specialist (if required) Demobilization Unit, Documentation Unit, Situation Unit Resource Unit departments and other sources. The PS must have a databank of available resources with their locations from where it can be mobilized.
4. Coordinate by assessing the current situation, predicting probable course of the incident and preparing alternative strategies for the Operations by preparing the IAP. The IAP contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period (24 hours is considered as one operational period). The plan may be oral or written. Written plan may have a number of attachments, including incident objectives, organization assignment list IRS Form-005 (enclosed in Annexure-V), incident communication plan IRS Form-009 (enclosed in Annexure-IX), demobilization plan IRS Form-010 (enclosed in Annexure-X), traffic plan, safety plan, and incident map etc. The major steps for preparing IAP are as follows;
  - ✓ Initial information and assessment of the damage and threat;

- ✓ Assessment of resources required;
  - ✓ Formation of incident objectives and conducting strategy meetings;
  - ✓ Operations briefing;
  - ✓ Implementation of IAP;
  - ✓ Review of the IAP; and
  - ✓ Formulation of incident objectives for the next operational period, if required;
5. Ensure that Incident Status Summary (IRS Form-002) enclosed in Annexure-II is filled and incorporated in the IAP.
  6. Ensure that Organizational Assignment List (Divisional / Group) IRS Form-005 as enclosed in Annexure – V is circulated among the Unit leaders and other responders of his Section.
  7. Plan to activate and deactivate IRS organizational positions as appropriate, in consultation with the IC and OSC.
  8. Determine the need for any specialized resources for the incident management.
  9. Utilize IT solutions for pro-active planning, GIS for decision support and modeling capabilities for assessing and estimating casualties and for comprehensive response management plan;
  10. Provide periodic projections on incident potential;
  11. Report to the IC of any significant changes that take place in the incident status.
  12. Compile and display incident status summary at the ICP.
  13. Oversee preparation and implementation of Incident Demobilization Plan (IRS Form-010) enclosed in Annexure-X.
  14. Assign appropriate personnel, keeping their capabilities for the tasks in mind and maintain On Duty Officers List (IRS Form-007) for the day as enclosed in Annexure-VII.
  15. Ensure that record of various activities performed (IRS Form-004 enclosed in Annexure-IV) by members of Units are collected and maintained in the Unit Log (IRS Form-003) enclosed at Annexure-III; and

### **Logistics Section (LS)**

The LS deals with matters relating to procurement of resources and establishment of facilities for the incident response. It also deals with all financial matters, concerning an incident. This section is headed by the Logistic Section Chief (LSC) and is an important component of the IRS organization for providing back end

services and other important logistic support like communications, food, medical supplies, shelter and other facilities to the affected communities and responders as well. There is a Finance Branch (FB) attached to this Section in order to ensure that the procurements, if any, may be done quickly and in accordance with the financial rules.

The establishment and functions of all Sections are essential and vital for efficient response management. However, for management of smaller incidents, all the Sections need not be activated.

### **Logistics Section Chief (LSC)**

The LS comprises Service, Support and Finance Branches. Structure and details of each Branch are shown in Fig. 16. The Section is headed by a chief known as the LSC. The activation of various Branches of the LS is context specific and would depend on the enormity and requirements of the incident. The Finance Branch (FB) constitutes an important component of the LS to specially facilitate speedy procurement, and proper accounting following financial procedures and rules.

### **Roles and Responsibilities of Logistics Section Chief (LSC)**

#### **The Logistics Section Chief will:**

1. Coordinate with the activated Section Chiefs;
2. Provide logistic support to all incident response effort including the establishment of SA, Incident Base, Camp, Relief Camp, Helipad etc.
3. Participate in the development and implementation of the Incident Action Plan (IAP)
4. Keep RO and IC informed on related financial issues.
5. Ensure that Organizational Assignment List (Divisional / Group) IRS Form-005 as enclosed in Annexure – V is circulated among the Branch Directors and other responders of his Section.
6. Request for sanction of Impress Fund, if required.
7. Supervise the activated Units of his Section.
8. Ensure the safety of the personnel of his Section.
9. Assign work locations and preliminary work tasks to Section personnel.
10. Ensure that a plan is developed to meet the logistic requirements of the IAP with the help of Comprehensive Resource Management System.
11. Brief Branch Directors and Unit Leaders.

12. Anticipate over all logistic requirements for relief Operations and prepare accordingly.
13. Constantly review the Communication Plan, Medical Plan and Traffic Plan to meet the changing requirements of the situation.
14. Assess the requirement of additional resources and take steps for their procurement in consultation with the RO and IC.
15. Provide logistic support for the IDP as approved by the RO and IC.
16. Ensure release of resources in conformity with the IDP.
17. Ensure that the hiring of the requisitioned resources is properly documented and paid by the FB.
18. Assign appropriate personnel, keeping their capabilities for the tasks to be carried out and maintain On Duty Officers List (IRS Form-007) for the day as enclosed in Annexure-VII.
19. Ensure that cost analysis of the total response activities is prepared;
20. Ensure that record of various activities performed (IRS Form-004 enclosed in Annexure-IV) by members of Branches and Units are collected and maintained in the Unit Log IRS Form 003 as enclosed at Annexure-III.

## **Role and Responsibility of IRS Officers**

### **1. District Magistrate & Collector**

- Preparation and updating of District Disaster Management Plan for the District.
- To ensure to able to perform the role of each involved emergency service effectively.
- To activate and maintain the District Control Room round the clock. To provide essential facilities with the District control room.
- To access emergency situation and have to declare the emergency, call and direct the emergency services to respond the emergency by providing reinforcement and support by pooling the resources form the District and if required from the State.
- The arrangement for rescue, evacuation, shelter, food, water, clothing, and transportation to affected area, announcement to the public.
- To keep inform to the higher authority time to time to declare the withdrawal or termination of emergency.
- Rehabilitation, Restoration, Cleaning etc on post emergency actions.
- To submit the reports on emergency. To conduct the meetings.
- To conduct the mock drill.



## **2. District Development Officer**

- To ensure the different authorities, agencies, organization persons, as specified their role, should participate immediately during emergency in district pocket area.
- To advice and guide different panchayat department and local representatives for mitigate and preventives aspects of disaster management and coordinative approach at the time of emergency.
- To participate in the meeting, mock drill & training.
- To prepare own detailed action plan to ensure effective control on emergency.
- To liaison & co-ordination with chair person, Central Control Room, emergency services, organization, agencies, agencies person etc.
- To support all other duties as specified by District Collector.

## **3. Police Department**

- To access the situation and report immediately.
- To maintain the law and order during the emergency to control the traffic and control the affected area.
- To protect the life of people, inside, outside as well as road movers.
- To protect the property & environment & public announcement.
- Evacuation, rehabilitation, shelter & transportation work during the emergency as per prevailing situation.
- To help & assist to make area clean, removing of any structure and other similar work as required during actual emergency.
- To participate the meetings & Mock Drill / Rehearsal & Training.
- To liaison with Central Control Room and other emergency services / organization / agencies.
- To prepare their own details action plan & to ensure the provisions to handle the emergency.

#### **4. Fire Service**

- Inspection, survey and assess the situation where incident occurs & give the report.
- To decide the proper & effective actions and immediate response actions to control the emergency, under intimation to Central Control Room or Chair Person.
- Proper training to fight against different hazards
- Rescue, Evacuation, Remove of debris, and other emergency work as directed or instructed.
- To maintain the proper and adequate fire fighting, equipments, neutralizing media, self-breathing apparatus, emergency equipments, personnel protective equipments with keeping in working order.
- The knowledge & information on different type of alternative resources, various types of extinguishing media, neutralizing media, chemical properties and their hazards with safe handling procedure.
- To participate the meetings Mock Drill / Rehearsal & training.
- To liaison with Central Control Room and other emergency services.
- To prepare their own details action plan & to ensure the provisions to handle the emergency.
- Other duties as required during actual emergency.

#### **5. Health Department**

- To ensure the arrangement & preparedness for special medical treatment antidotes and trained doctor Para-medical staff as specified in toxicology at the time of industrial emergency in local pocket area.
- On declaration of emergency or on receiving the message or information, prompt medical facilities should be set up e.g. first aid post, casualty receiving center/ camp, as per gravity of situation at site. Similarly, arrangement for emergency operation or special treatment on chemical burn, injury, gas dispersion etc with adequate arrangement, which will can serve the purpose of Base Hospital.
- Identification of dead bodies and post mortem arrangement.
- To maintain up to-date list with telephone nos. of services of doctors, hospitals,
- Ambulance, primary health center, Para-medical staff, vehicle to meet the emergency situation.

- Arrangement to inform the upto-date status time to time to DEOC, Chair Person, and Relatives of injured or admitted patients, emergency services etc.
- Arrangement to safe guard the public health in case of development of epidemic situation & announcement on safety measure to be taken by public at the time of emergency situation.
- To advice & guide the different stake holders in respect of medical & health part time to time.
- Provision for proper and adequate medicines, life saving drugs, equipments, antidotes etc. related to different hazards.
- To participate meetings, mock drills / examine and training.
- To prepare own detailed action plan to ensure the effective handling of different kinds of emergencies.
- To liaison with DEOC, Chair person, emergency services organization, agency and other related person.
- Other duties as required during actual emergency.

## **6. RTO**

- To respond to collector and police instructions in different kinds of emergency
- To provide adequate requirements for both persons and material.
- To arrange for deployment of vehicles with full fuel levels.
- To streamline traffic flow and parking yard movement.
- To co-ordinate in deployment of vehicles, if required.
- To participated meeting, mock drills & training.
- To prepare own detailed action plan to ensure effective handing at the time of actual emergency.

## **7. Civil Supplies Department**

- To arrange to provide cooked food and clothing to evacuees and others involved in emergency controlling operation.
- To ensure availability of sufficient cooked food, water ready for distributaries at various locations.
- To participate in the meeting, mock drills & training.
- To prepare own detailed action plan to ensure effective handling of emergency.

## **8. Dy Director – Information**

- To participate in the meeting, mock drill / exercises and training.
- To assist the public in case of rescue operation and authentic news.
- To liaison & Co-ordination with Chair person, Central Control Room and emergency services.
- Ensure to safe guard the public at large during actual emergency by providing correct reliable authentic guideline and news.

## **9. Dy. Controller (Civil Defence)**

- To participate in meeting, mock drills & training.
- To prepare own detailed action plan to ensure effective handling of emergency
- To assist police in rescue and evacuation work during emergency.
- To provide security, cordoning the area, and other Services.

## **10. Gujarat Electricity Board (PGVCL)**

- To arrange for un-interrupted power supply, if needed.
- To arrange for lighting at temporary medical camps, rallying points and parking yards.
- To take care of electrical equipment within affected zone.
- Arrange for switching off power supply if requested by authority.
- To participate in the meeting, mock drills & training
- To prepare own detailed action plan to ensure effective handling of emergency

## **11. Regional Officer (GPCB)**

- To participate in the meetings, mock drill / exercises and training.
- To prepare own detailed action plan to ensure the effective control of industrial emergency & subsequent action.
- Liaison with central control Room, chair person, Emergency Services, Organization agencies & other related persons.
- Advice & Guidance to the District Crisis Group in Respect of environment protection in the industrial pocket.
- To provide the technical input regarding environment and evaluate the contamination or adverse effect during industrial emergency.
- To provide the details & information on development of emergency situation regarding in safe level to the life and suggest area to be evacuated and other safety measures.
- To suggest the safe level for restoration & restarting of work on termination of emergency services & expert persons etc.
- Other duties or work as directed by District crisis group or chair person.

## **12. Representative Form MAH Units**

- The management of major accident hazardous unit has to maintain updated onsite emergency plan with necessary details with accurate information and a correct assessment of the situation. The site main controller is responsible to provide immediately on occurrence of crisis at his unit with specific details, development and needed help from local crisis group & district crisis group. He will arrange & provide all the resources, equipments, manpower, and communication network from his own unit and co-ordinate with local crisis group & district crisis Group to combat the industrial emergency.

## **13. Role of other members of District Crisis Group**

- To participate in the meeting, mock drill / exercise and training.
- To assist the public in proper way in case of rescue and evacuation during actual emergency.
- To advice and guidance to the District crisis group & Chair person.
- To arrange and help the supporting actions and duties in respect of industrial emergency
- To provide more and adequate resources & various requirement to tackle the industrial emergency immediately.
- Liaison & co-ordination with Central Control Room and emergency services.

## **14. Volunteer Organizations (N.G.O.)**

- The voluntary organization / services can play vital role in relief & rescue operations like arrangement of food packets & packing up of the same, distribution of the food packets and water pouches, arrangements of life saving drugs & distribution of the same, can play a major role in awareness generation, to convince the person / public to evacuate the residence / place and to shift to safe shelter timely during emergency. Otherwise it may result more serious effect. To save the life of public is more important factor, which will be successfully carried out by the voluntary organization. The list of such organization with address, telephone no. organization etc will be prepared and up-dated time to time.

## **15. Railway Authority**

- To issue the standing instruction to all railway gates to take actions on receiving the message from the Station Master.
- To decide authority level of railway staff to take actions.
- To carry out evacuation by railway, if required.
- To take care of floating population at railway stations and on board travelers.

- To issue the standing instruction to station Masters on up and down railway stations to stop the train as soon as emergency message is received from DEOC and CCR.

## **16. Irrigation Department**

- Play vital role in pre, during and post form of emergencies particularly in floods.
- Proper management of dams, irrigation canals, ponds and timely maintenance of the same.
- Inform DEOC and respective stake holders in case of water release from the dams.
- Start their control room at the time of monsoon.
- Follow the instructions mentioned with the Flood memorandum.
- To participate in the meetings, mock drill / exercises and training.
- To prepare own detailed action plan to ensure the effective handling of different kinds of emergencies.
- Liaison with DEOC, Chairperson, emergency services organization, agency and other related person.

## **17. R&B Department**

- To play vital role in pre, during and post form of emergencies.
- Proper management of roads and buildings and timely maintenance of the same.
- Inform DEOC and respective stake holders diversion of routes, closing status of the roads etc.
- Ensure safety terms while establishing or developing of bridges, dams, roads, buildings etc.
- To participate in the meetings, mock drill / exercises and training.
- To prepare own detailed action plan to ensure the effective handling of different kinds of emergencies.
- Liaison with DEOC, Chairperson, emergency services organization, agency and other related person. Other duties as required during actual emergency

## **Bhavnagar District & Taluka level IRT**

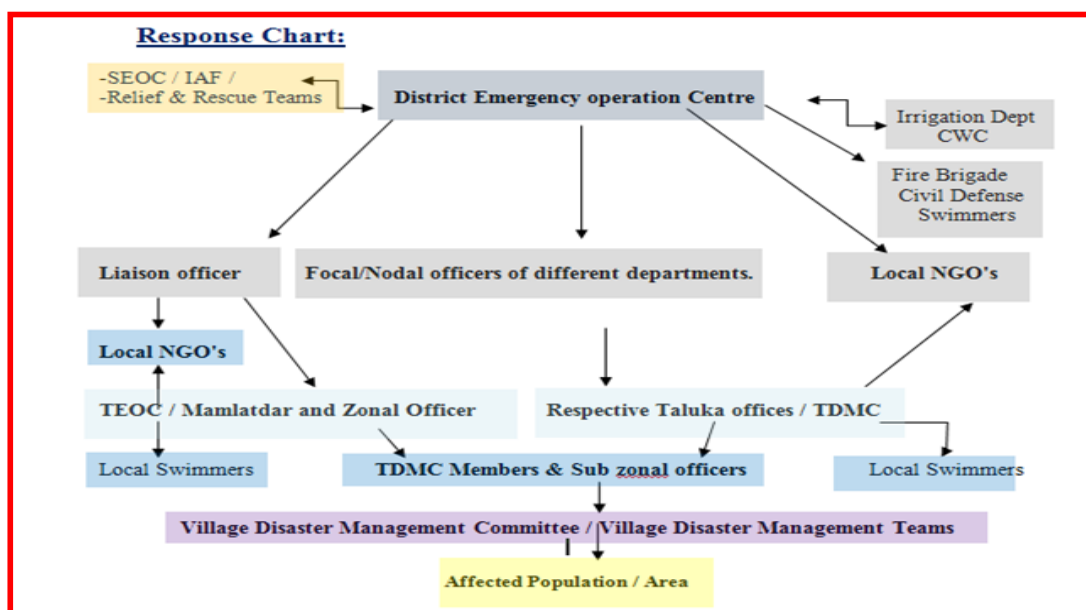
<b>Position of IRT</b>	<b>District</b>	<b>Taluka</b>
<b>Responsible Officer</b>	Collector & DM	Dy Collector & SDM
<b>Incident Commander</b>	ADM	Mamlatdar
<b>Information &amp; Media Officer</b>	Dy. Director Information	Asst. Officer from Info dept.
<b>Liaison Officer</b>	SDM/Any Class one	SDM/Any Class one

	officer	officer
<b>Safety Officer</b>	Disaster specification/ (fire-fire officer, flood-health, earthquake -civil engineer, CDHO )	Disaster specific-Fire-fire officer, As per require Health-BHO, Earthquake-Dy. Engineer
<b>OPERATIONS SECTION CHIEF</b>	DISH/SP/CDHO/FO	Dy. SP/Factory Inspector/BHO/FO
Staging area manger	DPEO/DEO	TPEO
Response Branch Director	District Municipal Officer	Chief Officer
Division Supervisor/Group-in charge	Fire officer	Fire officer /FireStaff
Transportation Branch Director	Dy. Collector Stamp Duty	Dy. Mamlatdar (Extra post)
Road Group	ARTO	ARTO's staff
Rail Group	Divisional Manger	Station Master
Air Operations Group	EE R&B State	Ass. Eng.R&B State
<b>PLANNING SECTION CHIEF</b>	Dy Collector DCLR	Dy Mmaltdra DCLR
Resource Unit	District Project Officer-GSDMA	Dy. Mamaltdar Revenue
Situation Unit	Taluka Mamltar	Members of VDMC
Documentation Unit	District Project Officer-GSDMA(Along with DEOC Staff)	Dy.Mamlatdar Revenue
Demobilization Unit	District Project Officer-GSDMA (Along with DEOC Staff)	Dy.Mam and TDO staff/CO
<b>LOGISTIC/ FINANCE SECTION CHIEF</b>	Dy Collector Election	Dy Mamltar Election
Service Branch Director	Dy. DDO Panchyat	Dy. Chinish Panahcyat
Communication Unit	Ex. Eng. GEB/R&B, General Manager BSNL	Dy. Engineer, R&B& GEB; SDOP;
Medical Unit	CDHO	BHO
Food Unit	DSO	Dy Mamlatdar, Supply Office
<b>Support Branch Director</b>	Dy DDO Revenue	ATDO
Resource Provisioning Unit	DSM (District Supply Mamlatdar)	Dy Mamlatdar / RAK
Facilities Unit	DPEO/DEO, Ex. ENG.R&B Panchayat	TPEO; Dy Engineer R&B Panchayat
Ground Support Unit	ARTO, DSO	RAK, RTO Inspector
<b>Finance Branch Director</b>	District Treasury officer	Sub-Treasury Officer

Claim Unit	Citnish to Collector (PRO)	Accountant Panchayat/Mamltar
Compensation Unit	Dy. DDO (Revenue) & Team	Dy. Mamlatdar / TDO / CO and team
Procurement Unit	Chitnish to Collector	Dy. Mamlatdar under the guidance of Mamlatdar
Cost Unit	ADM	Mamltar

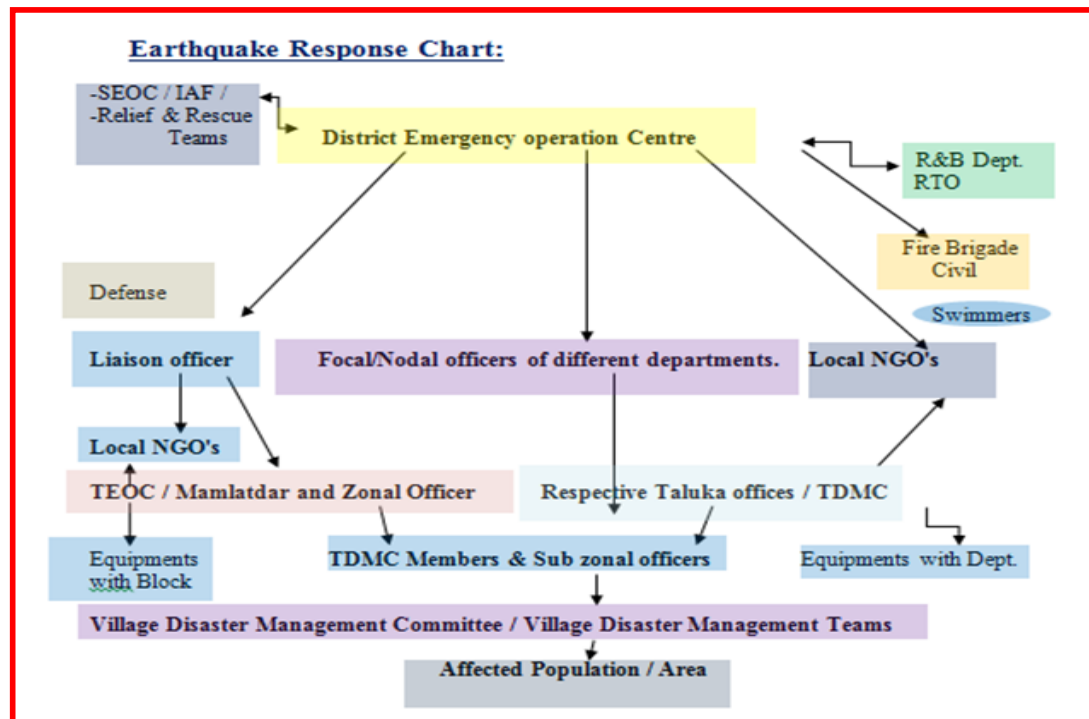
## Action Plan in various Disasters

### Response Chart

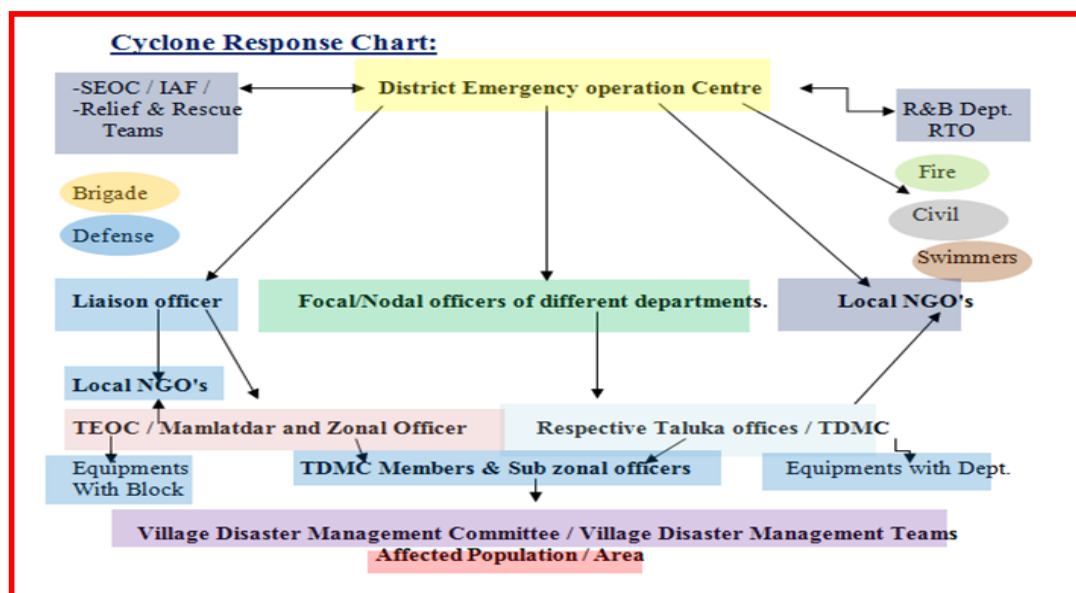




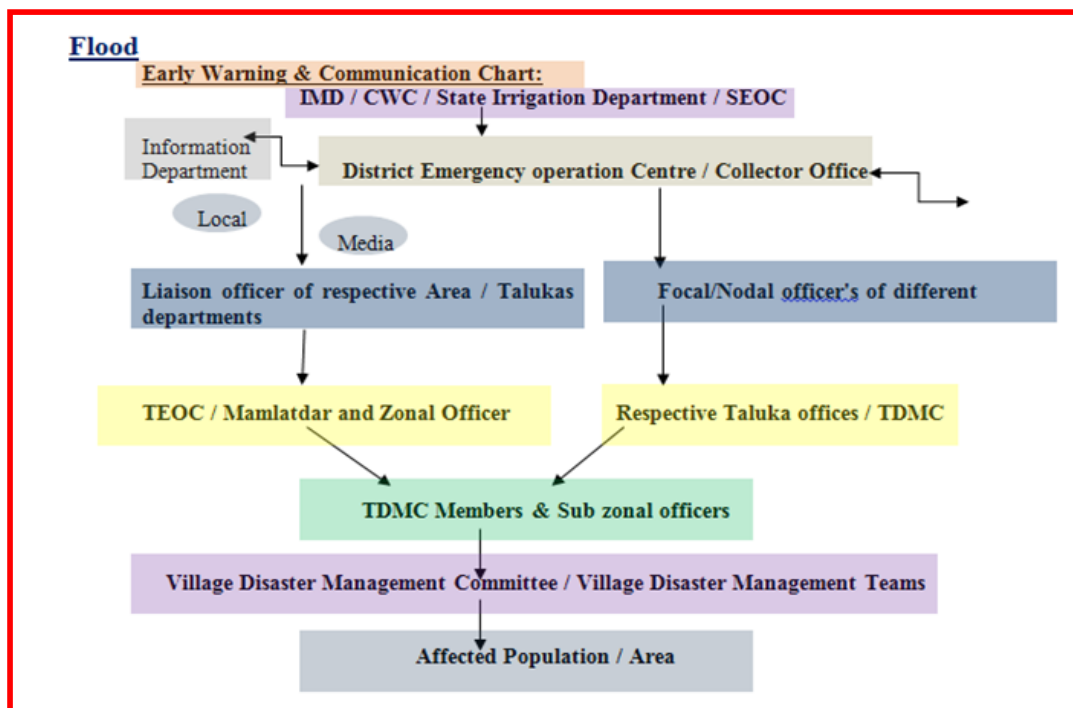
## Earthquake Action plan



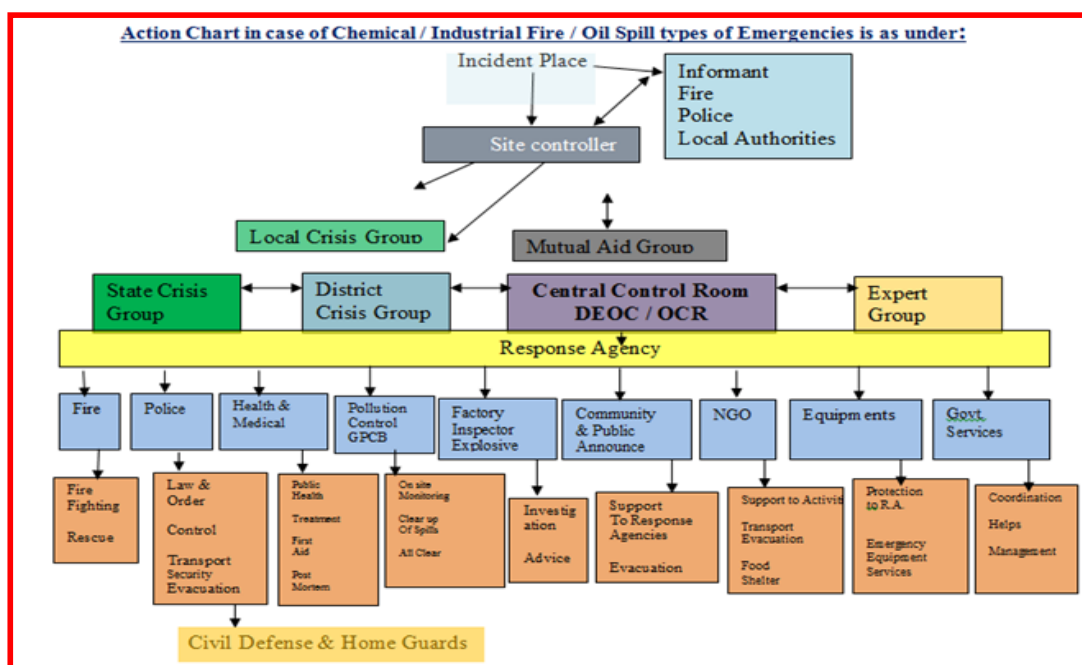
## Cyclone Action Plan



## Flood Action Plan



## Chemical/Industrial fire/Oil spills Action Plan



## Chapter-11

### Miscellaneous

#### Evacuation plan

- (1) White Signal - Alert condition
- (2) Blue Signal - Ready for Evacuation
- (3) Red Signal - Immediate Evacuation

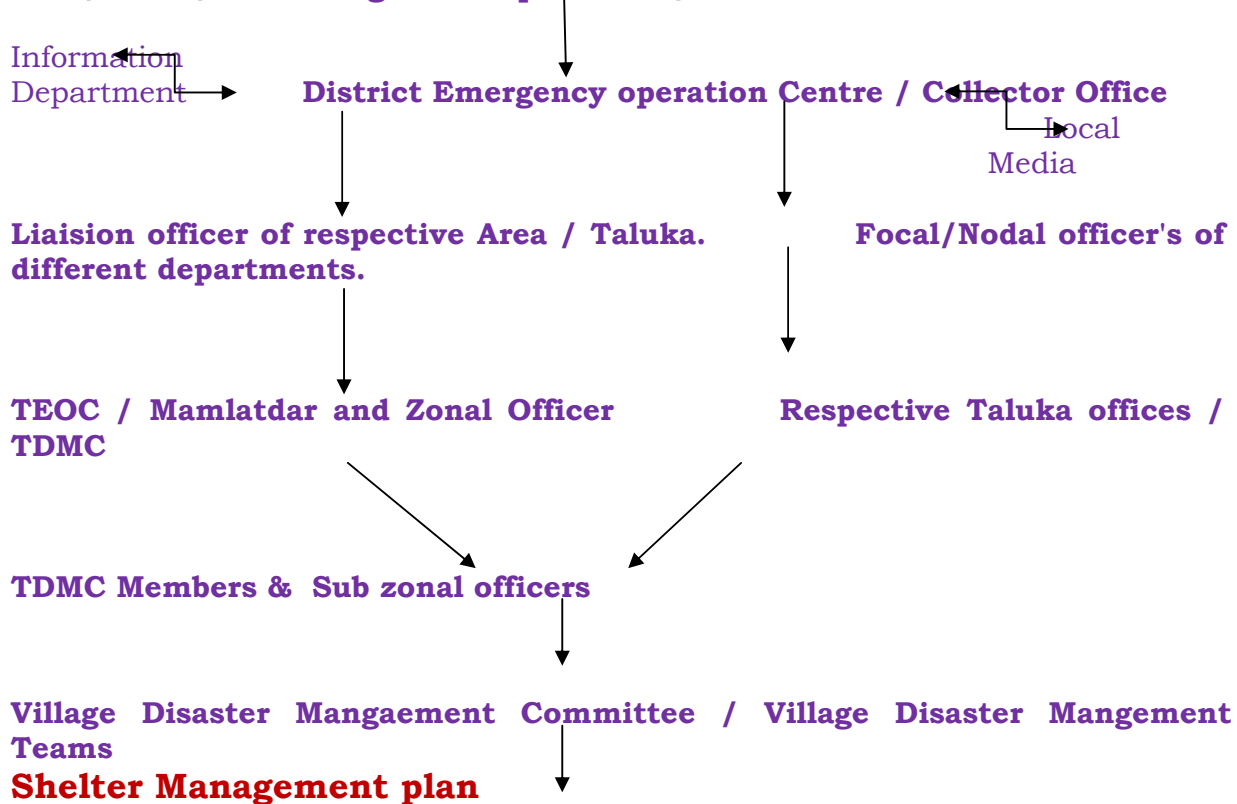
As and when the warning come from Indian Metrological department (IMD) , or from Irrigation department regarding heavy rainfall or water release the following channel has been intimated and appropriate message conveyed to the concerned department / official / control rooms /community members using tele communication , wireless message , by fax or in written by DEOC.

In city area the route has been finalized for early warning , accordingly early warning task force leading by fire and emergency services personals spread the message of alert in respective low line areas , in villages local methodologies of early warning has been used (by bitting up of drums etc.) to communicate the message of alert to the affected population of the village.

The following channel has been intimated and appropriate message conveyed to the concerned.

#### Early Warning & Communication Chart :

**IMD / CWC / State Irrigation Department / SEOC**



**Temporary Shelter:**

### **Urban Area:-**

Local Nagar Palika and TEOC,-District Primary and Secondary Education Officer will be Responsible to Shift safely of Affected Population during any kind of Disaster ,In Bhavnagar District mainly use school, collage /community hall ,and Samaj Vadi for shifting of Affected people.Also already it has been identified ward wise by TEOC AND Nagar Palika. The list of Safe Shelter Included in CDMP Plan. Also find list on SDRN Side. At Urban level City Disaster Management Committee and District Administration directly responsible to evacuate affected people at Safe Place.

### **Village area:**

Mainly village area looking by District and Taluka Panchayat with the support of Liaison officer and Respective mamlatdar. Also already Identified Village wise Safe Shelter at village level, like school/community hall/Samaj vadi etc. Detail List in VDMP Plan. Also find list on SDRN. District /Taluka/Village Level - District /Taluka /Village Disaster Management Team directly responsible to Evacuate affected people at Safe Place

## **Medical and Hospital Management plan**

### **Disaster: Health Impacts**

Disaster causes negative impact on the overall health of the community besides interfering in its sustainable development. Direct health implications of disaster are death and injury. Disruption of human ecology and environmental concerns are of prime importance due to:

Disruption / damage to sanitation and sewage facilities creates enabling environment favorable for occurrence of vector borne and water borne diseases,

The affected communities living in temporary shelters / resettlements have limited or no access to safe drinking water, food etc. In addition, prevailing unhygienic sanitary conditions make it conducive for spread of food and water – borne disease.

Overcrowding in temporary shelters results in spread of communicable diseases.

Effects on mental health include Post Traumatic Stress Disorder; excessive grief, sleep disorders; exaggeration of existing illness; death wish & suicidal ideation.

Reproductive Health – Pregnant mothers and newborns become vulnerable and require additional care.

Among all the adverse health impacts, the impact of communicable disease is often delayed for weeks or months after the acute event. Water and food-borne disease transmission potential increases immediately and week after the disaster. Vector borne diseases may appear after four weeks or more due to disruption of vector control efforts, washing away of residual insecticides, increased number of vector breeding sites and more man-vector contact. Nutritional problems appear after months. Table (see next slide) gives the summary of health effects according to the type of hazard.

### **Post disaster public health intervention**

Emphasis on post disaster public health measures is necessitated by the following additional factors:

Destruction of health care infrastructure.  
Interference in public health services specially for:

- Safe drinking water
- Sanitation measures
- Immunization
- Rodent/mosquito control

Ecological changes and its effect on vector populations  
High population density due to displacement Public health interventions to prevent disease outbreaks after disaster should  
Essentially focus on:

Post disaster sanitation measures for:

- Safe water supply
- Food hygiene
- Proper sewage systems/disposal of excreta
- Vector/rodent control
- Public health education

# **Media Management Plan**

## **Preparedness**

### **External**

Broadcast programs to raise people's awareness of disaster prevention measures  
Develop news sources in emergency situation  
Liaison with community leaders  
Publicize station frequency  
Broadcast public planning meetings  
Outreach to the elderly, women, children, mentally and physically disabled people, as well as other marginalized and other vulnerable groups  
Encourage stockpiling of (hand –powered) radio receivers  
Compile local knowledge on signs of impending disaster and share it with community

### **Internal**

Back up important documents and files (including audio content) and store in a safe location  
If possible, place a set of minimum broadcast equipment such as a microphone, tape/CD player, transmitter and antennae in a safe location  
Plan radio programs to raise people's awareness of disaster prevention  
First aid training for station personnel  
Technical preparedness (generator, APS, securing, transmitter  
Guidelines for managing staff and volunteers  
Arrange emergency drills in the station  
Develop a contact list and post in station  
Map community (ethnicity, religion, race, culture, vulnerability)  
Prepare pre-recorded Emergency Response  
Announcements and scripts and post in the studio

## **Mitigation**

Develop networks with local Disaster Management and Response (DMR) NGOs, local government and key stakeholders: hold regular meeting with them  
Arrange emergency drills in the community  
Training of on-air personnel - what and how to broadcast

## **Response**

### **External-on air**

Broadcast pre-prepared announcements  
Broadcast emergency public meetings  
Broadcast emergency evacuation announcements  
All announcements broadcast in a reassuring and calm manner  
Dispel myths and rumors and provide timely and accurate updates  
Broadcast updates on damage situation  
Produce programs in which victims can express themselves  
Establish contact with the meteorological office and broadcast weather information

### **Internal-behind the scenes**

Ensure safety of all station personnel  
Call station briefing meeting  
Notify CR networks of status  
Monitor all official announcements and activities of national government, local government and aid agencies(NGOs)  
Enact station evacuation plan if needed  
Log all communications for reference  
Stay calm  
Divide information work so that all voices of the community can be heard and not just male leaders.

## **Relief**

Establish Information Support Centre for information sharing and logistic distribution

## **Rehabilitation**

### **External – Networking and Support**

- Broadcast pre-prepared announcements
- Broadcast programs to heal victim's psychology trauma.
- Interview trauma counselors, monks, Imams and priests
- Broadcast recovery announcements
- Cooperate with DMR NGOs, local government and key stakeholders
- Broadcast recovery public meetings
- Provide call in or talk-back programs for people to people interactions
- Broadcast positive entertainment programming

## Disaster Zonation

### Cyclone

Sr. No.	Name of Taluka	No.of Villages
1	Mahuva	13
2	Talaja	10
3	Bhavnagar	08
4	Ghogha	03
<b>Total:-</b>		<b>34</b>

### Flood (water logging villages)

Sr. No.	Name of the Taluka	No. of Village
1	Mahuva	5
2	Talaja	5
3	Sihor	3
4	Gariyadhar	2
5	Bhavnagar	17
6	Umrالا	4
7	Jesar	2
<b>Total :-</b>		<b>38</b>

### Flood (river affected villages)

Sr. No.	Name of the Taluka	No. of Village
1	Mahuva	6
2	Talaja	4
3	Palitana	10
4	Gariyadhar	3
5	Vallabhipur	19
6	Bhavnagar	13
7	Ghogha	4
8	Umrالا	17
9	Jesar	8
<b>Total :-</b>		<b>84</b>

### Earthquake

Bhavnagar district comes under Zone-III for earthquake



### **Industrial Hazard (MAH industries in Bhavnagar District)**

<b>Sr. No.</b>	<b>Name of MAH industries</b>	<b>Chemical being utilized by the industries</b>	<b>Remarks</b>
1	Sumitomo Chemicals (I) Pvt.Ltd.	Epchoro hydrine	Bhavnagar
2	Indian Oil Corporation Ltd.	LPG	Bhavnagar
3	Ship Recycling Industrial Association (Odaraka village)	LPG	Ghogha
4	Sunfire Petrochemicals (P) Ltd. (Vadia village)	LPG	Sihor
5	Nirma Ltd. (KalaTalav village)	Clorine (Liquid), Hydrogen Gas	Bhavnagar
6	Archit Organosys Limited (Narmad village)	Clorine, Hydrogen Gas	Bhavnagar
7	Renaissance Industries (GIDC-Vartej)	Clorine	Bhavnagar

### **Projects for prevention of disaster**

- 1. Disaster Risk Management Programme (DRM)**
- 2. National Cyclone Risk Mitigation Project (NCRMP)**
- 3. Gujarat School Safety Programme (GSSP)**
- 4. Aapada Mitra project**

# Part-2

## **Annexure-1**

### **Bhavnagar District Profile**

#### **History**

Around 1260 AD, they moved down to the Gujarat coast and established three capitals; Sejakpur, Umralla and Sihor. In 1722–1723, forces led by Khanthaji Kadani and Pilaji Gaekwad attempted to raid Sihor but were repelled by Maharaja Bhavsinhji Gohil. After the war Bhavsinhji realised the reason for repeated attack was the location of Sihor (old Bhavnagar). In 1823, he established a new capital near Vadva village. 20 km away from Sihor, and named it Bhavnagar. It was a carefully chosen strategic location because of its potential for maritime trade. Naturally, Bhavnagar became the capital of Bhavnagar State Bhavnagar Boroz.

The old town of Bhavnagar was a fortified town with gates leading to other important regional towns. It remained a major port for almost two centuries, trading commodities with Mozambique, Zanzibar, Singapore, and the Persian Gulf. The current Royal Family of Bhavnagar comprises Maharaja Vijayraj Singh Gohil and Maharani Samyukta Kumari, Prince Yuvraj Jaiveerraj Singh Gohil and Princess Brijeshwari Kumari Gohil.

Until the independence of India in 1947, Bhavnagar was an independent state ruled by the Rajput Gohil family. In 1947, the Deputy Prime Minister of the newly independent Indian Union Sardar Vallabhbhai Patel undertook the ambitious and complex process of unifying 565 princely states with the Union of India. The last Maharaja of Bhavnagar, Krishnakumar Sinhji handed over the administration of his Bombay State to the people's representative in 1948, and Bhavnagar was the first state to join the Indian Union. The erstwhile royal family of Bhavnagar continues to lead an active role in the public eye as well as in business (hotels, real-estate, agriculture & ship-breaking) and is held in high regard by the population both in the city as well as areas that comprised the former princely state of Bhavnagar.

#### **Micro Regions**

Geographically, the Bhavnagar district is in agro climatic zone VI (South Saurashtra) and VIII (Bhal and Coastal area) sub region of Gujarat. The general slope dips towards the north-east at the apex of Gulf of Khambhat. A small non-perennial river named Kansara Nala passes through the outer area of the city.

Mahuva, Talaja, Bhavnagar, Ghogha talukas are situated at costal line of Gujarat as well Bhavnagar district.

#### **Boundry**

Bhavnagar borders with Ahmedabad District to the northeast, Botad District the northwest, the Gulf of Cambay( Gulf of Khambhat) to the east and south and Amreli District to the west.

Umarala taluka, Palitana, Sihor well connect with railway line as well State highway. Ghogha taluka of Bhavnagar is Developing Taluka of Bhavnagar district (By State Government).

The area covered by the district is 7034 sq. km. Bhavnagar District rank 6th among the districts in terms of area. Density of population is 289 per sq.km.

## Geographical detail

Bhavnagar is placed in the southwestern corner of Gujarat State. Its mainland extends between 21-47 degree southeast at North Pole and 71-15 degree longitude. It is bounded by Gulf of Khambhat in east and south and Amreli district in the west, Rajkot and Surendranagar districts in the northwest, Ahmedabad in northeast and Arabian Sea in the east and south.

Bhavnagar, in the Indian State of Gujarat, is a port of city on the coastal region of the Saurashtra peninsula abutting the picturesque Gulf of Cambay.

Sr. No.	Name of Taluka	Total Village	Total Village Panchayat	Total Geographical area (sq. km)	Total Forest area (sq. km)
1	Bhavnagar	60	52	1039.68	11.35
2	Ghogha	48	36	437.85	8.28
3	Gariyadhar	50	48	484.33	0.73
4	Jesar	37	37	490.13	69.67
5	Mahuva	118	115	1255.61	26.39
6	Palitana	83	78	734.74	39.16
7	Sihor	82	78	720.87	46.03
8	Umralla	43	43	407.33	0.87
9	Vallabhipur	60	53	593.39	11.35
10	Talaja	118	118	869.72	23.56
	<b>Total</b>	<b>699</b>	<b>658</b>	<b>7034</b>	<b>237.39</b>

(Source- Village Profile)

Bhavnagar town is District Head quarter and has one Municipal Corporations in the State out of 8 Municipal Corporations. There are 10 Talukas (Bhavnagar, Ghogha, Umralla, Jesar, Mahuva, Talalja, Sihor, Palitana, Gariyadhar and Vallabhipur), 6 Nagarpalikas (Mahuva, Talalja, Sihor, Palitana, Gariyadhar and Vallabhipur).

## Forestry

Out of the total reported district area of 7034 sq.km, 237.39 sq.km is the forest area. It accounts for about 3.37% of the district area.

**Victoria Park** is a reserved forest range in the heat of Bhavnagar city. This park is one of the oldest manmade forest in India and also the only City Forest of Gujarat, thus its maintenance is prioritized by the Indian government. The government has taken the entire responsibility to maintain this beautiful park in Bhavnagar. Victoria Park is spread across a sprawling 500 acres of land which is filled with rare species of flora and fauna.

The park is also connected to Gaurishankar Lake and the lake view from the park is spectacular and this spot is highly popular among the tourists.

This park acts as a green lung for Bhavnagar city which shelters foxes and antelopes. Not only this, you can also see many other mammals like porcupine, hyena and nilgai. Gaurishankar Lake in Victoria Park is where plenty of water birds can be seen. It is a treat and paradise for all bird lovers. You can spot birds like green bee-eaters, bulbuls, robins, silverbills, tree pie, black-winged stilts, tailorbirds, spotted owlets, sunbirds, roseringed Parakeets, shikra, egrets, common peafowl, pelicans, darters and herons.

The park is open throughout the day however; early morning is the best and perfect time to visit this place. There is no entry fee to the park. If you are lucky enough, then you might get to have a close view of a scampering fox and Nilgais.

**Black bug national park** is situated at Velavadar (Bhal) region of Bhavnagar district, at a distance of 72 km from Bhavnagar airport of Gujarat. It was established in the year 1976 in. spreads over an area of 34.08 sq. km and has appropriate grasslands ecosystem. This has helped in the conservation of Black Buck, Wolf and Lesser Florican (a bustard). Black Buck Wildlife Sanctuary has the maximum population of black bucks in India. This animal is more beautiful and graceful as compared to any other species.

**Jesar taluka of Bhavnagar district is new Home of Asiatic Lion.** The new conservation area in the form of Je Searin Hg iphaovmade lit ozo ante lewaislt b2e0 ospdrde alido nasc, r oaslsso 1 a0c9t ss qa.s k am c; oltr'si daobro ufotr 7 t0hkem b feraosmts Gtoir ,t Trahvee la raeloan, ga ptahret banks of the river Shatrunjay to reach relatively newer territories near Bhavnagar and Amreli.

## Land development: Non-agricultural use

In the coastal areas, (Ghogha, Mahuva, Bhavnagar Rural, Talaj) salinity as well as in some parts water logging, make the land infertile. Hence this area is valuable for industrial and other uses and enhanced the aspirations of people for prosperous future. like Bhal-kharapat area of Bhavnagar taluka has strongly potential for Chemical Industry / Chemical Zone because it has biggest waste land of Asia and most suitable for Chemical Industry.

The scale of special programmers to generate wage employment like MGNREGA and self employment like SJSY and Vajpayee bankable yojana has increased in terms of number of beneficiaries as well as the amount of land works of capital formation such as approach roads, water harvesting structures have helped to strengthen the economic base and also environment.

## Important Crops

The Bhavnagar is agriculture dominated district. Groundnut, Cotton Wheat, Bajra, Onion sesame, Pulses and Sorghum are the major field crops grown in the district. The major field crops cultivated in KHARIF season are Groundnut, Cotton, Pulses, Bajra, and Sesame. Wheat, Gram, Cumin, Onion, and other vegetables are important Rabi crops of the area.

District is now taking to horticulture and to value added cropping pattern. Considerable focus is placed on the water economizing techniques of irrigation and on water use efficiency and on water conservation.

Horticulture mainly dominated in Mahuva, Talaja, and Ghogha taluka's of district are planting Coconut plantation.

Mahuva taluka of district is major hub of Onion grow and Onion Dehydration plant. Maximum dehydrated Onion (Onion Powder) export to overseas which helps to earn foreign currency to India.

## Demographic details

Sr. No.	Name of Taluka	Population		
		Male	Female	Total
1	Bhavnagar	409978	377341	787319
2	Ghogha	51861	49116	100977
3	Gariyadhar	58669	56218	114887
4	Jesar	43222	41563	84785
5	Mahuva	206965	200294	407259
6	Palitana	107424	103142	210566
7	Sihor	110343	101893	212236
8	Umralla	44391	41932	86323
9	Vallabhipur	41335	38857	80192
10	Talaja	174482	151185	325667
	<b>Total</b>	<b>1248670</b>	<b>1161541</b>	<b>2410211</b>

(Source- Census-2011)

## **Climate**

Bhavnagar has a hot semi-arid climate with hot, dry summers from March to mid-June, the wet monsoon season from mid-June to October during which it receives heavy to moderate rainfall, and mild winters from November to February. The semiarid classification is due to its high evapotranspiration. The average temperature from November to February is around 20 °C, with low humidity. Due to proximity to the sea, the climate remains fairly humid throughout the year. The highest record temperature was 54 °C (129 °F) on 26 May 1988, while the lowest record temperature was 2 °C (36 °F) on 11 December 1973.

## **Rainfall**

The district mainly receives the rainfall through south-west monsoon which normally starts from middle of June, July and August are the richer months of rainfall.

## **Minerals**

Major Minerals products of Bhavnagar district are; Lignite, Dolomite, Lime stone and minor minerals are Black trap, Bentonite, Ordinary sand, Hard murrum, B.lime stone, Soft murrum, Ordinary clay, Brick earth, Sand stone.

## **Soil**

The soils of the district may be broadly classified into following categories;

- Medium black soils
- Alluvial soils
- Alkaline soils

Medium black soils are wide spread and are found in all the talukas of the district, they are more productive and are rich in lime, magnesium and alumina and poor in phosphorous, nitrogen and organic matters. They can retain considerable moisture and are much suitable for agriculture. Alluvial soils are found along the Shetrunji river covering parts of Gariyadhar and Palitana taluka. Soils in this area are less productive as they are saline. Alkaline soils are found in the parts of Gariyadhar taluka. They consist of both productive and non productive soils.

## Drainage

Bhavnagar district is drained by a number of rivers, namely Shetrunjiriver and its tributaries viz., Kalubhar, Ghelo, Vagad, Kalbi, Padala, Keri, Goma, Utavli, Dhantarvadi, Surajvadi, Melan and Bagad. Most streams are ephemeral. The drainage is southeasterly except in Mahuva taluka, where it is drained by southerly flowing 5 streams. Shetrunji is the main river that flows towards Southeast and meets with the Arabian Sea. The River Shetrunji drains the south-central of the district covering Gariadhar, Palitana and Talaja talukas. Originating in the Dundhi hills in the Gir, it enters the district about 1.5 km north of Karjala and flows almost towards east and northeast to east of Palitana and takes a southeasterly turn afterward and debouches in the Gulf of Cambay near Sultanpur. The total length of the river in the district is about 98 km. The other important rivers that drain the central and northern part of the districts include the Kalubhar, Ghelo, Vagad etc. The above rivers have generally easterly and southeasterly flow and debouch in the marshy land adjoining the Gulf of Cambay in the north-eastern part of the district. The Kalubhar has a total flow length of 45 km, the Ghelo 72 km and the Vagad 38 km in the district. A number of rivers/streams originate and flow in a southerly direction in the southern part of the district south of Shetrunji basin-divide and debouches in the Gulf of Cambay. Important among them are Dhantarvadi, Nadhi, Surajvadi, Nandh, Malan Nadi and Bagad Nadi.

## Transportation

- 1) The district has 987 Kms. length of State Highway, 3847 Kms. length of pakka roads connection to approximately 700 villages / towns in the district. Kachchha roads are of 1843 kms. And 108 villages accessible only in fair weather.

Out of the total 824 inhabited villages, 633 villages are connected by State Road Transport facilities.

- 2) Total length of railway track is 282.68 kms. In the District of broad gauge, and 34 railway stations are on the district.

Gariyadhar, Vallabhipur, Ghogha, and Talaja talukas have not the railway facilities.

- 3) District has airport facility too.
- 4) Gogha-Dahej RO-RO ferri Service open the door of new horizon in the district, Bhavnagar become the saurashtra's transportation hub.



## Education

The district has 75.52% literacy rate. The district has total 1039 Primary schools, 347 Secondary and Higher Secondary Schools and 1 university (there is more than 25 colleges under the Bhavnagar university).

## Animal Husbandry

### Veterinary Hospital

Sr. No.	Taluka/Place	Veterinary Doctor	Mobile No.
1	Bhavnagar	Dr. Kalpeshbhai H. Baraiya	9427511553
2	Ghogha	Dr. Hareshbhai N. Sudani	9904643873
3	Talaja	Dr. Revabhai G. Mali	9998583410
4	Trapaj, Talaja	Dr. Valajibhai V. Bhoot	9723617921
5	Mahuva	Dr. Kanubhai C. Baldaniya	8000382271
6	Jesar	Dr. Anilkumar M. Solanki	9033689481
7	Palitana	Dr. Prakashsinh I. Vaghela	7359379768
8	Sihor	Dr. Hiteshbhai S. Kher	9723424599
9	Umrالا	Dr. Tejaskumar A. Maheta	9537718984
10	Vallabhipur	Dr. Bhaveshkumar R. Maheta	8141912096
11	Gariyadhar	Dr. Anilkumar M. Solanki	9033689481

### Live Stock

Sr. No.	Place	Cattle	Buffalo	Sheep	Goat	Total
1	Bhavnagar	31483	33621	15032	8075	88211
2	Gariyadhar	11560	6286	1959	4390	24195
3	Ghogha	14964	29248	11162	11563	66937
4	Jesar	15208	19417	9260	11716	55601
5	Mahuva	29748	55564	22370	29821	137503
6	Palitana	27316	29077	5081	8452	69926
7	Sihor	32990	28189	8579	12287	82045
8	Talaja	30151	74679	56551	17035	178416
9	Umrالا	14374	6903	856	3592	25725
10	Vallabhipur	18613	8946	1301	3202	32062
	<b>Total</b>	<b>226407</b>	<b>291930</b>	<b>132151</b>	<b>110133</b>	<b>760621</b>

## Fisheries

### Fishing Center Details

There are total 11 fishing centers. Most of Coastal area is active in fishing activity.

Sr. No.	Taluka Name	Fishing Center Name		Fisheries Gaurd	Mobile No.
		Sr.No.	Name		
1	Bhavnagar	1	Nirma Khadi	Maganbhai R. Jethava	9879734675
		2	Nava Bandar		
		3	Juna Bandar		
2	Ghogha	4	Ghogha	Bhagavanbhai C. Solanki	8000381775
		5	Osaara		
		6	Mithi virdi		
3	Talaja	7	Sartanpar	Bhagirathsinh P. Rathod	9427661474
		8	Reliya		
		9	Gadhula		
4	Mahuva	10	Katpar	Karnubha K.Gohil	9408381833
		11	Mahuva Bandar		

### Boat Details

Sr.No.	Fishing Center Name	Number of Boats
1	Bhavnagar	31
2	Ghogha	85
3	Sartanpar	96
4	Gadhula	08
5	Mathavada	06
6	Jasapara	02
7	Sosiya	02
8	Alang	02
9	Mahuva Bandar	35
	<b>Total</b>	<b>267</b>

## Active Fishermen Details

Sr.No.	Taluka Name	Number of Fishing Family	Number of Fishermen
1	Bhavnagar	582	2870
2	Ghogha	279	1416
3	Sihor	15	153
4	Palitana	130	1613
5	Talaja	283	2018
6	Mahuva	202	2214
	<b>Total</b>	<b>1491</b>	<b>10284</b>

## Search & Rescue Details

Sr.No.	Taluka Name	Number of Availale Boats for Rescue work	Number of Fishermen Swimmers
1	Bhavnagar	12	10
2	Ghogha	10	10
3	Talaja	10	10
4	Mahuva	10	10
	<b>Total</b>	<b>42</b>	<b>40</b>

## Salt pan

Due to large seashore in the District, Salt Industries has developed very well. There are many salt factories in the district.

Sr. No.	Name of Unit	Name of Representative	Contact Number
1	Shri Nilkamal Salt Chemical ( Agariya) Sahkari Mandali Ltd.	Rameshbhai	9879873898
2	The Bhavnagar Salt & Ind. Works pvt.Ltd.	Chetanbhai S.Kamdar	9825205238
3	Marchant Salt Pvt.Ltd.	Azazbhai A.Hamidani	8306808080
4	Nandi Salt Works	Ashrafbhai S.Hamidani	9825209940
5	Patel Salt and Marine Chemicals Pvt.Ltd.	Bipinbhai D.Patel	9825208288
6	Nilkanth Salt Chemicals	vithalbhai J.Patel	9426940102
7	Pavansut Salt Works	Mr.Anurag Singal (Sonubhai)	9426253230
8	Shree Shyam Salt Product Ltd.	Ramgopal G Agarwal	9328212434
9	Rina Salt & Marine Chemicals	Yogeshbhai/Rajeshbhai	9426454507
10	Maruti Salt Works	Jay K.Gohil	9067060238

		Mr.Kiritbhai Bachubhai	
11	Akhandanand Salt & Marine Chemicals	A.D.Patel	9825871488
12	Jay Bhagwati Salt Works LLP	R.N.Gujariya	9427244620
13	The Modern Salt Works Pvt.Ltd.	Dahyabhai H.Patel	9825209172
14	Sanvriya Chemicals Ltd.	Prakashbhai Gorasiya	9426221101
15	Darshan Salt Works Pvt.Ltd.	Babubhai M.Makwana	9925245128 9377107881
16	Jagdish Salt	Kalubhai G.Bhikadiya	9879379791
17	Shree Khariya Hanuman Salt Works Pvt.Ltd.	Babubhai M.Makwana	9925245128 9377107881
18	Khodiyar Salt Works	Ashrafbhai S.Hamidani	9825209940
19	Mahavir Salt Works	Manojbhai Shah	9426919003
20	Malhotra Salt & Chemicals Pvt.Ltd.	Bipinbhai D.Patel	9825208288
21	Bhupatbhai Ramjibhai Koli	Bhupatbhai	9998360843
22	Adarsh Salt works	Sanjay L.Patel	9925563616 8200800000
23	Bip Salts & Allied Chemicals	Arjavbhai Mehta	9825404909 9428991441
24	Tithal Trading Pvt. Ltd.	H.B.Mandaliya	9829057327
25	Sagar Salt Works	Ashrafbhai S.Hamidani	9825209940
26	Shri Sharda Mitha Utpadak Sahkari Mandali Ltd.	Kiritkumar J.Savaiya	0278- 2639011
27	Usmangani Sulemanbhai Hamidani (Gujarat Salt Works)	Usmangani S.Hamidani	9898152605
28	Akwada Mitha Utpadak Sahkari Manli Ltd.	Ghanubha B.Gohil	9898785606
29	Nayankumar Parshottambhai (Kalubhai)	Nayankumar	9825154818 9825505026
30	Kiran Salt Works	Sureshbhai Bhatt	9925243507
31	Chandan Salt Works Pvt.Ltd.	Shivkumar Khemka	9426917445
32	Shree Chamunda Salt Works (Ganeshgadhi)	Narshibhai Tapubhai	9879186415
33	Ashok Salt Works (Ganeshgadhi)	Parshottambhai Ramjibhai	9725867348
34	Dhavdi Salt Works (Ganeshgadhi)	Raghubhai Motibhai	9601061865
35	Meladi Salt Works (Ganeshgadhi)	Shankarbhai Tapubhai	9925974680
36	Rajshakti Salt works (Ganeshgadhi)	Govindbhai Danabhai	98779930493
37	Gayatri Salt Works (Ganeshgadhi)	Chandrakantbhai Mohanbhai	8780262120
38	Naklank Salt Works (Ganeshgadhi)	Somabhai Ghelabhai	9638641645
39	Shakti Salt Works (Ganeshgadhi)	Chandubhai Premjibhai	9879193122
40	Devraj Salt Works (Ganeshgadhi)	Savshibhia Jasabhai	9724862908

41	Umiya Salt Works (Ganeshgadh)	Hirabhai Jagabhai	9879115705
42	ShivSakti Salt Works (Ganeshgadh)	Chaturbhai Keshabhai	9879917833
43	Bhagwati Salt Works (Ganeshgadh)	Bhagwanbhai Devabhai	9879172638
44	Ambuja Salt Works (Ganeshgadh)	Vashrambhai Mohanbhai	9879145317
45	Shree Ram Salt Works(Ganeshgadh)	Dineshbhai Lakhabhai	9909139142
46	Jay Mahashakti Salt (Kumbharwada)	Bhupatbhai Popatbhai	9825836709
47	Laxmi Salt (Kumbharwada)	Rameshbhai Babubhai	9924264233
48	Gayatri Salt(Kumbharwada)	Premabhai Shamjibhai	9925774184
49	Kishan Salt (Kumbharwada)	Hirabhai Shamjibhai	9712500618
50	Gita Salt (Kumbharwada)	Bhupatbhai Popatbhai	9825836709
51	Chamunda Salt works (Akwada)	Bhupatbhai Ratabhai	9825353059
52	Ashapura Salt Works (Akwada)	Vashrambhai Punjabhai	9879073962
53	Khodiyar Salt (Akwada)	Govindbhai Chhaganbhai	9979672852
54	Momai Salt (Ganeshgadh)	Batukbhai M.Vaghela	9909899430
55	Bhavna Salt (Ganeshgadh)	Shavshibhai Shivabhai	9377888996

## Culture and Arts, Socialism

Home to socialism, reforms, and cultural legacy, Bhavnagar is considered a city of education and culture, and is known as the cultural capital of Saurashtra. People of Bhavnagar are considered to be easy-going, and art-loving. The artists and literary luminaries of Bhavnagar have immensely contributed to the culture of the city. Gujarati is the language of normal life, although Hindi is commonly understood. Knowledge of English is limited to the more educated population of the city.

## Tourism

- **Takhteshwar Temple** is one of the prime places to see in Bhavnagar. Takhteshwar Temple (1893) is a white marble temple, on a high plinth, offering a commanding view of Bhavnagar. The high shikhara rising above the pillared rectangular mandapa makes it an important landmark. Lord Shiva is worshipped as the main deity of this shrine
- **Nilambag Palace:** The residence of the current Maharaja of Bhavnagar, HH Maharao Vijayrajsinhji Virbhadrasinghji Gohil & his family; is now also a heritage palace hotel.

- **Mangalsinhji Mahal Palace:** This palace is the residence of the members of the Bhavnagar royal family (family of Maharajkumar Mangalsinhji Takhsinhji of Bhavnagar). It is a historical property in the heart of Bhavnagar city and is designed on traditional Kathiawari architectural principles. It is now the formal residence of the descendants of Rajkumar Chandrasinhji Mangalsinhji of Bhavnagar.
- **Bhav Vilas Palace:** This palatial property was formerly the club-house for the royal family of the erstwhile princely state of Bhavnagar, now the residence of Maharajkumar Shivbhadrasinhji Krishnakumarsinhji Gohil & his family. It is famous for its wildlife collection & lake-side views.
- **Gaurishankar Lake** is a beautiful lake between small hills. It was made by Shree Gaurishankar Oza, the Deewan of Bhavnagar. There is Balvatika for Children, and temple of Lord Shiva. There is a big palace for Highness Family. It is peaceful and lovely place.
- **Seashore at Ghogha (About 22 km. from Bhavnagar):** Sea-side palace retreat of the Bhavnagar royal family, also now a hotel-guesthouse for travellers with excellent sea-side views & cuisine.
- **Victoria Park:** It covers an area of about 500 acres (2 km<sup>2</sup>) with diverse flora and fauna. This park attracts bird watchers and nature lovers. It is a forest conserved by the Indian Government within the boundary of the Bhavnagar city. The forest has varieties of Indian birds like waders, raptors and perching birds that attract bird watchers and nature admirers.
- **Gopnath Beach** offers colorful bird life, limestone cliffs, a sea breeze, and scenic views. It also houses the world's biggest ship breaking zone, and the Talaja temple, which is built on a 350 foot high volcanic hill.
- **Barton Library** (Bhavnagar City)
- **Darbargadh:** Once the seat of the Bhavnagar royal family, now rented out to the State Bank of India is also their headquarters (formerly the State Bank of Saurashtra)
- **Ganga Deri (Ganga Jalia Talav):** This monument is a miniature of the Taj Mahal constructed entirely in marble and is one of the masterpieces of old times given by the Maharaja.
- **Alang Ship Breaking Yard:** (About 50 km from Bhavnagar on the way to Talaja)
- **Gandhi Smriti:** A memorial, with a library of Gandhian books and photographs about the life of Mahatma Gandhi. It also has a fine collection of art objects representing the culture of the Saurashtra region.

- **CSMCRI (Central Salt and Marine Chemicals Research Institute):** The only constituent laboratory of CSIR (Council of Scientific and Industrial Research) in Gujarat. A significant research effort is being carried out here to develop Bio-Diesel from Jatropha.
- **Ghogha Beach (19 km away from Bhavnagar):** It is a favourite spot for local trips.
- **Oldest Mosque** during the period of Hazarat Muhanmad Paygambr of Gujarat is in Ghogha.
- **Piram Bet (About 20 km away from Ghogha Beach)** treasured fossils and old caves
- **Malnath Shiv Temple** (About 15 to 20 km from Bhavnagar)
- **Khodiyar Mata Temple** (near Sihor)
- **Pillgarden:** A beautiful garden in the city. Also called Sardar Baug.
- **Palitana:** Famous for its beautiful Jain temples. A pilgrimage place for Jains.
- **Velavadar:** Blackbuck National Park.
- **Sihor Brahm Kund** Made By Siddhraj Jaysinh Rathod.
- **Gautmeshwar Temple** (Gautam Rushi Do the Sadhna)
- **Sihori Mata Temple** (Sihor)
- **Mongal Mata Temple** (near Mahuva)
- **Nishkalnk Mahadev** (Koliyak)
- **Bhavani Mata Temple** (Katpar-Mahuva Taluka)
- **Bajarangdas Bapa Temple** (Bagadana)
- **Zanzmer Beach** (Talaja)

## Men of letters

Bhavnagar has produced many Reformists, Thinkers, Socialists, Poets, Writers, Artists, Educationists, and Independence activist. A few of these are mentioned below:

- **Narsinh Mehta**– A poet-saint and exponent of Hindu devotional religious poetry, author of the popular bhajan 'Vaishnav Jana To', was born in the village of Talaja in Bhavnagar district.
- **Gangasati**– A medieval Gujarati saint poet who wrote many devotional songs, hailed from Samadhiyala village of Umralla Taluka of Bhavnagar district. The shrine of Gangasati and Panbai is situated on the riverbed of the Kalubhar river.
- **Kavi Kant**– Royal poet of Bhavnagar state was born in Chavand village of Bhavnagar district.
- **Nanabhai Bhatt (Lokbharti)**– Founder of Lok Bharti, educationist, creative writer, thinker.
- **Gijubhai Badheka**– Educationist and reformer.
- **Jhaverchand Meghani**– Gujarati poet and writer of Gujarati folk literature.
- **Ravishankar Raval**– A painter, art teacher, art critic, journalist, and essayist, was born in Bhavnagar.
- **Manubhai Pancholi "Darshak"**– An educationist, writer, and politician
- **Prahlad Parekh and Krishnalal Shridharani**– Poets
- **Dula Bhaya Kag**– Renowned poet, social reformer and freedom fighter, born in Mahuva town of Bhavnagar district.
- **Morari Bapu**– A Hindu preacher famous for Ram Charit Manas Katha, from a small village Talgajarda near Mahuva of Bhavnagar district.
- **Govardhanram Tripathi**– Gujarati novel Saraswatichandra written by him based on locations of Bhavnagar and Sihor. A few chapters were written during his stay in Bhavnagar.
- **Somalal Shah**– Painter
- **Mulshankar M. Bhatt**– Educationist
- **Ambashankar Bhatt**– Educationist



- **Kanti Bhatt**– Journalist and Columnist in leading News paper
- **Harbhai Trivedi**– Educationist
- Kismat Qureshi, Nazir Dekhaiya, Barkat Virani are writers of Ghazals.

## Commerce

- Exports of cotton, ship machinery and dehydrated onions.
- Diamond cutting, polishing, and marketing.
- Manufacture of diamond jeweler.
- Manufacture of plastic rope, yarn, twine.
- Re-rolling mills driven by the ship-breaking yard at Alang.
- Manufacture of Investment Castings with lost wax process (Ferrous and Non Ferrous)
- Other large scale manufacturing industries like fertilizer, soda-ash, steel casting etc.

## Workers and Industrial Classification

Census 2011 data reveals that total 40.98% are workers in the district, out of that 33.7% are main workers and 7.38% are workers. Cultivators are 21.99%, Agriculture laborers 27.61%, Workers in household industry 1.39% while a significant percentage of 49.0%, Are classified as other workers.

## Industrial Development

Industrial development of Bhavnagar district could be attributed to the presence of a large number of diamond cutting and polishing units, salt and marine chemicals, plastics, ship building and breaking industries. Ship breaking is the biggest industry in the district. Bhavnagar stands second in diamond cutting & polishing industry after surat in india.

## MAH industries in Bhavnagar District

Sr. No.	Name of MAH industries	Chemical utilized by the industries	Remarks
1	Sumitomo Chemicals (I) Pvt.Ltd.	Epchoro hydrine	Bhavnagar
2	Indian Oil Corporation Ltd.	LPG	Bhavnagar
3	Ship Recycling Industrial Association (Odaraka village)	LPG	Ghogha
4	Sunfire Petrochemicals (P) Ltd. (Vadia village)	LPG	Sihor
5	Nirma Ltd. (KalaTalav village)	Clorine (Liquid), Hydrogen Gas	Bhavnagar
6	Archit Organosys Limited (Narmad village)	Clorine, Hydrogen Gas	Bhavnagar
7	Renaissance Industries (GIDC-Vartej)	Clorine	Bhavnagar

## Ports (Gujarat Maritime Board)

Out of 1600 Kms. Length of Coastal line of Gujarat the coastal belt of Bhavnagar District blessed with 152 Kms.

### Bhavnagar Port

Bhavnagar port is all-weather lighterage port for bigger cargo vessels. It has a draught of upto 4 m and is located in the Gulf of Cambay on the West coast of India. The port is having a lock gate for tidal advantage. Presently Coal, Lime Stone, and Salt are beaing handled.

The port is well connected with the state highway and broua-gauge railway line. The city of Bhavnagar is about 10 km from the new port. Daily air services are available between Bhavnagar and Mumbai. Nearest international Airport is Ahmedabad.

### Alang Port

Alang is the world's largest ship recycling yard. It has been in operation since 1982. It ccomes undert the administrative control of Gujarat Maritime Board(GMB) which was established by the government of Gujarat in 1982 under the Gujarat Board Act, 1981.

Alang-Sosiya Ship Recycling Yard stretches over a approximately 10 km of coastline along the western shore of the Gulf of Khambhat. It can be approached from the nearest city Bhavnagar by NH-8E (up to Trapaj) and SH-37 (from Trapaj). A concrete service road runs along the entire length of the SRY. GMB has developed 153 plots for ship recycling which have been leased to private entrepreneurs. Out of total 153 plots 90 plots are in the Alang area (Southern part of the yard) and 63 are in Sosiya area (Northern part of the yard).

## **Alang-Sosiya Ship Recycling Yard**

### **Background:**

The ship breaking industry performs two major roles. It adjusts Ship tonnage for the shipping industry by way of disposal of old ships and it also supplies substantial quantities of re-rollable and scrap steel. It also increases the availability of some finished material/ products which otherwise would have to be produced by the iron and steel industry using the natural ore. Thus, the ship breaking industry helps in conservation of natural resources.

In India till 60's ship breaking activity was confined mainly to dismantling of small barges and coastal wrecks. The activity grew as a full-fledged industry by 1979 when the Government of India recognized it as a Manufacturing Industry. Though ship-breaking activities are carried out at West Bengal (Kolkata), Kerala (Beyport, Azical), Maharashtra (Mumbai) and Gujarat (Sachana) etc. however the main centre lies on the west coast of Gulf of Cambay at Alang-Sosiya, Bhavnagar, Gujarat. The large tidal range and other geomorphological characteristics of the beach at Alang make it an ideal location for the ship breaking industry. As many as 173 plots are developed by Gujarat Maritime Board along a 10 km long coast with total breaking potential of 3-5 MMTA.

### **MATERIALS OBTAINED ON RECYCLING OF SHIP:**

During the recycling of ship, precious material is obtained which can be used either directly or after altering it. Some of the important materials obtained due to ship dismantling are:

- Steel plates, pipes, beams, angles, channels etc.
- Engines, D.G. Set, A.C. Unit and spare parts.
- Refrigerators, washing machines, TVs etc.
- Wood (doors, panels, furniture)
- Cables (Copper and Aluminum cables)
- Glass wool, Thermocol, PUF etc.
- Oils (Furnace oil, lubricating oil, transformer oil, diesel)
- Lead acid batteries.
- Gear boxes, machineries, pumps, valves etc.

## **BREAK UP OF MAJOR END PRODUCTS OF SHIP RECYCLING:**

The percentage wise break up of important end products shows that only 2-3% waste is generated thereby proving it environment friendly process of getting steel.

Re-roll able scrap	: 70 - 80 %
Melting scrap	: 6 - 10 %
Non-Ferrous scrap	: 0.25 - 0.75 %
Machinery & other material	: 4 - 5 %
Furniture	: 1 %
Weight loss	: 8 - 10 %
Solid disposable waste	: 2 - 3 %

## **TYPE OF SHIPS COMING FOR RECYCLING ACTIVITY**

Committee of Technical Experts in its report categorized ships in to 1) Ships of special concern and 2) General ships. However mainly following type of ships comes to Alang for dismantling.

- 1) Bulk Carrier (Cargo)
- 2) Tankers (Oil, Chemical, LPG etc.)
- 3) Passenger Ships (RORO Passenger/ Big Passenger liner)
- 4) Factory Ships (Fish/Cement Factory)
- 5) War ships
- 6) Research vessel
- 7) FPSO/Offshore fixed or floating Platforms

## **HAZARDOUS WASTE MANAGEMENT:**

**The following activity leads to generation of hazardous/non-hazardous wastes**

Removal of oil : used oil/waste oil  
Cleaning of oil tanks : oily sludge/oily rags/contaminated oily sand  
Dismantling of cabins/passage : waste asbestos/glass wool/ thermocol/floor tiles/ glass pieces  
Dismantling of pipes : waste asbestos/glass wool/PUF  
Removal of cables: pieces of waste cables  
Removal of Lead acid batteries: used batteries  
Cutting of massive pieces of vessels : paint chips  
Cutting of large pieces of plates in to smaller pieces: paint chips/scale

**The Hazardous waste management scenario was observed to have improved significantly, as compared to the previous years, on account of the following measures:**

Removal of oil:

Ship Recycler submits the tentative schedule of removal of oil to Regional Office, Bhavnagar. During the period of removal of oil, GPCB officials monitor the facility ensuring no leakage of oil. Used oil recovered from ships is sold to the oil reprocessing units registered with CPCB and copy of manifest is submitted to Regional Office.

Cleaning of oil tanks:

Oily sludge is sent to common incinerator facility where as oily rags and contaminated oily sand is disposed off to TSDF site.

#### **Various types of oils in the ship:**

Type of oils	Source	density	Flash point	Application
Fuel Oil	Engine	0.94	110	Sold as fuel oil
Marine gas Oil (Diesel)	Generator set	0.87 0.84	230+10	Sold as fuel oil
Lubricating oil	Various mechanical/ Hydraulic system	0.87	Total Base number 7-13	Sold as lube oil
Used oil	Sump tank	0.90 to 0.92	180 Water contaminant 2 to 50%	Disposed to Re Refining units
Waste oil	(Heavy fuel bottom tank) (Gas oil bottom tank)	0.94 0.80		Disposal to re refining units/incineration depending on the quality

4. Handling of asbestos: Following practice was adopted prior to Hon'ble Supreme Court order dtd.6/9/2007. Pipe and other parts containing asbestos is dismantled from the ship and brought to the asbestos handling area at the plot. The Pipe/parts containing asbestos is made wet by spraying the water on it and than Scrapped off to minimize the generation of air borne asbestos fiber. Waste asbestos thus generated is solidified in the cement pipe with the help of cementing

material before disposal to the TSDF site. On site handling & solidification facility is provided in all the operative plots.

Many of the Plots have provided special asbestos handling facility (negative pressure system) containing facility of providing negative air, HEPA filter system along with air pollution control measures and a waste water treatment.

Proper collection, segregation, storage and disposal of pieces of glass wool, thermocol, floor tiles and other wastes including waste cables/rubber tubes, etc. to a secured land fill site at Alang.

Stopping haphazard dumping of solid/hazardous waste generated from the ships.

The landfill site at Alang developed by GMB is commissioned in October 2005 and made operational in March-06. It is expected to cater to the solid/hazardous waste disposal requirement for around 5 years. This site is outsourced by GMB to GEPIL, Surat for operation and maintenance for the period of three years which is further extended for another two years. So far about 6760 tons of waste is received at this site. These contain 185 MT of ACM/asbestos waste.

The ship breaking units at Alang-Sosiya had disposed around 3868 MT of such wastes up to February 2006 at the Naroda TSDF site. Till August-08, 4922 MT of hazardous & non-hazardous waste is received whereas 1838 MT of MSW is received at the site. The waste segregation and storage facilities for these wastes are provided on plots basis. The recoverable sheets of glass wool, asbestos containing material (ACM) and thermocol are recovered and sold for reuse.

Hazardous Waste/Solid Wastes from Ship Recycling Yard and its disposal methodology:

Sr. No.	Waste/Waste stream	Mode of disposal	Remarks
<b>HAZARDOUS WASTE</b>			
1	Oily sludge	Disposal by selling at TSDF or by incineration	
2	Asbestos	Disposal at TSDF	
3	Paint Chips	Disposal at TSDF	
4	Used Oil	Disposal by selling to registered re-refiners	
5	Waste Oil	Disposal by selling registered re-refiners or by incineration	
6	Used Batteries	Disposal by selling to Registered Recyclers	
<b>SOLID WASTE</b>			
1	Cementing	Disposal by selling to	Unusable pieces of

	Material	end users	tiles and other cementing material goes to TSDF
2	Iron scaling	Disposal by selling to end users	Unsellable goes to TSDF
3	Chicken mesh	Disposal by selling to end users	Unsellable goes to TSDF
4	Cardboard & packing Material	Disposal by selling to end users	Unsellable material goes to TSDF
5	Glass	Disposal by selling to end users	Unsellable broken glass pieces goes to TSDF
6	Rexene	Disposal by selling to end users	Unsellable small pieces goes to TSDF
7	PVC & Plastic & Cable	Disposal by selling Registered recycler	Unsellable small pieces goes to TSDF

## Annexure-2

### Disaster History of District

Year	Description
1982	On 8 <sup>th</sup> November 1982 Bhavnagar faced a tropical cyclone of the speed of 150 kms / hours. Instead of it there was heavy rain in the district on 7 <sup>th</sup> and 8 <sup>th</sup> November 2004. Because 250 mm rain falls in two days there was the situation of flood in the rivers that cause the death of 125 people at the site of Kalubhar dam in Gadhada Taluka. Same day 25 people felt in the grip of death of Umralal Taluka. In the same cyclone the Kashmir of Saurashtra MAHUVA lost its beauty because thousands of trees fell down and there was heavy loss of human being, resources, property and livestock.
1999	Again the Bhavnagar District copied a cyclone of 80-100 kms / hour with heavy rain. It's taken the 5 innocent people in the grip of death.
2000	In August – 2000 the topple of Bhavnagar experienced the earthquake. The epicenter of the quake was near to the 8 kms far from circuit near Malanka village. From August 2000 to 25 <sup>th</sup> January – 2001 the people of Bhavnagar experienced 175 to 200 light earthquakes. Because of the waves of those quakes there was heavy loss of buildings in the Bharatnagar area of Bhavnagar.-
2001	The destructive earthquake of 26 <sup>th</sup> January 2001 badly affected the Bhavnagar district. Because of earthquake 4 people and one cattle dead and 24 people were injured. In the same earthquake 9752 kuchcha and pukka houses were partially damaged and 239 house were totally damaged.
2002	In Bhavnagar district during 6 <sup>th</sup> June 2002 to 30 <sup>th</sup> June 2002 the heavy rain created flood in Palitana, Bhavnagar and Sihor Taluka of the district, during the flood 19147 people were affected and 8 people were dead and there was heavy loss of buildings and property in Bhavnagar, Sihor and Palitana Taluka.
2007	During this session heavy rain became the main cause of flood. Seven taluka of the Dist. were adversely affected city and total 40 people dead in different area within district. Similarly other adjoining taluka were also affected. There was heavy loss public and private property.
2015	There was heavy rain in district and it cause of flood. It affected whole district especially some area of Palitana city and Talaja city and also 4 villages of Gariyadhar and Jesar taluka. 8 people were dead and there was heavy loss of property. Administration also done evacuation during flood situaion.
2018	Villages of Mahuva, Talaja and Jesar taluka have affected due to heavy rain. There was situation of evacuation and heavy rain also result to property damage.
2019	Heavy Rainfall in “BHAL” area of Bhavnagar taluka. Water logging issues occurred due to the same. There was also situation of evacuation in some of villages.
2021	“Taukte”- due to this cyclone district faced many difficulties; Human Death, Cattle death, House damage, Road damage, Heavy damage of Electrical pole and Thousands of trees fell down. Wind speed was 120 kms/hours.



## Annexure-3

### List of Vulnerable villages

#### The details of coastal villages

Sr.No.	Taluka	Village	
		SN	Name
1	Bhavnagar	1	Kalatalav
		2	Hathab
		3	Narmad
		4	Koliyak
		5	Jashvantpur
		6	Kotda
		7	Kheta khatli
		8	Ganeshgadh
2	Ghogha	1	Kuda
		2	Ghogha
		3	Avaniya
3	Mahuva	1	Nicha kotda
		2	Dayal
		3	Kalsar
		4	Naip
		5	Nikol
		6	Vaghnagar
		7	Katpar
		8	Khared
		9	Gadhda
		10	Gujarda
		11	Dudheri
		12	Doliya
		13	Padhiyarka
4	Talaja	1	Alang
		2	Mithivirdi
		3	Sartanpar
		4	Reliya
		5	Gadhula
		6	Zanzmer
		7	Methala
		8	Madhuvan
		9	Juna-rajpara
		10	Tarasra

**Total-34**

### The details of water logging villages

Sr.No.	Taluka	Village	
		SN	Name
1	Bhavnagar	1	KalaTalav
		2	Velavadar
		3	Keta Khatli
		4	Narmad
		5	Paliad
		6	Devalia
		7	Jasvant Pura
		8	Kotda
		9	Sanesh
		10	Ganeshgadh
		11	Saviakot
		12	Madhia
		13	Savainagar
		14	Bhadbhid
		15	Adhelai
		16	Rajgadh
		17	Mithapar
2	Sihor	1	Bhangadh
		2	Ukhrala
		3	Navagam Mota
3	Gariyadhar	1	Bhamaria
		2	Sarambhada
4	Umrala	1	Ratanpar
		2	Chogath
		3	Tarpala
		4	Hadmatata
5	Mahuva	1	Katpar
		2	Gadhda
		3	Khared
		4	Sathra
		5	Nikol
6	Talaja	1	Valar
		2	Sartanpur
		3	Tarasara
		4	Gorakhi
		5	Mangela
7	Jesar	1	Pa
		2	Ranigam

**Total-38**

### The details of river affected villages

Sr.No.	Taluka	Village	
		SN	Name
1	Bhavnagar	1	Shedhavadar
		2	Fariyadka
		3	Vartej
		4	Undavi
		5	Adhevada
		6	Malanka
		7	Kala talav
		8	Narmad
		9	Kheta Khatli
		10	Paliyad
		11	Devaliya
		12	Jashvantpur
		13	Kotda
2	Ghogha	1	Lakhanka
		2	Odarka
		3	Kareda
		4	Garibpura
3	Vallabhipur	1	Nasitpur
		2	Totniyana
		3	Monpur
		4	Pipaliya
		5	Navagam {Gayakvadi}
		6	Kanpur
		7	Jalalpur
		8	Juni Rajashthali
		9	Navi Rajashthali
		10	Pati
		11	Juna Rampar
		12	Chamardi
		13	Nava Rampar
		14	Dared
		15	Mevasa
		16	Loliyana
		17	Kheta Timbi
		18	Pachhegam
		19	Rajapara Bhal
4	Palitana	1	Nani Rajashali
		2	Maydhar
		3	Lapaliya
		4	Medha
		5	Lakhavad
		6	Moti Paniyani
		7	Bhutiya
		8	Nani Paniyani
		9	Mandavada

		10	Anida
5	Gariyadhar	1	Gujarda Juna
		2	Thansa
		3	Satpada
6	Jesar	1	Ranigam
		2	Karjala
		3	Shantinagar
		4	Bila
		5	Itiya
		6	Kobadiya
		7	Beda
		8	Bhanvadiya
7	Umralla	1	Bhojavadar
		2	Chogath
		3	Dhamanka
		4	Vangdhra
		5	Tarpala
		6	Ratanpar
		7	Samdhiyala
		8	Hadmatalla
		9	Timba
		10	Ranghola
		11	Piprali
		12	Malpara
		13	Langala
		14	Zanzmer
		15	Dharuka
		16	Dambhaniya
		17	Devaliya
8	Mahuva	1	Samdhiyala
		2	Sendarada
		3	Kantasar
		4	Vadli
		5	Bhadrod
		6	Khatsura
9	Talaja	1	Juni Kamrol
		2	Lilivav
		3	Shobhavat
		4	Navi Kamrol

**Total-84**

## Annexure-4

### Rainfall Data of last 10 Years

Sr. No	Taluka	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	Bhavnagar	532	1324	651	672	668	659	483	1184	1056	906
2	Gariyadhar	251	685	359	366	604	370	178	502	515	601
3	Ghogha	443	917	516	451	631	503	433	932	562	768
4	Jesar	361	817	420	675	753	546	528	425	701	589
5	Mahuva	259	1055	542	592	778	750	745	873	896	832
6	Palitana	446	830	354	627	639	735	406	729	634	669
7	Sihor	353	983	458	554	499	471	371	754	585	460
8	Talaja	354	969	466	493	697	637	615	617	519	458
9	Umrالا	416	773	596	682	542	566	352	961	903	621
10	Vallabhipur	515	851	540	581	660	613	379	1002	999	599
	<b>Total</b>	<b>3930</b>	<b>9202</b>	<b>4902</b>	<b>5693</b>	<b>6471</b>	<b>5850</b>	<b>4490</b>	<b>7979</b>	<b>7370</b>	<b>6503</b>

## Annexure-5

### Dam Details of District

S.N.	Name of the Dam	Village Name	Taluka	District	Capacity (In feet)	Danger point (In foot)	No. of Villages affected
1	2	3	4	5	6	7	7
1	Shetrunji	Nani Rajasthali	Palitana	Bhavnagar	34.00	41.00	
2	Hanol	Hanol	Palitana	Bhavnagar	12.30	12.30	
3	Kharrodam	Sonpari	Palitana	Bhavnagar	21.70	22.14	
4	Rajaval	Mandavda	Palitana	Bhavnagar	22.14	27.81	
5	Malpara	Mandavda	Gadhada	Botad	16.73	16.73	1
6	Kalubhar	Rajpipla	Gadhada	Botad	21.80	26.30	4
7	Bhimdad	Bhimdad	Gadhada	Botad	28.30	36.28	
8	Limbali	Limbani	Gadhada	Botad	12.12	14.23	
9	Ghelaitariya	Itaria	Babra	Amreli	25.00	31.00	
10	Ghelasomnath	Somalpura	Jasdan	Rajkot	25.75	30.75	
11	Malgarh	Bhadli	Jasdan	Rajkot	25.75	30.75	
12	Ranghola	Ranghola	Umralla	Bhavnagar	30.00	31.00	2
13	Goma	Goma	Botad	Botad	20.00	27.50	3
14	Sukhbhadar	Nana Bhadla	Sayala	Surendra-Nagar	26.60	30.43	2
15	Kaniyad	Kaniyad	Botad	Botad	11.15	11.15	
16	Malan	Mota Khutavada	Mahuva	Bhavnagar	34.00	34.00	2
17	Rojki	Thoran	Mahuva	Bhavnagar	32.50	38.50	3
18	Bagad	Khumbharia	Mahuva	Bhavnagar	16.60	26.56	3
19	Hamirpara	Hamirpara	Talaja	Bhavnagar	17.50	17.50	
20	Khodiyardam	Dhari	Dhari	Amreli	65.00	65.00	
21	Lakhanaka	Lakhanka	Ghogha	Bhavnagar	30.30	32.80	
22	Pingali	Pingali	Talaja	Bhavnagar	51.30	51.30	

## **Annexure-6**

### **Government Health Facilities**

#### **Government Hospitals in City**

<b>Sr. No.</b>	<b>Hospital</b>	<b>Fone Number</b>	<b>Contact person</b>	<b>Mobile Number</b>
1	Sir T. General Hospital	0278 2423250	Dr. Jayeshkumar Brahmbhatt	9898141114
2	Tapibai Ayurvedik Hospital	0278 2423941	Dr.Naresh Jain	7359361933
3	Railway Hospital	0278 2445502	-	-
4	ESI Hospital	0278 2424664	-	-

#### **Taluka Health Office**

<b>Sr. No.</b>	<b>Taluka</b>	<b>TELIPHINE NO (O)</b>	<b>Sr. No.</b>	<b>Taluka</b>	<b>TELIPHINE NO (O)</b>
<b>1</b>	Bhavnagar	0278-2510246	<b>6</b>	Jesar	02844-227660
<b>2</b>	Ghogha	0278-2510246	<b>7</b>	Sihor	02846-224839
<b>3</b>	Gariyadhar	02848-243483	<b>8</b>	Talaja	02842-223095
<b>4</b>	Palitana	02848-243483	<b>9</b>	Umralla	02841-222543
<b>5</b>	Mahuva	02844-227660	<b>10</b>	Vallbhipur	02841-222543

## Primary Health Center

Sr. No.	Name of PHC	Name of Taluka	Code No.	Telephone No. (O)
1	Nari	Bhavnagar	0278	2446760
2	Bhunbhali	Bhavnagar	0278	2882167
3	Bhandariya	Bhavnagar	0278	2881315
4	Undavi	Bhavnagar	0278	2541305
5	Tansa	Ghogha	0278	2886307
6	Valukad (Ghogha)	Ghogha	0278	2888338
7	Thaliya	Talaja	02842	284432
8	Unchadi	Talaja	02842	287856
9	Manar	Talaja	02842	235213
10	Trapaj	Talaja	02842	286638
11	Bhadraval	Talaja	02842	285250
12	Piththalpur	Talaja	02842	287860
13	Kalsar	Mahuva	02844	281111
14	Sendarada	Mahuva	02844	-
15	Kunbhan	Mahuva	02844	286433
16	Gundarada	Mahuva	02844	283438
17	Boda	Mahuva	02844	282408
18	Bagadana	Mahuva	02844	284470
19	Talgajarada	Mahuva	02844	247084
20	Madhiya	Mahuva	02844	280519
21	Ranghola	Umralla	02843	234232
22	Dadava	Umralla	02843	242262
23	Motivavadi	Gariyadhar	02843	254273
24	Velavadar	Gariyadhar	02843	286645
25	Mangadh	Gariyadhar	02843	254342
26	Patana	Vallabhipur	02841	244282
27	Kalatalav	Vallabhipur	02841	-
28	Nonghanvadar	Palitana	02848	285597
29	Nani Rajshthali	Palitana	02848	288906
30	Valukad (Palitana)	Palitana	02848	283321
31	Gheti	Palitana	02848	260119
32	Usarad	Sihor	02846	260629
33	Tana	Sihor	02846	286342
34	Songadh	Sihor	02846	244061
35	Sanosara	Sihor	02846	283117



## **Annexure-7**

### **Private Health Facilities**

#### **List of Private Hospital (District Code No. 0278)**

<b>Sr. No.</b>	<b>Hospital</b>	<b>Fone Number</b>	<b>Mobile Number</b>
1	Ram mantra mandir hospital	2569100, 2564191	-
2	Bajarangdasbapa hospital	2512353, 2521001	9909989404
3	Red cross hospital	2424761, 2430700	9429406202
4	Aanandvatika Bhagini mandal hospital	2561366, 2563796	9374021912
5	P.N.R. hospital	2431150, 2431160	7383538283
6	Suchak hospital	2422184	9033632775
7	HCG hospital	6640000, 6640108	9909950216
8	BIMS hospital	9152652544	9723709101
9	Pulse hospital	9152699011	9741109236

## **Annexure-8**

### **List of Blood Bank (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>
1	Sir T. Hospital Blood Bank	2423250
2	Bhavnagar Blood Bank	2561526, 2565663
3	Bambhaniya Blood Bank	3004744
4	Indian Red Cross Society Blood Bank	2427286

## **Annexure-9**

### **List of Ambulance (District Code No. 0278)**

#### **Government Ambulance**

<b>Sr. No.</b>	<b>Name of organization</b>	<b>Contact Number</b>	<b>Number of Ambulance</b>
1	Sir T. general hospital	2423250	6
2	Tapibai Ayurvedik hospital	2423941	1
3	Railway hospital	2445502	1
4	108 services	108	7
5	ESI Hospital	2424664	1
6	Fire & emergency services	2424814	2
7	Airport Bhavnagar	2212971	2

#### **Private Ambulance**

<b>Sr. No.</b>	<b>Name of organization</b>	<b>Contact Number</b>	<b>Number of Ambulance</b>
1	Ram mantra mandir hospital	2569100, 2564191	2
2	Bajarangdasbapa hospital	2512353, 2521001	1
3	Indian red cross society	2424761, 2430700	2
4	HCG hospital	6640000,6640108	1
5	BIMS hospital	9152652544	2
6	Pulse hospital	9152699011	1

## Annexure-10

### List of NGOs (District Code No. 0278)

Sr. No.	Name	Contact Person	Contact Number
1	Chember of Commerce	Kiritbhai Soni	2244279, 9824245360
2	Indian Redcross Society	Sumitbhai Thakkar	2427286, 9825566642
3	Bhavnagar Blood Bank	Dr. N.N. Vaishnav	2511755, 9825207660
4	Gujarat Ship Recycling Association	Vishnukumar Gupta	2428696
5	Diomand Association	Vithalbhai Mendapara	2429391, 9426210351
6	Shri P.N.R. Society for Relief	Anantbhai Shah	9328286402
7	Shri Ram Mantra Mandir Trust	R.P.Shah	2422205, 9825868633
8	Sai Seva Samaj	B.J.Udaviya	9998423450, 9427202408
9	Jwel Star	Nayanbhai Golkiya	9978349970
10	Engineers Association	Ravjibhai Pandaya	9825132772, 9825309825
11	Ramjibhai Monabhai Trust	Odhavajibhai Patel	
12	Sardar Patel Snatak Mitra Mandal	Rajubhai Rabadiya	2426218, 9825204767
13	Golibar Hanumanji Mandir	Pujya Madanmohandasji Bapu	
14	Mavtar Senior Citizen Councelling Centre	Vibhavariben Dave, Vijaybhai Dave	2565018, 9426463146
15	Shishuvihar	Nirmalbhai Vakil	2568823
16	Nand Kunvarbaa Balashram	Anilaben pandya	2445521
17	Om Shri Mastarambapu Sanshthan Seva Trust	Himatbhai kanadiya	
18	Ramvadi	Kiritbhai Pandya	9925006888
19	Shaishav	Falgunbhai Sheth	9825209679
20	Youth Hostel Association of India	Prabhatsinh Gohil	9898606864
21	Shri Apang Parivar Kalyan Kendra	Dinkarbhai Mehta	2202574
22	Lions Club of Bhavnagar	Maheshbhai Dave	2513709
23	Shri Bhavnagar Mahila Sangh	Naliniben Jadeja	
24	Balwantray Maheta Mahavirnagar Vikas Trust	Vinubhai Parikh	2432790
25	Bhavnagar Mahila Mandal	Nilambariben Vora	

26	Darbargadh ward Navjavan Sangh	Dr.Sunil Mehta	2437150
27	Shri NCR Bhatt, Anoaupacharik Shikshan and Mahila Udhog Sahasikata Vikas Kendra	Namrataben Pandaya	2470944
28	Shahid Bhagatsinh Uvak mandal		
29	Bhukamp Surkasha Samiti	Damyantiben Modi	2566929
30	Sweemer Association	Bulbulbhai Vyas	3299309
31	Gujarat Rajya Swatantra Sainik Samaj	Rasikbhai Pandaya	
32	Civil support army	Rasendubhai Bhatt	
33	Bhavnagar Kutch Samaj	Mahendrabhai Shah	2569405, 9426209820
34	Doctor Association	Bharatbhai Trivedi	9825205464
35	Nehru Yuva Kendra Sangathan	Rajanikant Suthar	9824979371
36	Citizen Couseling	Rakeshbhai Bhadiyadra	9898462925

## Annexure-11

### List of Gaushala/Panjarapol (District Code No. 0278)

Sr. No.	Taluka	Gaushala		Panjarapol	
		Name	Number of Animals	Name	Number of Animals
1	Bhavnagar	Mahajan Gaushala	70	Panjarapol Bhavnagar	150
		Akasharvadi Gaushala	59		
		Kamghenu Gaushala	160		
		Sadguru Gaushala, Sidsar	42		
2	Ghogha			Samdhiyala Panjarapol	3054
3	Talaja	Mahajan Gaushala, Talaja	102		
		Gram Dakshinamurti, Manar	80		
		Lok Niketan Trust, Bela	28		
		Nil Kanth Mahadev Gaushala, Dharadi	75		
		Sundar Van Gaushala, Makhniya	42		
		Kal Bhairav Gaushala, Rojjiya	80		
		Mahajan Gaushala, Gopnath	15		
4	Mahuva	Mahuva Gaurakshak Sabha	186	Gopal Trust	95
		Doshi Bhanaji Devaji, Bhanavav	126	Mahuva Panjarapol	480
		Kailash Gaushala, Talgajarada	99	Anandji Kalyanji, Chhapariyali	3402
5	Palitana	Pranav Hemgiri Gaushala	307	Girivihar Panjarapol	2750
		Surajben Kantilala Gandhi, Valukad	80		
		Adarsh Gaushala	13		
		Sidhachal Jivdaya, Sarod	110		
		Anandji Kalyanji	35		
6	Gariyadhar	P.M. Mangukiya	227	Mahajan Panjarapol	481
		Gurudat Gaushala, Motivavadi	36		
		Gurudat Gaushala, Parvadi	60		
7	Sihor	Monghiba Gaushala	120	Mahajan Panjarapol	174
		Lokseva Trust Gaushala, Valaval	45		
		Gram Dakshinamurti, Ambala	42		
		lok Bharati Gaushala, Sanosara	108		
		Gurukul Gaushala, Songadh	35		
		Jayarambapu Gaushala, Usarad	50		
8	Vallabhipur	Bhholanath Gaushala, Navagam Dhal	19	Punamchand Vithaldas Doshi	250

## Annexure-12

### List of Community Hall (District Code No. 0278)

Sr. No.	Name of Community Hall	Address	Remarks
1	Shri modh vanik gnati nana tadani vadi	High court road, Bhavnagar	
2	Shri modh chaturvediy chuntha samvay gnati mandal	Vadala talavadi, Bhavnagar	
3	Shri shamji gopalaji raval audichya vidhyarthi bhavnan	Takhteshvar plot, vaghavadi road, Bhavnagar	
4	Shri gujarat audichya sidhpura sampraday brahaman gnati nagarpol	Bhagatalav, Bhavnagar	
5	Shri dasa ghoghari porvad gnati, Chakubag vadi	Opp: Bhid bhanjan mahadev, Bhavnagar	
6	Shri rajput gnatini vadi	opp: Gov. Qaurters. Navapara, Bhavnagar	
7	Shri bhavnagar delvadiya kapol gnati	Amrutvadi, Diwanpara road, Bhavnagar	
8	Shri bhavnagar shrimali soni gnati trust	Sherdipithna delama, desaifali, Bhavnagar	
9	Shri bhavnagar ghoghari lohana mahajan mandal	Khargate, Bhavnagar	
10	Shri bhavnagar samast gurjar sutar gnatini vadi	Shri vishwakarma mandir, Bhavnagar	
11	Shri brahama kshtriya panchni vadi	Station road, Bhavnagar	
12	Leuva kanabi gnatini vadi	Vadava paliyadhar chauk, near vijay taukiz, Bhavnagar	
13	Ratilal vithaldas gosaliya jain bhavan	Meghani circle, Bhavnagar	
14	Shri variya chovisi prajapati gnatini vadi	Prabhudas talav, Bhavnagar	
15	Shivshakti hall	Sarpattani road, crescent, Bhavnagar	
16	Anand hall	Ramnagar, Kaliyabid, Bhavnagar	
17	Doctor hall	opp: mahila college, Bhavnagar	
18	Shri dasa shrimali sthanakvasi jain gnatini vadi	Masjid chauk, navapara, Bhavnagar	
19	Shri bhavnagar dasa shrimali Kanthibandh vanik gnatini vadi	Ghogha gate, Bhavnagar	
20	Shri modh agiyaras brahaman gnatini vadi	Near alka taukiz, Bhavnagar	
21	Shri jalavadi rami mali gnatini vadi	Piparvali sheri, navapara, Bhavnagar	

22	Lakhubhai hall	Ramnagar, Kaliyabid, Bhavnagar	
23	Sahakar party plot graphed	Vijayrajnagar, behind nilambug hotel, Bhavnagar	
24	Jagad ambe party plot	Sir pattani road, cresen, Bhavnagar	
25	Shri sihor sampraday audichya agiyaras brahaman gnatini vadi	Ramvadi, opp bhidbhanjan mahadev, Bhavnagar	
26	Shri bhavnagar ghoghari kapol gnatini vadi	Opp railway station, Bhavnagar	
27	Shri ghogha bhavnagar vadnagara nagara brahamn gnatini vadi	Near nilkanth mahadev mandir, bhagatalav, Bhavnagar	
28	Luharvadi	Sutarvad, near railway station, Bhavnagar	
29	Luharvadi	Near ranika bhang karkhana, Bhavnagar	
30	Shrimali brahaman gnatini vadi	Diwanpara road, Bhavnagar	
31	Rotery club society of bhavnagar hall	Ghogha circle, Bhavnagar	
32	Dipak hall	Atabhai road, Bhavnagar	
33	Meladima hall	Hadanagar, Bhavnagar	
34	Shri modh agiyaras brahaman gnatini vadi	Near alka taukiz, Bhavnagar	
35	Shri alvatani gujarat leuva patidar gnatini vadi	Dhajagaravali sheri, Kanabivad, Bhavnagar	
36	Shri andhariya kachhiya gnatini vadi	Paliyadhar, Vadava, Bhavnagar	
37	Meman moti jamatkhana hall	Jogivad tanki, Bhavnagar	
38	Shri swetambar visha shrimali odhad ramjini vadi	Panavadi road, vadava, Bhavnagar	
39	Shri modh chaturvediy rajgor samvay	Haluriya chauk, Bhavnagar	
40	Shri bhavnagar dasa zarola vanik gnatini vadi	Opp Bartan library, Bhavnagar	
41	Shri lokagachchh jain sangh	Opp Bhidbhanjan, Bhavnagar	
42	Shri dasa shrimali jain sangh swetamber	Hajur payaga road, Bhavnagar	
43	Shri parekh mota tadani vadi	Opp darbari kothar, Bhavnagar	
44	Shri desai sai sutarvadi	Matava chauk, Bhavnagar	
45	Shri gohilvad vanand gnatini vadi	Kalanala, Uparkot, Bhavnagar	
46	Shri mochi gnatini vadi	Near vadava jain derasar, Bhavnagar	
47	Shradhavadi	Masjid chauk, navapara, Bhavnagar	
48	Shri modh chaturvediy chuntha samvay gnatini vadi	Vadava talavadi, charbati cauk, Bhavnagar	

### **Annexure-13**

#### **List of Ham Radio Operator (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Number</b>
1	Dr. B.U.Tekani	Swagar Complex, Jail Road, Bhavnagar	2422388, 2211588, 9376769088
2	Rajesh Vyas	Bhavnagar	9426882688
3	Pro. S.P.Bhattanagar	Head of Phisics	9428222401
4	Lalitbhai Divakar	Gurukrupa, Opp: Merubaug, Bhavnagar	9427181973
5	Anopsinh Gohil	Bhavnagar	9825209972

### **Annexure-14**

#### **List of Cable Operator (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Number</b>
1	So Lucky Cable	Ghogha Circle, Bhavnagar	2227222
2	C.C.N. Cable	Kalanala, Bhavnagar	2524163
3	Sunny Cable	Crescent, Bhavnagar	3056315
4	Braham Cable	Bhavnagar	9428078151



## **Annexure-15**

### **List of Media Person (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>
1	Show Time News	2201199, 2427777
2	City News	2200210
3	News Time	2431111, 2203122
4	ETV Gujarati	2518600, 2447373
5	Hello Saurashtra News	9426211806
6	Zee Alfa	2524500
7	Durdarshan Ahmedabad	2515001, 2569577
8	Samay Media News	2525222
9	Stya Media	2414004
10	Asian News International	9426901212,
11	Sky News	2202275
12	City Watch News	3007172, 2203999
13	Nidar News	2414733
14	IBN 7	2203999, 6540208
15	UNI	2423572

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>
1	Saurashtra Samachar	2422577, 2516558
2	Gujarat Samachar	2430555, 2431199
3	Sandesh	2519941, 2519942
4	Divya Bhaskar	2516558, 2516559
5	Fulsab	2561299
6	Times of India	9879372149
7	Ajkal	2470177, 2470188
8	Saurashtra Aspas	2513777,
9	Sanj Samachar	2512828
10	Pagdandi	2421133
11	Akila	2560105
12	Lokraj	9978227463
13	Jay Hind	2512828
14	Avadh Times	3007172
15	Saurashtra Kesari	9375888666

## **Annexure-16**

### **List of Private Travels (District Code No. 0278)**

#### **2 X 3 Seater**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Number</b>
1	Shakti Travels	Near Rubber Factory, Bhavnagar	9375555959
2	Ghanshyam Travels	Panvadi Chauk, Bhavnagar	9925513650
3	Baba Tours and travels	Panvadi Chauk, Bhavnagar	9879640376
4	Gurukrupa Travels	Opp: Pil Garden, Jashonath Circle, Bhavnagar	9824343909
5	Gaurang Travels	Nyaldas Complex, Bhavnagar	9427753588
6	Jay Shri Khodiyar Travels	Opp: Jain Derasar, Shashtinagar, Bhavnagar	2424400
7	Ganesh travels	Opp: Jain Derasar, Shashtinagar, Bhavnagar	9825054099
8	Shiv Sagar Travels	Opp: Vithalvadi Petrol Pump, Bhavnagar	9427248890
9	Akshay Travels	Jashonath Chauk, Bhavnagar	9825592456
10	Safari Travels	Sant Kanvarram Chauk. Kalanala, Bhavnagar	992508848
11	Modern Travels	Sant Kanvarram Chauk. Kalanala, Bhavnagar	9424287676
12	Mahida Travels	Opp: Kesarbai Masjid, Navapara, Bhavnagar	9426971346
13	R.A. Travels	Opp: Kesarbai Masjid, Navapara, Bhavnagar	9427413892
14	India Travels	Opp: Barten Library, Diwanpara, Bhavnagar	9898001314
15	Navrang Travels	Navapara, Bhavnagar	
16	A-D-Amin Travels	Opp: S.T. Stand, Bhavnagar	2423554
17	Gayatri Travels	Gayatrinagar, Parth Society, Bhavnagar	9426461527
18	Jay Bhavani Travels	Near Vartej Petrol Pump, Bhavnagar	9824859666
19	Avani Travels	Opp: S.T. Workshop, Chitra, Bhavnagar	9879536162

## **Annexure-17**

### **List of Private Travels (District Code No. 0278)**

#### **2 X 2 Seater**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Number</b>
1	Maya Travels	Near Bhidbhanjan Mandir, Bhavnagar	2425217
2	Rajdhani Travels	Madhavdarshan, Waghavadi Road, Bhavnagar	2432535
3	Tanna Travels	Rubber Factory Road, Bhavnagar	2425218
4	Gujarat Travels	Sir Pattani Road, Near Shivshakti Hall, Bhavnagar	2431786
5	Toter Travels	Crescent Circle, Bhavnagar	2513759
6	Sunny Travels	Opp: Jain derasar, Crescent, Bhavnagar	2429045
7	Laxmi Travels	Nilambaug Circle, Bhavnagar	2420892
8	R.K. Travels	Opp: Madhav Complex, Shashtrinagar, Bhavnagar	2439686
9	New Limda Travels	Sant Kanvarram Chauk, Bhavnagar	2427409
10	Sitaram Travels	Kalanala, Bhavnagar	2512211
11	Madhuli Travels	Diamond Chouk, Bhavnagar	2201282
12	Bindiya Travels	Opp: S.T. Stand, Bhavnagar	2514384
13	Parbat Travels	Opp: S.T. Stand, Bhavnagar	2428798
14	Ashapura Travels	Opp: S.T. Stand, Bhavnagar	2421818
15	Motor sangh	Opp: Collector office, Bhavnagar	2423572

## **Annexure-18**

### **List of Private Transport (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Phone Number</b>	<b>Mobile Number</b>
1	Jaypur Golden pvt. ltd.	2429967	9824222672
2	Ahmedabad Trasport	-	9826208518
3	Narayanji Peraj Transport	2516601	9824086601
4	Bharat Carring Corporation	2432613	9377106866
5	India Road Carring Corporation	2427264	9377113476
6	New Khodiyar Transport	2429489	9825206448
7	Malhotra Roadlines	3014499	9826901134
8	Hindustan Cargo Moovers	2518030	-
9	Hill Motors Transport Co.	2424446	9377422461
10	New Mahesh Transport	2428872	9879006825
11	Nondhanvadar Transport	2428095	9825205328
12	V.R.L. Logistic ltd.	2426638	9426910801
13	Jamnagar Transport Co.	2428584	-
14	Khodiyar Transport Co.	-	9328177363
15	Rajeswari Transport	2510155	9824248686
16	New Bhavnagar Transport	2516667	9825205696
17	V-Trans (India) ltd.	2424203	9375606300
18	Navayug Transport Corpo.	2423017	9825278677
19	Shri Khodiyar Transport Co.	2524310	9824289999
20	Gujarat Goods Service	2436080	9377111960
21	Associated Road Carrieres ltd.	3299268	-
22	New Ahmedabad Transport	2436269	-
23	Savani Transport	2424981	9377100710
24	Katariya Transport	2428338	-
25	Viraj Transport	2420419	6825207791
26	Gautam transport	2434922	9426917475
27	Devendrasinh Gohil	-	9429095317
28	Pujanbhai Maru	-	9426475777
29	Khengarbhai Maru	-	8306078910

## **Annexure-19**

### **List of Private Water Tenker (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>	<b>Number of WT</b>	<b>Capacity (Liter)</b>
1	Ramapir Water Supply	9427751466	1 9	10000 5000
2	Rajhansh Water Supply	982519733	4	10000
3	Shiv Water Supply	2430732, 2430131, 9426912628	1 3 3	10000 5000 1000
4	K.K.Water Supply	9909606959	2	5000
5	Amidhara	982580140	2	5000
6	Sitaram Water Supply	9904312994	5	5000
7	Jalpari	9328507373	4	5000
8	Sitaram	9824995031	2	5000
9	Mahendrabhai	9725579615	1	5000
10	Dhirubhai	9879867131	1	5000
11	Yograjsinh	9879565327	1	5000
12	Gautambhai	9978526434	1	5000
13	Joshankarbhai	9725260072	1	5000
14	Lalajibhai	9429234173	1	5000
15	Ajitbhai	9824186825	3	5000
16	Mehulbhai	9426385623	1	5000
17	Mukeshbhai	9428990927	1	5000
18	Vinubhai	9925914530	1	5000
19	Vajabhai	9825592676	2	5000
20	Sukhubha	9586463572	2	5000
21	Jamsangbhai	9924672223	2	5000
22	Dhirubhai	9426253190	4	10000

## Annexure-20

### List of Petrol Pump (District Code No. 0278)

Sr. No.	Name of Petrol Pump	Address	Contact Person	Contact Number
1	Satyanarayan Petroleum	Opp: Jilla Panchayat, Bhavnagar	Dilipsinh Ghanshyamsinh	2430051
2	Company Pump	-	Natavarlal	2511896
3	Bhavnagar Motor Sangh	Opp: Collector Office, Bhavnagar	Bakulbhai Chaturvedi	2425271
4	Swastik Auto Centre	Talaja Road, Bhavnagar	Navalkishor Thakkar	2564718
5	Maru Auto Mobiles	Juna Bandar, Bhavnagar	Pareshbhai Maru	6546002
6	Bhavnagar Sahakari Petrol Pump	Vithalvadi, Bhavnagar	Balwantray Badheka	2425269
7	Shri Bajarangdas Motor Sangh	Vithalvadi, Bhavnagar	Vanrajsinh jadeja	2439726
8	Kathiyavad Motor Sangh	Near Bus Stand, Bhavnagar	Natavarlal	2524892
9	Chitra	Desainagar, Bhavnagar	Batukray Nhanalal	2445712
10	Ramdev Petrol Pump	Chitra, Bhavnagar	Lalajibhai tejabhai	2444505
11	Hindustan Petrol pump	-	-	2567272
12	Planet	Dilbahar water Tank Road, Bhavnagar	Swetaben G.	-
13	Sai Petroleum	Atabhai Road, Bhavnagar	Bansal Rajkumar	-

## **Annexure-21**

### **List of Kerrosine Diller (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name of Agent</b>	<b>Address</b>	<b>Contact Person</b>	<b>Contact Number</b>
1	Saurashtra Petroloum	Topnaka, Bhavnagar	B.B.Gandhi	2516775
2	Sohilraj Agency	Sakarbaazar, Bhavnagar	N.S.Thakkar	2516584
3	Mehta Auto Mobiles	Railway Station, Bhavnagar	N.R.Mehta	3005725
4	Mohanlal Brothers	Danapith, Bhavnagar	Rasikbhai Vora	2516007
5	T.C.Brothers	Danapith, Bhavnagar	R.V.Parekh	2424736
6	Thakkar Brothers	Danapith, Bhavnagar	Pravinchand Harjivandas	3014761
7	Honest Petroloum	Railway Station, Bhavnagar	S.H.Chandarana	2427373
8	Natavarlal&Sons	Railway Satation, Bhavnagar	N.B.Bhayani	2511896
9	R.T.Brothers	Manimahel, Station Road, Bhavnagar	A.B.Jani	2566601
10	Rameshwar	Juna Bandar, Bhavnagar	Mayurbhai Kanjibhai	-

## **Annexure-22**

### **List of LPG Gas Diller (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name of Diller</b>	<b>Address</b>	<b>Contact Person</b>	<b>Contact Number</b>	
				<b>Phone</b>	<b>Mobile</b>
1	H.K. Kamdar&Sons	-	Anopsinh	2518505	9427559100
2	Bhavnagar Sahakari Hat	Waghavadi Road, Bhavnagar	Mashrufbhai	2517520	9426966756
3	Jayshakti Inden Gas	Subhashnagar, Bhavnagar	Bhagavanbhai	2203446	9825755085
4	Dipti Gas Agency	Bordi Gate, Bhavnagar	Rajanbhai	2203722	9426949290
5	Sitaram Gas Agency	Bordi Gate, Bhavnagar	Jitubhai	2521269	9924741133
6	Yogi Krupa Gas Agency	Shashtrinagar, Bhavnagar	Prabhudasbhai	2422370	9824982828
7	Shiv Prathmik Gas	Shashtrinagar, Bhavnagar	Harishbhai	2413213	9426212365
8	Krishana Gas Agency	Kalanala, Bhavnagar	Hareshbhai	2422958	9978458898
9	Rajdip Gas Agency	Shashtrinagar, Bhavnagar	Dilipsinh	2510768	9898156579
10	Astha Gas Agency	Desainagar, Bhavnagar	Chetnaben	2445233	992516417
11	Sweta Inden Gas Agency	Ghogha Jakat Naka, Bhavnagar	Nileshbhai	2572345	9426819171
12	Shri Bajarangdasji Inden Gas Agency	Kaliyabid, Bhavnagar	Jitubhai	2573124	9033730010

## **Annexure-23**

### **List of Rescue Equipment Suppliers (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Person</b>	<b>Contact Number</b>
1	Kamal Industries	Ruvapari Road, Jamnakund, Bhavnagar	Miteshbhai	2514339, 9426253270
2	Star Fire Fighters	Vithalvadi, Bhavnagar	-	9067628313
3	Sidhi Fire Service	31, Lalapark, Jalaram Society, Bhavnagar	Bharatbhai	9898330083
4	Kanadiya Fire&Safety	Shihor GIDC	-	-
5	Navin Fire Safety	Eva Complex, Opp: Gulista, Bhavnagar	Ketanbhai	9825580782
6	Kazi Enterprize (Boats)	Alang	Ramzanbhai	8460110110



## **Annexure-24**

### **List of Resources Available with Government**

#### **Equipment available with District Collector**

<b>Sr.No.</b>	<b>Item Name</b>	<b>Number of Items</b>
1	Portable inflatable Emergency Lighting System	2
2	Life Jacket	25
3	Life Buoy	25
4	PP Ropes 26 MM (100ft)	5
5	PP Ropes 26 MM (200ft)	3

#### **Equipment available with BMC**

<b>Sr.No.</b>	<b>Item Name</b>	<b>Number of Items</b>
1	Mini Fire Fighter	2
2	Fire Fighter	4
3	Foam Tender	2
4	Fire Bouser	2
5	Heavy Fire Tender	2
6	Rescue Van	1
7	Rescue Van (Pick up)	2
8	Ambulance	2
9	Sab Vahini	1
10	Dharma Rath	3
11	Fire Jeep	1
12	Fire Bullet	1
13	Life Buoya	120
14	Life Jacket	120
15	PP Ropes (200ft/ 100ft)	30
16	Portable inflatable Emergency Lighting System	5
17	Rubber Boat	2
18	Fibre Boat	1

### Equipment available with Nagarpalika

Sr. No.	Name of Nagarpalika	Portable inflatable Emergency Lighting System	Motorcycle Mounted Water Mist	Water Browser	Mini Fire Tender	HDPE Boat
1	Gariyadhar	2	1	1	1	-
2	Mahuva	2	1	1	1	1
3	Palitana	2	1	1	1	-
4	Sihor	2	1	1	1	-
5	Talaja	2	1	1	1	-
6	Vallabhipur	2	0	1	0	-

### Equipment available with Alang Fire station

Sr.No.	Item Name	Number of Items
1	Water tander	2
2	Form tender	1
3	Bouser	4

## **Annexure-25**

### **List of Resources Available with Corporate Sector**

#### **Equipment available with Nirma Company**

<b>Sr.No.</b>	<b>Item Name</b>	<b>Number of Items</b>	<b>Remarks</b>
1	Water tender	1	

#### **Equipment available with Excel Company**

<b>Sr.No.</b>	<b>Item Name</b>	<b>Number of Items</b>	<b>Remarks</b>
1	Mini fire fighter	1	

## **Annexure-26**

### **List of Private JCB Suppliers (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Number</b>	<b>Number of JCB</b>
1	Mahendrabhai Parmar	Kaliyabid, Patel Park, Bhavnagar	9879678480	15
2	Dharmendrasinh Gohil	Ghogha Road, Shivaji Circle, Bhavnagar	9904569567	4
3	Chhanubha Gohil	Malpar	9998313131	3
4	Jitubhai Parmar	Kaliyabid, Patel Park, Bhavnagar	9428108406	3
5	Zaadubhai	-	9725497632	2
6	Ashokbhai Baraiya	Ghogha Road, Pragati Hall, Bhavnagar	9426910953	2
7	Shyambhai Chauhan	Bhangali Gate, Talaja Road, Bhavnagar	9428052429	2
8	Natubhai Rathod	Akwada, Near Sitaram Hospital, Bhavnagar	9879916515	2

## **Annexure-27**

### **List of Private Crain Suppliers (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>	<b>Number of JCB</b>
1	Jaswantsinh	9825205583	5
2	Karansing Sardarji	9426211553	1
3	Mustakbhai	9427262771	1
4	Shahidbhai	9898086263	4
5	Punabhai	9426211553	5
6	Mahebubkha Mahmadbhai	9424704321	3
7	Gafarbhai Aarab	9824220819	2
8	Salimbhai Sadikbhai	9825212621	7
9	Harunbhai	9327753627	3
10	Imtiyazbhai	9824538932	2

## **Annexure-28**

### **List of Private Gas Cutter Suppliers (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Number</b>
1	Abbdulabhai Solanki	9904765292
2	Sohilbhai Bilakhiya	9825131292
3	Akilbhai Solanki	9904485055
4	Rameshbhai Dabhi	7405538481
5	Mukeshbhai Rameshbhai	9979329156
6	Laxmanbhai Parmar	9173563182
7	Iqbalbhai Mehatar	8401322932
8	Ashwinbhai Parmar	9824212268

## **Annexure-29**

### **List of Private Generator Suppliers (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Address</b>	<b>Contact Person</b>	<b>Contact Number</b>
1	Zen Engineering	32, Suryadarshan Complex, Near Rubber Factory Circle, Bhavnagar	Ketan Mehta	9825307900
2	Nigam Electricals	Simdhar Flate, Near Madhavdeep, Bhavnagar	Paresh J. Pandya	9824242122, 2221332
3	Gandhi Electric Store	Lalagar Bavano Math, Bhagatalav, Bhavnagar	Harshadbhai Gandhi	9427211521, 2425467, 2513046
4	Sigma Engineering	182, Madhavdarshan, Waghavadi Road, Bhavnagar	Vyasbhai	9825205934, 2436943, 2433434, 2429865, 2436943
5	Rahul Electric	1, Chandramani, Jail Road, Bhavnagar	Goradhanbhai Baraiya	9824397391
6	Baraiya Sound and Light	Mepanagar, Beh-Railway Hospital, Bhavnagar	-	9824390971

## Annexure-30

### Contact detail of Swimmers

Sr. No.	Name	Office	Contact Number	
			Office	Mobile
1	Pradyumansinh Jadeja	Fire&Emergency Service	2424814/15	9825204004
2	Anilkumar Rathod	Fire&Emergency Service	2424814/15	8000763246
3	Kantibhai Chudasama	Fire&Emergency Service	2424814/15	9428222157
4	Kalubhai Khambhaliya	Fire&Emergency Service	2424814/15	9428222164
5	Anvarmiyan Saiyad	Fire&Emergency Service	2424814/15	9427135565
6	Hareshbhai Dholakiya	Fire&Emergency Service	2424814/15	9979620620
7	Ghanshyamsinh Vala	Fire&Emergency Service	2424814/15	9328176877
8	Jivrajbhai Gilatar	Fire&Emergency Service	2424814/15	9428222167
9	Sandipbhai Kodyatar	Fire&Emergency Service	2424814/15	9824848964
10	Sureshbhai Jadav	Fire&Emergency Service	2424814/15	9974826479
11	Dipakkumar Gohil	Fire&Emergency Service	2424814/15	7016924884
12	Mahendrabhai Garchar	Fire&Emergency Service	2424814/15	8460466227
13	Yograjsinh Padheriya	Fire&Emergency Service	2424814/15	9726484814
14	Sanjaysinh Sarvaiya	Fire&Emergency Service	2424814/15	7202859736
15	Narshibhai Gohil	Fire&Emergency Service	2424814/15	9998409346
16	Nayanbhai Nakiya	Fire&Emergency Service	2424814/15	8140643669
17	Sanjaybhai Solanki	Fire&Emergency Service	2424814/15	9737470148
18	Vajubhai Vala	Fire&Emergency Service	2424814/15	9712635499
19	Sanjaybhai Bhuriya	Fire&Emergency Service	2424814/15	9913663531
20	Pardipbhai Khabhalya	Fire&Emergency Service	2424814/15	6354179196
21	Ileshbhai Damor	Fire&Emergency Service	2424814/15	8141785128
22	Bharatbhai Makwana	Fire&Emergency Service	2424814/15	9574400696
23	Ajaybhai Vaja	Fire&Emergency Service	2424814/15	9227065213
24	Shaktisinh Jadeja	Fire&Emergency Service	2424814/15	7043727496
25	Kripalsinh Vadher	Fire&Emergency Service	2424814/15	7227076447
26	Lalajibhai Makwana	Fire&Emergency Service	2424814/15	9687328253

## **Annexure-31**

### **Contact detail of Nationl and State Government**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Detail</b>	
		<b>Phone</b>	<b>Fax</b>
1	Ministry of Home Affairs, New Delhi	011 23092923, 011 23093054, 011 23092885, 011 23093897	011-23092763, 011-23093750
2	State Emergency Operation Center, Gandhinagar	07923251914, 07923251900, 07923221902	07923251916
3	PS, RD-COR & Secy (SEOC)	07923251926	07923251912, 07923251916
4	Irrigation Department, Gandhinagar	07923220954, 07923248735, 07923248736	07923240553
5	R&B Department, Ahmedabad	07926305296, 07926303490	-
6	Health Commissioner, Gandhinagar	07923253343, 07923250818	07923253343, 07923250818
7	Home Department, Gandhinagar (State Control)	07923252957, 07923252958	07923252075
8	DGP, Police Bhavan, Gandhinagar (State Control)	07923246328, 07923246330, 07923246331	07923246329
9	Gujarat Maritime Board, Gandhinagar	07923238346, 07923238348	07923234704
10	IMD (Seismo), New Delhi	011-24611842	011-24611792
11	IMD (MET), Ahmedabad	07922865012	07922865449
12	GSRTC, Ahmedabad (Central Office)	07925454102	07925453280

## **Annexure-32**

### **Contact detail of Army, Airforce, Coast Gaurd, NDRF, SDRF**

<b>Sr. No.</b>	<b>Name</b>	<b>Place</b>	<b>Contact Detail</b>	
			<b>Phone</b>	<b>Fax</b>
1	Army Exchange	Ahmedabad	079 22856251	-
2	Air Force Exchange	Gandhinagar	07923242600	-
3	Coast Guard	Gandhinagar	07923243147	07923241717
4	NDRF	Gandhinagar	07923201551	07923202540
5	SDRF	Gandhinagar	07923254376, 07923254414	07923259444

### **Annexure-33**

#### **Contact detail of PRI Member (District Code No. 0278)**

<b>Sr.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Contact Number</b>
1	Shri Bharatiben Shiyal	MP	9726530182 9825211699
2	Shri Vibhavariben Dave	MLA, (Bhavnagar city-West)	9426463146 9978555888
3	Shri Jitubhai Vaghani	MLA, (Bhavnagar city-East)	9825207804
4	Shri Parsotambhai Solanki	MLA, (Bhavnagar Rural)	9978405318 9426404642
5	Shri R.C.Makwana	MLA, (Mahuva)	9426245745
6	Shri Kanubhai Baraiya	MLA, (Talaja)	9426910110
7	Shri Keshubhai Naakarani	MLA, (Gariyadhar)	9825132965
8	Shri Bhikhabhai Baraiya	MLA, (Palitana)	9824933938
9	Shri Bharatsinh Gohil	President (District Panchayat)	9426565285
10	Shri Kirtiben Danidhariya	Mayor (BMC)	9898150596



## **Annexure-34**

### **Contact detail of Collector office (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Contact Number</b>	
			<b>Office</b>	<b>Mobile</b>
1	Shri Yogesh B. Nirgude (IAS)	Collector	2428822	9978406206
2	Shri B.J.Patel (GAS)	Resident Additional Collector	2421881	9978405178
3	Shri M.R.Brahmbhatt	Dy. Controller, Civil Defence	2521555	9925025199
4	Shri S.N.Suthar	DSO	2428908	7567021670
5	Shri S.N.Suthar (I/C)	Dy. Collector, MDM	2421880	7567021670
6	Shri S.N.Katara	Dy. Collector, Election	2421819	9978405281
7	Shri H.M.Jankaat(I/C)	Dy. Collector, Stamp Duty	2420547	7567010346
8	Shri K.V.Patel	District Planning Officer	2565348	9428422273
9	Shri Dhirubhai Gondaliya	Chitnis to Collector	2425683	9904543330
10	Shri C.P.Patel	Additional Chitnis to Collector	2425683	-
11	Shri M.N.Raychura	PRO	2433881	9978700779
12	Shri M.V.Parmar	Mamlatdar, Disaster Management	2521555	9426902111
13	Shri Dimpal M.Teraiya	District Project Officer-GSDMA	2521554	9824438275
14	Shri Harish Patel	DIO-NIC	2429633	9898691911
15	Shri Chirag Vala	ICT Officer	-	9408303157
16	Shri Darshan Mehta	Legal Officer	-	9374814531

## Annexure-35

### Contact detail of District Panchayat (District Code No. 0278)

Sr. No.	Name	Designation	Contact Number	
			Office	Mobile
1	Dr. Prashant Jilova (IAS)	District Development Officer	2426810	9978406231
2	Shri T.H.Joshi (I/C)	Dy.DDO (Ravanue/Panchayat)	2428864	7567017325
3	Shri T.H.Joshi	Dy.DDO (Mahekam/Development)	2433868	7567017390
4	Shri T.H.Joshi (I/C)	Director,DRDA	2427535	7567032839
5	Shri Tushar K. Bhatt (I/C)	Chitnis	2439951	9925196262
6	Dr. A.K.Taviyad (I/C)	CDHO	2423665, 2512794	9727779062
7	Dr. A.K.Taviyad	ADHO	2428885	9727779662
8	Dr.P.A.Pathan	Epidemic Medical Officer	2525671	9727779717
9	Shri K.V.Mayani	DPEO	2523582	9909971655
10	Shri S.D.Chaudhari	Execitive Engineer (R&B)	2422548	9979261664
11	Shri D.R.Patel	Executive Engineer (Irrigation)	2430155	9825352556
12	Shri S.R.Kosambi	District Agriculture Officer	2439931	7600530340
13	Shri B.M.Shah	Dy.Director, Animal Husbandary	2524376	9426936997
14	Shri R.D.Parmar	District Social Welfare Officer	2516766	9804559507
15	Smt.Savitriben Nathji(I/C)	PO, ICDS	2519411	9824458602

## **Annexure-36**

### **Contact detail of DSP Office (District Code No. 0278)**

<b>Sr. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Contact Number</b>	
			<b>Office</b>	<b>Mobile</b>
1	Shri Ashokkumar Yadav (IPS)	DIGP	2510810	9978405368
2	Shri Ravindra Patel (IPS)	DSP	2520050	9978405067
3	Shri Safin Hassan (IPS)	ASP	2518091	9978407983
4	Shri D.D.Chaudhari	Dy.SP (HQ)	2513717	9978407982
5	Shri A.M.Saiyad	Dy.SP (SC/ST)	2513721	9825305116
6	Shri U.K. Makva	PI, CID-Crime	2517225	9099939100
7	Shri D.M.Mishra	PI, LIB	2513718	9879842303
8	Shri V.V.Odedara	PI, LCB	2515101	9825096339
9	Shri K.B.Jadeja	PI, SOG	2521234	9099913034
10	Shri M.A.Rathod	PI, CPI	2562909	9265541353
11	Shri D.K.Vaghela	PI, ACB	2420980	9737657071
12	Shri J.J.Rabari	PI, Traffic	2518090	9879857066
13	Shri C.J.Goswami	PI, Cyber Cell	2512810	9978445483
14	Shri N.J.Sarvaiya	PSI, Mounted Unit	2510596	9825417417
15	Shri P.H.Solalni	PSI,QRT	-	9428401917
16	Shri J.R.Sheikh	PSI, Band Department	2525858	9925893276
17	Shri J.P.Makwana	M.T.Department	2513724	9904825159
18	Shri R.S.Babariya	M.O.B.Department	2433511	9687840090
19	Shri Rameshbhai Pandya	F.S.L.Department	-	9978405110
20	Shri B.P.Parmar	Finger Print Department	-	9714645657
21	Shri V.D.Maheta	Computer Department	2423720	9428408804
22	Shri D.D.Sorthiya	CCTV Command & Control Room	2434150	9898818245
23	Shri S.H.Khamal	RP-SI,PHQ	2525858	9824252545

## Annexure-37

### Contact detail of BMC (District Code No. 0278)

Sr. No.	Name	Designation	Contact Number	
			Office	Mobile
1	Shri Yogesh B. Nirgude (IAS)	Municipal Commissioner	2510532 2439900	9978406206
2	Shri V.M.Rajput	Dy.Commissioner(Admin)	2439292	9925224646
3	Shri M.R.Kukadiya	Dy.Commissioner(General)	2439797	9429946972
4	Shri M.R.Kukadiya	City Engineer	2511605	9712975522
5	Shri Mahesh Hirpara	Chief Fire Officer	2424814	9727712177
6	Shri Dimpal Teraiya	PO-GSDMA, BMC	-	9824438275
7	Shri Ajitsinh Solanaki	Flood Cell	-	9925232292
8	Dr.R.K.Sinha	Medical Officer, Health	2430249	9727776890
9	Shri Yogeshbhai Bhatt	Shashnadhikari	2515646	9428108686
10	Shri Ushaben Vaghela	Mamlatdar, MDM	2433881	8160611211
11	Shri N.V.Machhar	PRO	-	9426229807
12	Shri Dhavalbhai Patel	Legal Officer	-	8469223366
13	Shri Bhanuben Parmar	Election Cell	-	7984716257
14	Shri Savitriben Nathaji	PO, ICDS BMC	2424044	9824458602
15	Smt.Nitaben Bhatt	CDPO-1	2561711	6359924339
16	Smt.Hetalben Dudhrejiya	CDPO-2	2421111	9909579275
17	Shri K.K.Gohil	Garden Suprentendent	2433881	9898491914
18	Shri N.V.Wadhvaniya	Town Development Officer	-	9825836369
19	Shri S.M.Godhawani	Exicutive Engineer (Estate)	-	9909912727
20	Shri Y.C.Makwana	Exicutive Engineer (Transport)	2424817	9106962073
21	Shri S.N.Hariyani	Exicutive Engineer (SWM)	-	9106788316
22	Shri S.V.Gohil	Exicutive Engineer (Project)	-	9724513409
23	Shri M.D Makwana	Exicutive Engineer (Roads)	-	9909911910
24	Shri J.M.Sompura	Exicutive Engineer (Drainage)	2430256	9879572323
25	Shri B.M.Advani	Exicutive Engineer (Building)	-	9898201050
26	Shri Dharmesh Kevadiya	Exicutive Engineer (Light)	2512929	8460442066
27	Shri P.J.Chudasama	Exicutive Engineer (Filter)	2424811	9925009293
28	Shri C.C Devmurari	Exicutive Engineer (Water Works)	2430247	9879525199
29	Shri Rajesh Solanki	PA to Commissioner	-	9825780702

## Annexure-38

### Contact detail of other Offices (District Code No. 0278)

Sr. No.	Name	Designation	Contact Number	
			Office	Mobile
1	Shri Ajay Dahiya (IAS)	Regional Commissioner-Municipalities	2520600	9978404035
2	Shri Sadik Mujavar (IFS)	DCF-Forest	2428644	7567861778
3	Shri R.R.Damor	CEO-BADA	2430748	9978402535
4	Dr.Jayeshkumar Brahmbhatt	Superintendent-Civil Hospital	2427524	9898141114
5	Dr. Nareshkumar Jain	Superintendent-Tapibai Ayurvedik Hospital	2423941	7359361933
6	Shri R.U.Patel	Exe. Engineer-R&B State	2423383	9427264050
7	Shri S.J.Gupta	Exe. Engineer-State Irrigation	2430155	9426937739
8	Shri U.G.Vasava	Superintending Engineer-PGVCL	2524924	9879203840
9	Shri Deepa Parmar	Exe. Engineer- Water Supply	2425849	9978095184
10	Shri A.G.Oza	Regional Officer-GPCB	2524108	9427050550
11	Shri Mitesh Menat	Ass.Director-DISH	2428473	9427508476
12	Cap.Rakeshkumar Mishra	Port Officer-Alang	02842 235622	9601254062
13	Shri Manishkumar Agraval	Airport-Director	2212971	9427211500
14	Shri Manoj Goel	DRM-Railway	2445475	9724097000
15	Shri H.G.Raval	Divisional Controller-State Transport	2428264	6359918394
16	Shri D.H.Yadav	Regional Transport Officer	2424293	9913923111
17	Shri Z.M.Parmar	Exe. Engineer- JETCO	-	9925210207
18	Dr. Kannan Srinivasan	Director-CSMCRI	2569496	9426957357
19	Shri K.G.Makwana	Exe. Engineer-Salt Control Department	2439896	9426551754
20	Shri K.V.Ramani	Ass.Director-Fisheries	2427567	8141789262
21	Shri Chintan Raval	Dy. Director-Information	2424994	9537409098
22	Shri Shambhusinh Sarvaiya	District Homeguard Commandant	2423011	9998613672
23	Shri N.G.Vyas	District Educatin Officer	2426629	9909970212
24	Shri Tapan D. Vyas	Principal-ITI	2424316	9824092923
25	Dr.Hemant Mehta	Dean-Gov. Medical College	2430808	9429503144
26	Shri Kaushik Bhatt	Register- M.K.University	2428014	9725466333
27	Shri J.K.Gondaliya	Assi.Charity Commissioner	2424171	9998530526
28	Shri Seemaben Gandhi	District Sports Officer (Rural)	2432765	9428797885

29	Shri Seemaben Gandhi	District Sports Officer (City)	2422765	9428797885
30	Shri B.B.Raval	District Treusary Officer	2518908	9925023880
31	Shri K.V.Katriya	District Women & Child Welfare Officer	2421901	9586666117
32	Shri Nisarg Pathak	Assistant Labor Commissioner	2427985	9825220252
33	Shri P.P.Tadavi	General Manager-DIC	2422225	9824260270
34	Shri V.D.Joliya	Head Post Master	2516875 2426972	9913102003
35	Shri Prashant Dhore	DGM-Telecom	2434000	9426686986
36	Shri M.M.Karmata	District Inspector-Land Record	2439784	8320516899
37	-	Circuit House	2560451 2560452 2560453	-
38	-	Majiraj Guest House	2422520 2422521	-
39	-	Pathikashram	2423997	-
40	-	Yashwantray Natyagruh	2202366	-
41	-	6 Guj. Btn.- NCC	2424995	-
42	-	3 Guj. Girls Btn.-NCC	2565336	-
43	-	3 Guj. Naval Unit	2565396	-
44	-	3 Guj. Air Unit	2515393	-

### **Annexure-39**

#### **Contact detail of All SDM**

<b>Sr. No.</b>	<b>Prant Name</b>	<b>Officer Name</b>	<b>Taluka Code No.</b>	<b>Fone No.</b>	<b>Mobile No.</b>
1	Mahuva (Jesar)	Smt.Kusum Prajapati	02844	222765	7567010268
2	Talaja	Shri Vikas Ratada	02842	222260	7567010274
3	Sihor (Umralla, Vallabhipur)	Shri Dilipsinh Vala	02846	222103	7567010355
4	Palitana (Gariyadhar)	Shri Sidhrajsinh Gadhavi	02848	243350	7567010276
5	Bhavnagar (Ghogha)	Shri H.M.Jankaat	0278	2428701	7567010346

### **Annexure-40**

#### **Contact detail of All Mamlatdar**

<b>Sr. No.</b>	<b>Taluka Name</b>	<b>Officer Name</b>	<b>Taluka Code No.</b>	<b>Fone No.</b>	<b>Mobile No.</b>
1	Mahuva	Shri N.S.Paritosh	02844	223042	7567001646
2	Talaja	Shri J.J.Kanojiya	02842	222042	7567001823
3	Sihor	Shri Mosam Jaspuriya	02846	222009	7567001683
4	Palitana	Shri A.B.Bhatt	02848	243326	7567001737
5	Gariyadhar	Shri N.B.Desai	02843	252922	7567001910
6	Vallabhipur	Shri B.T.Savasani	02841	222435	7567001868
7	Bhavnagar (Rural)	Shri R.G.Zala	0278	2421885	7567001743
8	Ghogha	Shri A.R.Gadhavi	0278	2882323	7567001895
9	Umralla	Shri A.P.Antala	02843	235230	7567001922
10	Jesar	Shri V.U.Barot	02845	281400	9727769875
11	Bhavnagar (City)	Shri G.K.Vala	0278	2422661	7567001897

## **Annexure-41**

### **Contact detail of All TDO**

<b>Sr. No.</b>	<b>Taluka Name</b>	<b>Officer Name</b>	<b>Taluka Code No.</b>	<b>Fone No.</b>	<b>Mobile No.</b>
1	Mahuva	Shri M.M.Vasava	02844	223968	7567018926
2	Talaja	Shri K.P.Parmar	02842	222036	7567018948
3	Sihor	Shri Nazninben Desai	02846	222029	7567012759
4	Palitana	Shri R.M.Chaudhari	02848	242451	7567012714
5	Gariyadhar	Shri S.M.Patel	02843	252934	7567012743
6	Vallabhipur	Shri V.A.Gadhavi	02841	222469	7567012766
7	Bhavnagar	Shri P.K.Ravat	0278	2421898	7567012852
8	Ghogha	Shri A.R.Patel	0278	2882339	7567019728
9	Umralla	Shri Harshad Patel	02843	235596	7567012707
10	Jesar	Shri B.M.Vaghela	02845	223968	7567044321

## **Annexure-42**

### **Contact detail of All Chief Officer**

<b>Sr. No.</b>	<b>City Name</b>	<b>Officer Name</b>	<b>Taluka Code No.</b>	<b>Fone No.</b>	<b>Mobile No.</b>
1	Mahuva	Shri Krupesh Patel	02844	222318	9313236374
2	Talaja	Shri Krupesh Patel	02842	223173	9313236374
3	Palitana	Shri M.R.Khimsuriya	02848	242555	7567770242
4	Gariyadhar	Shri M.R.Khimsuriya	02843	250053	7567770242
5	Sihor	Shri B.H.Markana	02846	222024	9825674219
6	Vallabhipur	Shri R.B.Parmar	02841	222432	9825056827



## **Annexure-43**

### **Contact detail of All Fire Station**

<b>Sr. No.</b>	<b>Fire Station</b>	<b>Taluka Code No.</b>	<b>Contact Detail</b>		
			<b>Phone No.</b>	<b>Name</b>	<b>Mobile No.</b>
1	BMC	0278	2424814 2424815 2430061	Pradyumansinh Jadeja	9825204004
2	Alang	02842	2235147, 222250	P.D.Vyas	9925037626
3	Mahuva	02844	222250	Deepak Makwana	9924739376
4	Talaja	02842	222329	Sidhrajsinhbhai	9426648101
5	Palitana	02848	242555	Chetansinh Sarvaiya	9879797971
6	Gariyadhar	02843	250053	Alpesh Rathod	9662525596
7	Sihor	02846	222024	Mukeshbhai Goswami	9979620722
8	Vallabhipur	02841	222432	Rajbha	9712968968
9	Bhavnagar Airport	0278	2210743	K.V.Gohil	9824408191
10	Nirma	0278	2885301 to 5	Shaktidanbhai	8980026351
11	Excel	0278	2212401 to 3	S.M.Patil	9426703457

## **Annexure-44**

### **Contact detail of All Police Station**

<b>Sr. No.</b>	<b>Police Station</b>	<b>Taluka Code No.</b>	<b>Fone No.</b>
1	Mahuva	02844	222537
2	Talaja	02842	222033
3	Sihor	02846	222060
4	Palitana	02848	243301
5	Gariyadhar	02843	252999
6	Vallabhipur	02841	222431
7	Bhavnagar(R)	0278	2541633
8	Bhavnagar(C)	0278	2525858
9	Ghogha	0278	2882333
10	Umralla	02843	235233
11	Jesar	02845	281433

## **Annexure-45**

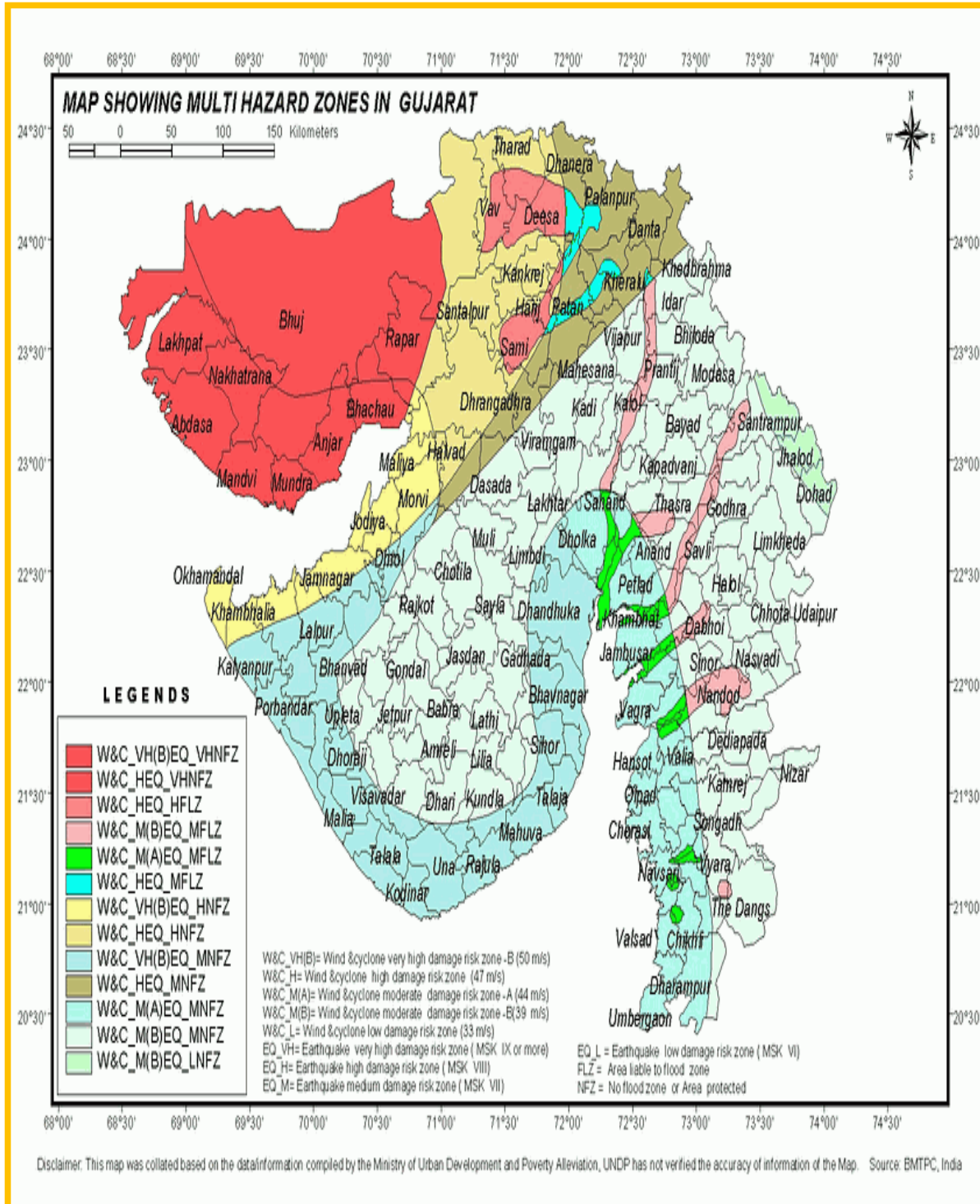
### **Important Tollfree Number**

<b>Sr. No.</b>	<b>Name</b>	<b>Contact Details</b>
1	SEOC-Disaster	1070
2	DEOC-Disaster	1077
3	Police	100
4	Fire	101
5	Ambulance	102
6	Emergency Ambulance	108

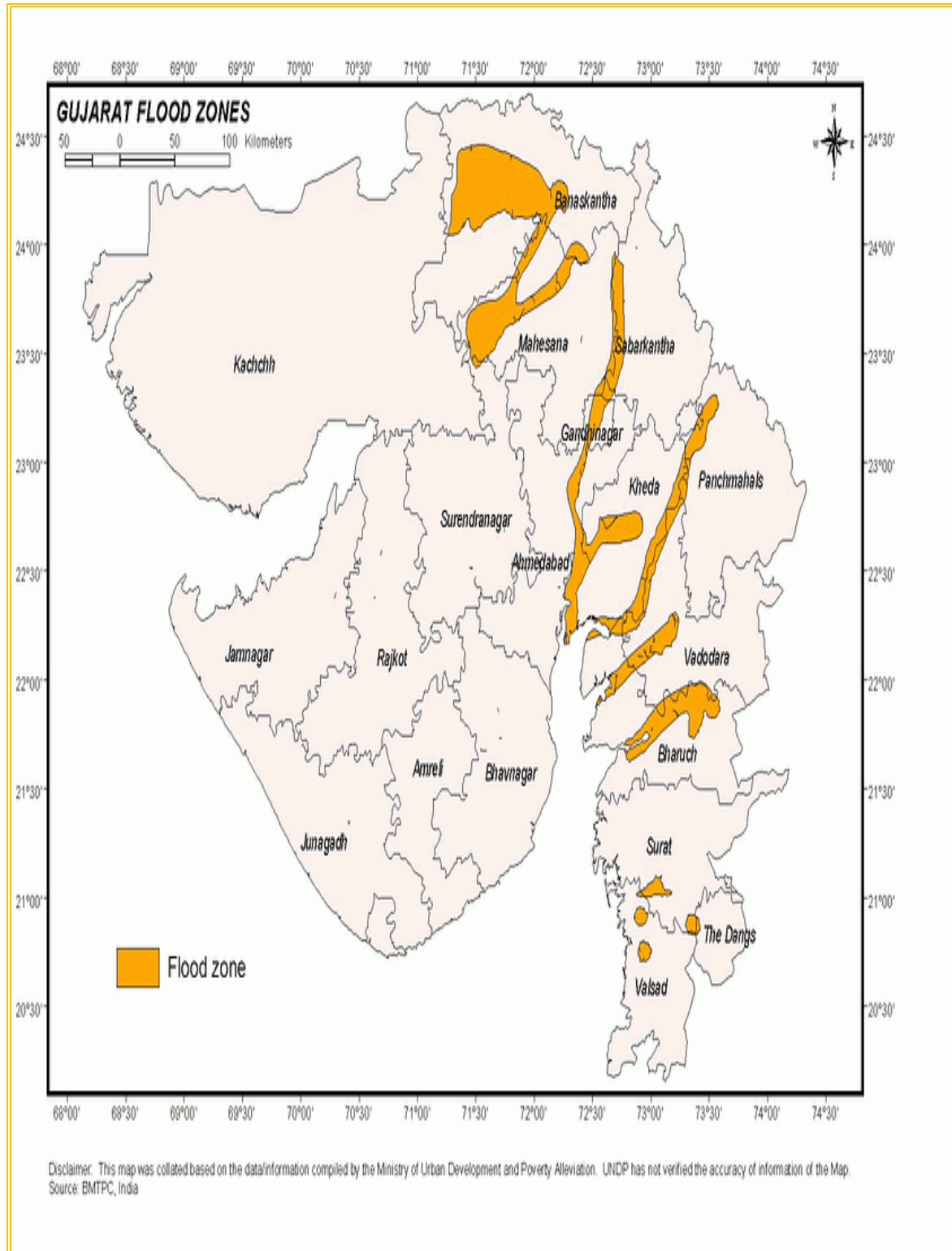
# Maps

## Hazard Maps

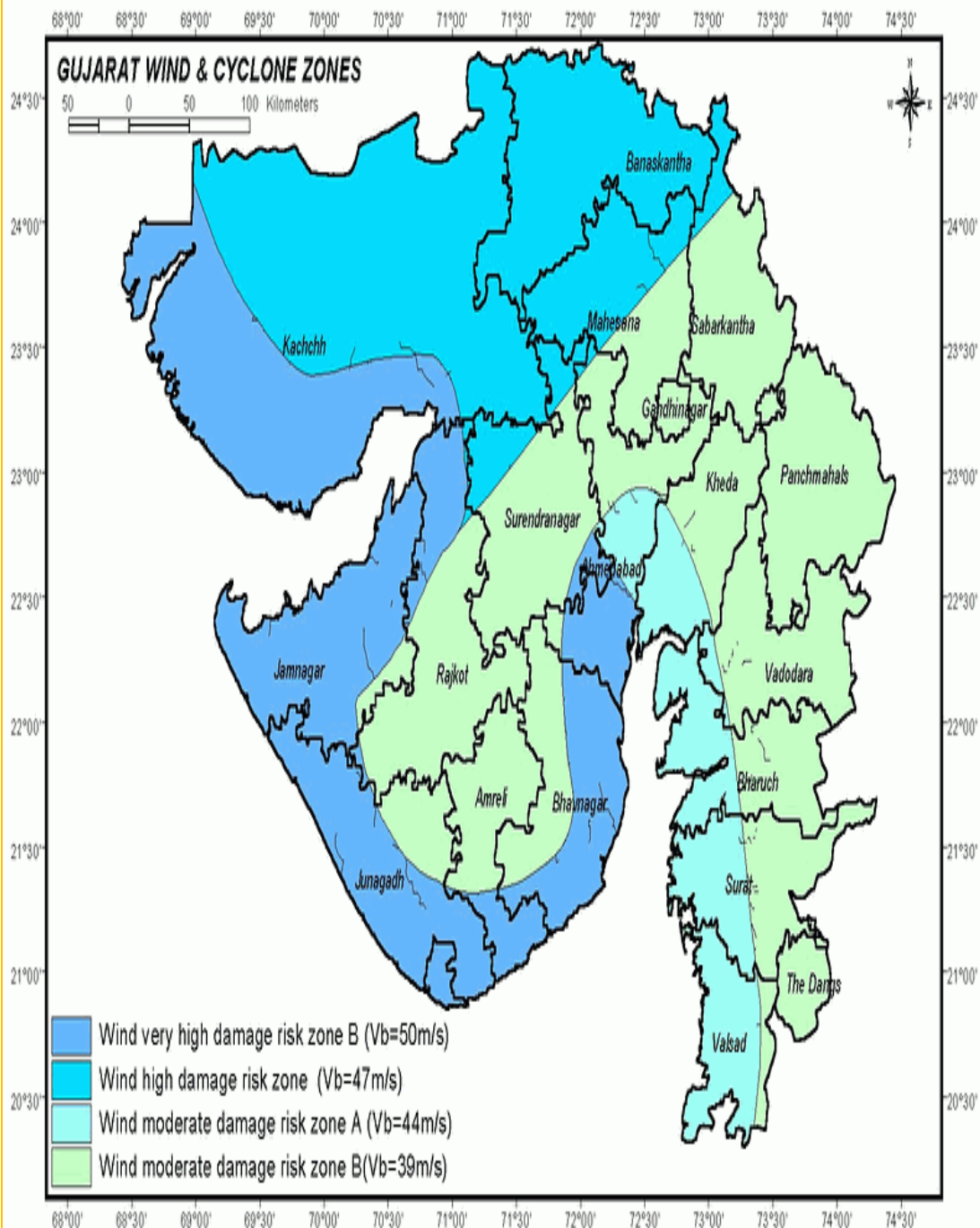
### Gujarat Multy Hazard Map



## Gujarat Flood Hazard Map



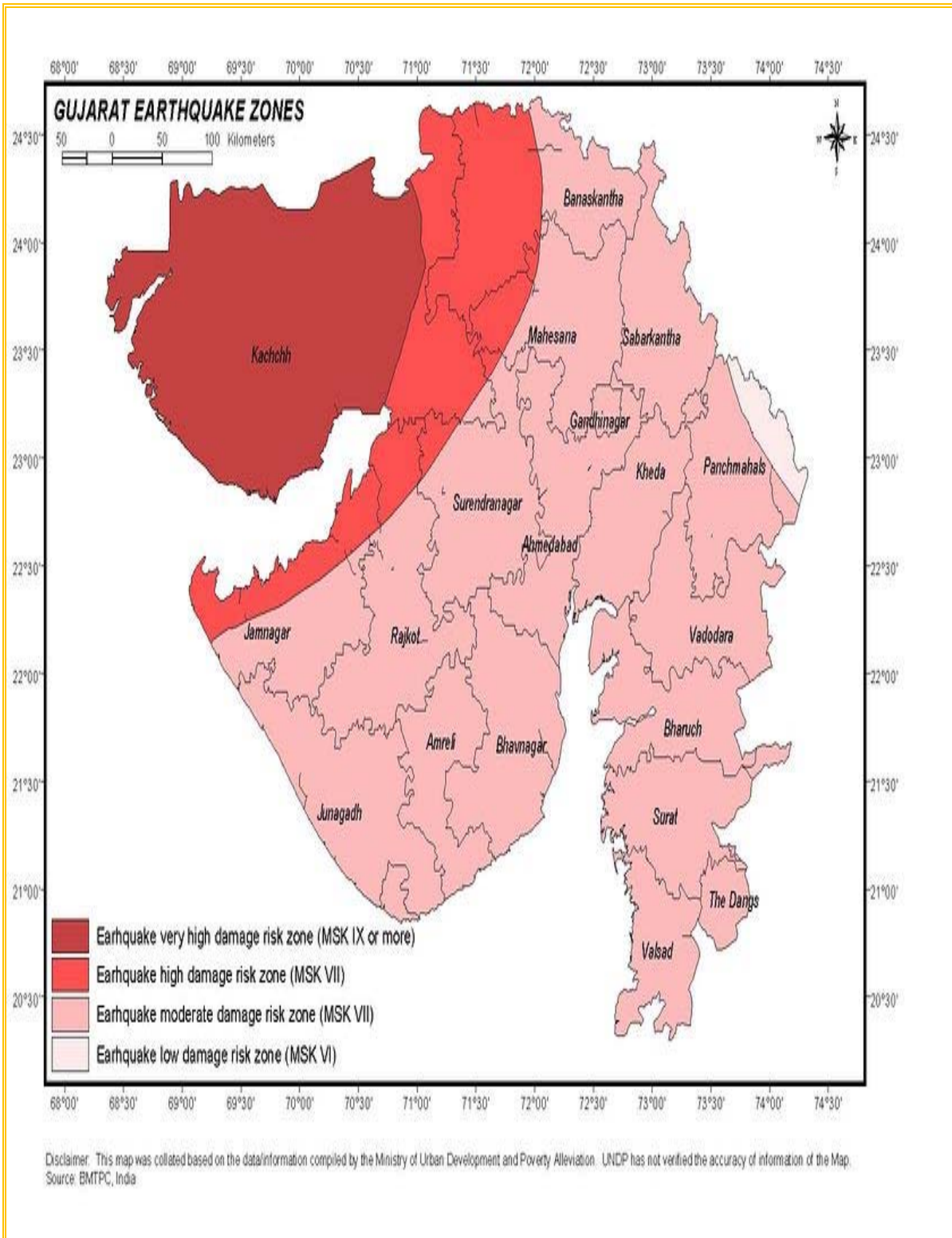
## Gujarat Cyclone Hazard Map



Disclaimer: This map was collated based on the data/information compiled by the Ministry of Urban Development and Poverty Alleviation. UNDP has not verified the accuracy of information of the Map.  
Source: BMTPC, India



## Gujarat Earthquake Hazard Map



# **Dos and Don'ts in various Disasters**

## **Cyclone**

A cyclone is a storm accompanied by high-speed whistling and howling winds. It brings torrential rains.

### **Where does a cyclone come from?**

A cyclonic storm develops over tropical oceans like the Indian Ocean and Bay of Bengal and the Arabian Sea. Its strong winds blow at great speed, which can be more than 118 kilometers per hour.

### **What are the visible signs of a cyclone?**

When a cyclonic storm approaches, the skies begin to darken accompanied by lightning and thunder and a continuous downpour of rain.

### **How does a cyclone affect us?**

- A cyclone causes heavy floods.
- It uproots electricity supply and telecommunication lines. Power supply shuts down and telephones stop functioning.
- Road and rail movements come to halt because floods damage rail tracks and breach roads. Rail movements are also disrupted because of communication failure.
- The inclement weather conditions also disrupt Air services. Seaports stop work due to high winds, heavy rains and poor visibility. Sometimes ships overturn or are washed ashore. The high speed winds bends and plucks out trees and plants.
- A cyclone tears away wall sidings and blows off roofs of houses.
- Houses collapse and people are rendered homeless. In villages kachha houses get blown away. The speeding winds cause loose metal and wooden sheets to fly turning them to potential killers. Broken glass pieces can cause serious injuries.
- The floodwaters can take time to recede.
- The floodwaters can turn the fields salty.
- Bridges, dams and embankments suffer serious damages.
- Floods wash away human beings and animals and make water unfit for drinking. There can be outbreak of diseases like Cholera, Jaundice or Viral fever due to intake of impure water. Water gets contaminated because of

floating corpses of animals and human beings and mixing of sewage stored food supplies, gets damaged.

### **Which areas are exposed to a cyclone in Gujarat?**

In Gujarat, the Saurashtra-Kachchh region experiences a cyclone. The port towns of Veraval, Porbandar, Jamnagar, Dwarka, Okha, Kandla and Bhavnagar and other minor port towns suffer most.

### **Does a cyclone follow a particular path?**

It is often difficult to predict where a cyclone will strike. When it starts moving from oceans (in Gujarat it is Arabian Sea) towards the land area, a cyclone can change track and hit areas other than those anticipated earlier.

### **Has any early warning system been evolved for the occurrence of a cyclone?**

Yes. In India, the Indian Meteorological Department has developed a four-stage warning system for a cyclone.

### **How does the system operate?**

This warning is about the possibility of a cyclone when a low pressure depression develops in oceans. For Gujarat, the development of such a depression in the Arabian Sea is indicative of a cyclone attack.

- **The Alert stage**

This warning is given 48 hours prior to the time when a cyclone is expected to hit the land.

- **The Warning stage**

This is the stage when a cyclone gets formed. The warning is given 24 hours before the anticipated time of arrival of a cyclone.

- **Cyclone arrival**

This warning is issued 12 hours before a cyclone is due to hit the land. The warning gives information about cyclone and will continue until the winds subside. In sea ports, danger signal are hoisted about the impending cyclone.

### **From where can people access cyclone storm warnings?**

Warnings about storms, their intensity and the likely path they may take are regularly broadcasted by radio and television network continuously until the storm passes over.



## **What to do before and during a cyclone**

- Have your dwellings checked before a cyclone season starts and carry out whatever repairs that are needed.
- Talk to children and explain about cyclones without scaring them.
- Create storm awareness by discussing effects of a cyclonic storm with family members so that everyone knows what one can and should do in an emergency. This helps to remove fear and anxiety and prepares everyone to respond to emergencies quickly.
- Keep your valuables and documents in containers, which cannot be damaged by water.
- Keep information about your blood group.
- Keep lanterns filled with kerosene, torches and spare batteries. These must be kept in secure places and handy.
- Make plans for people who are either sick, suffer from disabilities, aged and children.
- Store up at least seven-day stock of essential food articles, medicines and water supply.
- Keep blankets & clothes ready for making beds. Also keep cotton bandages and several copies of photographs of family members in case they are needed for identification purposes after the storm.
- Store some wooden boards so that they can be used to cover windows.
- Keep trees and shrubs trimmed. Remove damaged and decayed parts of trees to make them resist wind and reduce the potential for damage. Cut weak branches and make winds blow through.
- All doors, windows and openings should be secured.
- Continue to listen to warning bulletins and keep in touch with local officials. Keep radio sets in working condition. Battery powered radio sets are desirable.
- Evacuate people to places of safety when advised.
- Take steps to protect your assets.
- Store extra drinking water in covered vessels.
- Remain calm.

**What one should not do during a Cyclone attack?**

- During the storm do not venture out unless advised to evacuate.
- If you have a vehicle and wish to move out of your house, leave early before the onset of a cyclone. It is often best to stay at home
- Avoid remaining on the top floor of dwellings. Stay close to the ground.

## **Earthquake**

- Tell the facts about earthquake to your family members
- Construct new buildings with earthquake resistant method and strengthen the old buildings
- Insure your house and family members
- Take the training for first aid and fire fighting
- Do not keep cots near the glass window
- Do not keep heavy and fragile things in the selves
- Do don't hang photo frames, mirrors, or glasses up your bed
- Keep your important documents, some cash and necessary articles ready in a bag
- Get your house insured before the earthquake
- Identify special skills of neighbor (medical, technical) so that it can be utilized in emergency

### **During Earthquake**

- Do not panic
- If already inside, than Stay indoors! Get under a heavy desk or table and hang on to it.
- If fire breaks out, drop on the floor and crawl towards the exist
- If you are out doors during the quake, keep away from buildings, trees and electricity lines. Walk towards open places, in a calm and composed manner.
- If you are driving, quickly but carefully move your car as far out of traffic as possible and stop. Do not stop on or under a bridge or overpass or under trees, light posts, power lines, or signs. Stay inside the car until shaking stops
- If you are in a school, get under a desk or table and hold on

### **After the Earthquake**

- Do not be afraid of the aftershocks
- Listen to radio-TV and other media for Government Announcement

- Check for injuries to yourself and those around you. Take first aid where you can
- Extinguish fire, if any
- Examine walls, floors, doors, staircases and windows to make sure that the building is not in danger of collapsing
- Do not enter into the unsafe or risky houses or buildings
- Inspect for Gas leaks-If you smell gas or hear blowing or hissing noises, open a window and quickly leave the building. Don't light your kitchen stove if you suspect a gas leak.
- Do not keep telephone lines busy unnecessarily
- Switch off electric lines

# **Flood**

## **Do's and Don'ts after flood**

- There is a possibility of spread of water borne diseases after flood, and hence
- Medical treatment should be taken immediately.
- Do not enter deep, unknown waters.
- Do not go near the riverbank even after the floodwater has receded.
- Sprinkle medicines in the stagnant dirty water.
- Inspect your house for any cracks or other damage. Check all the walls, floor, ceiling, doors and windows, so that any chance of house falling down can be known and you can be aware about the immediate danger.
- If the floodwater has entered the house or has surrounded the house, then it is advisable not to enter such house.
- Keep listening to weather forecast on radio and television. Move to your residence only when instructed by the competent authority. It is not safe to believe that the problems have ended after the flood water have receded
- Inform the competent authority/officer for restoration of the necessary connections like gas, electricity, telephone, drainage, etc.
- Beware of the various insects or poisonous snakes that may have been dragged inside the house along with the floodwater.
- Destroy the food commodities that have been affected by floodwater.
- Check properly all the electric circuits, floor level furnace, boilers, gas cylinders, or electric equipments like motor pump etc. Check whether any inflammable or explosive item has not entered along with the floodwater.
- Switch off the main electric supply, if any damage is noticed to the electric equipments.
- If you find any breakage in the drainage system stop using latrines and do not use tap water.
- Do not use polluted water.
- Sewerage system should be checked and any damage should be repaired immediately so as to curtail spread of diseases.
- Empty the water clogged in the basement slowly with help of water pump so that damage to infrastructure can be minimized
- Check gas leakage which can be known by smell of gas or by hearing the sound of leakage; immediately open all windows and leave the house.
- Boil drinking water before usage and drink chlorinated water.
- Eat safe food.
- Rescue work should be undertaken immediately after flood situation as per the instruction. Do not follow any shortcut for rescue work.
- Do not try to leave the safe shelter to go back home until the local officials declare normalcy after flood and instruction to return home are not given.

# **Tsunami**

**The phenomenon Tsunami is a series of traveling ocean waves of extremely long length generated primarily by earthquakes occurring below or near the ocean floor:**

**Following safety measures needs to be learnt before, during and after the occurrence of tsunami:**

## **Before**

- Be familiar with the tsunami warning signals. People living along the coast should consider an earthquake or a sizable ground rumbling as a warning signal. A noticeable rapid rise or fall in coastal waters is also a sign that a tsunami is approaching.
- Make sure all family members know how to respond to a tsunami. Make evacuation plans. Pick an inland location that is elevated.
- After an earthquake or other natural disaster, roads in and out of the vicinity may be blocked, so pick more than one evacuation route.
- Teach family members how and when to turn off gas, electricity, and water
- Children should be taught in advance about the evacuation plans
- Prepare emergency kit beforehand. The emergency kit should contain Flashlight and extra batteries, battery-operated radio and extra batteries, First aid kit
- Emergency food and water, Essential medicines etc

## **During**

- Listen to a radio or television to get the latest emergency information, and be ready to evacuate if asked to do so.
- If you hear a tsunami warning, move at once to higher ground and stay there until local authorities say it is safe to return home.
- Move in an orderly, calm and safe manner to the evacuation site
- Stay away from the beach. Never go down to the beach to watch a tsunami come in.
- If you can see the wave you are too close to escape it.
- Return home only after authorities advise it is safe to do so.

## After

- Stay tuned to a battery-operated radio for the latest emergency information.
- Help injured or trapped persons.
- Stay out of damaged buildings. Return home only when authorities say it is safe.
- Enter your home with caution. Use a flashlight/torch when entering damaged buildings. Check for electrical shorts and live wires. Do not use appliances or lights until an electrician has checked the electrical system.
- Open windows and doors to help dry the building.
- Shovel mud while it is still moist to give walls and floors an opportunity to dry.
- Check food supplies and test drinking water.
- Fresh food that has come in contact with flood waters may be contaminated and should be thrown out

## **Fire**

### **Dos**

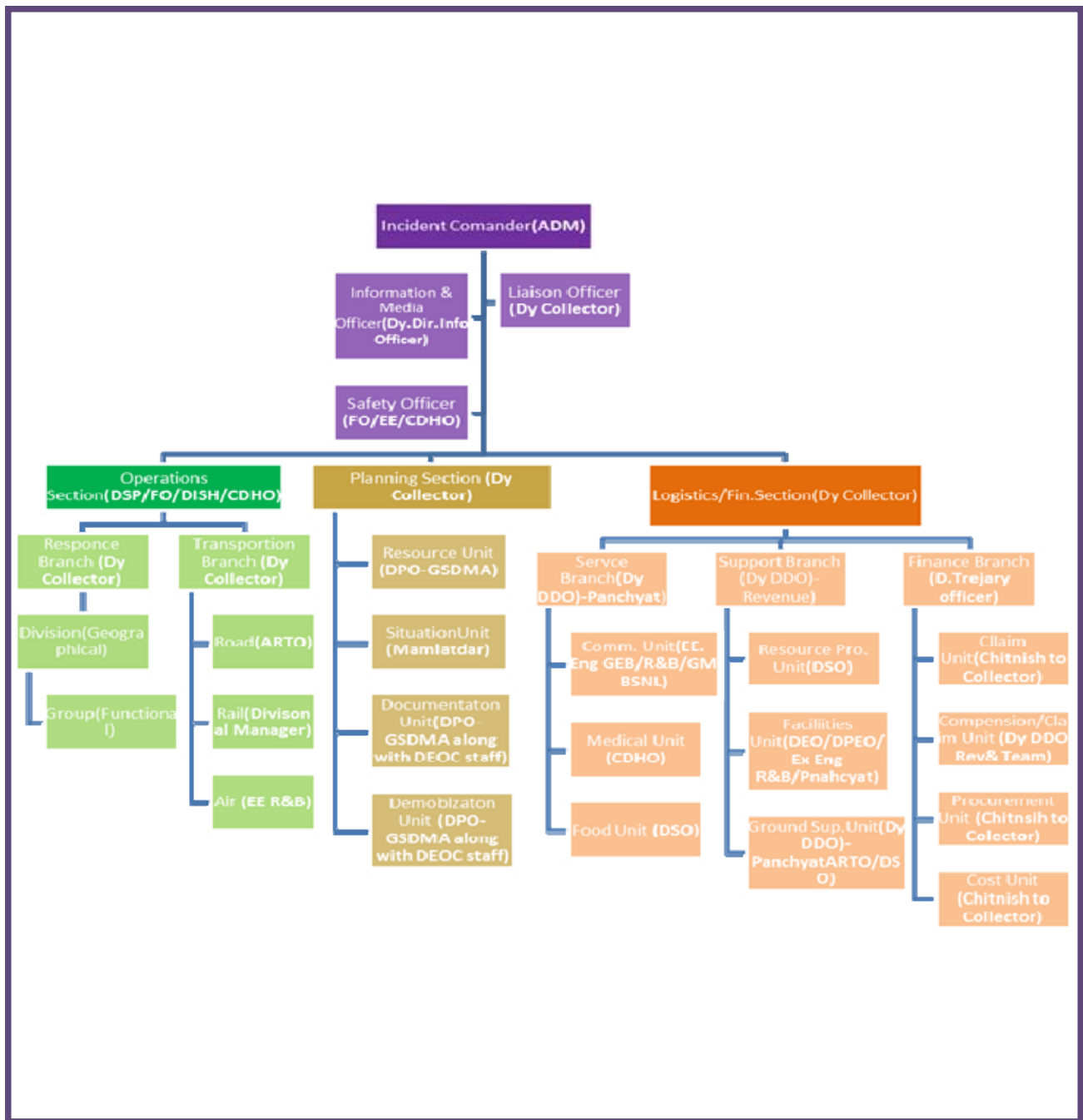
- Buy Fireworks from the licensed shop.
- Keep fireworks in a closed box
- Store crackers away from source of fire or inflammation
- Follow all safety precautions issued with the fire works
- Go to open spaces like playgrounds, fields
- Light them at arm's length using a taper.
- Stand back while lighting the crackers
- Discard used fireworks in a bucket of water
- Keep buckets of water and blankets ready, in case a firebreaks out.
- Wear thick cotton clothes for maximum safety from fire.
- If clothes catch fire, Stop, Drop and Roll
- In case of uncontrolled fire wrap the victim in a blanket, till it stop.
- In case of burns splash tap water (not ice water), the process may be repeated till the burning sensation reduces.
- If fingers or toes are burned, separate them with dry, sterile, non-adhesive dressings.
- Make sure the burn victim is breathing, if breathing has stopped or if the victim's airway is blocked then open the airway and if necessary begin rescue breathing.
- Elevate the burned area and protect it from pressure and friction.
- Cover the area of the burn with a moist sterile bandage, of clean cloth (do not use blanket or towel for healing burns).
- Consult the doctor as soon as possible for the proper medication
- Consult an ophthalmologist immediately in case of eye injuries.
- Do contact at the Fire Brigade (Tel.No. 101), for getting the details of the doctors on duty during the festival.



**Don'ts**

- Don't burn crackers in crowded, congested places, narrow lanes or inside the house.
- Don't let children burst crackers unaccompanied by an adult
- Don't put fireworks in your pocket or throw them
- Don't cover crackers with tin containers or glass bottles for extra sound effect
- Don't dare to examine unburst crackers...leave it!! Light a new cracker
- Don't show the Dare-devilry of lighting crackers on own hands.
- Don't use fireworks inside a vehicle
- Avoid long loose clothes, as they are fast in catching fire
- Don't remove burnt clothing (unless it comes off easily), but do ensure that the victim is not still in contact with smoldering materials.
- Don't apply adhesive dressing on the burnt area.
- Don't break the burst blister

# Gujarat State Disaster Management Authority



**District Emergency Operation Center  
Collector Office  
Bhavnagar**