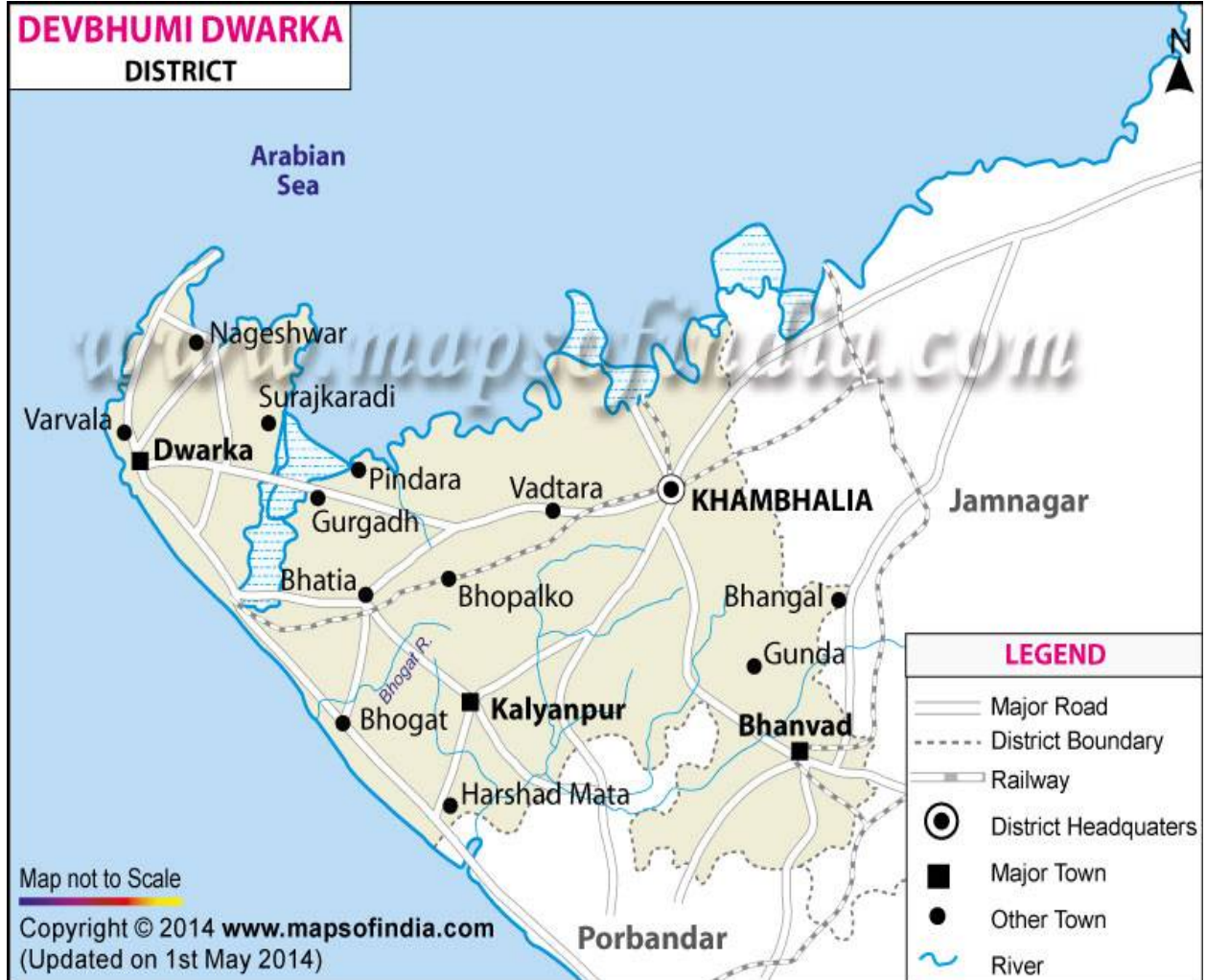


# District Disaster Management Plan

## DEVBHUMI DWARKA



COLLECTOR OFFICE  
DEVBHUMI DWARKA  
2018



**Website: <http://devbhumidwarka.gujarat.gov.in>**

## FOREWORD

Devbhumi Dwarka district is bifurcated from Jamnagar District in August, 2013. The District is multi hazard prone district. It is affected by various disasters like Drought, Scarcity, Flood, Cyclone, Earthquake and Industrial accidents. The district had faced multitude of Disasters such as Floods, Cyclone, Heavy Rain, Lightning, Earthquake and Fires. Experience has shown that pre-planned and practiced procedures for handling an emergency can considerably reduce loss of life and minimize damage too.

The industries have onsite emergency plans but those were limited to the particular territory, but now under the Disaster Risk Management Program, The Gujarat State Disaster Management Authority and District Disaster Management Committee- Devbhumi Dwarka are preparing communities from grass root level to top level under the three DRM components viz. Awareness Generation, Plan Preparation and Capacity Building.

Disaster Management Plan of Devbhumi Dwarka District has been updated and additional details have been incorporated. The success of disaster management depends upon the coordination and effective performance of the duties assigned to each and every department/agency. The role of each department in the event of an emergency is specified in the District Disaster Management Plan. I take this opportunity to place on record contribution of individual, agencies, organizations in the preparation and updation of the Multi Hazard/Disaster Management Plan of Devbhumi Dwarka.

I hope that all the administrative units of the district, safety department of all industries and Mutual Aid Scheme Members will use this action plan in the true spirit. We wish that no disaster ever occur, but in case of such occurrence, preparedness of macro to micro level will be very helpful to the people of the district.

18/05/2018



**J. R. Dodiya (IAS)**  
**District Collector**  
**Devbhumi Dwarka**

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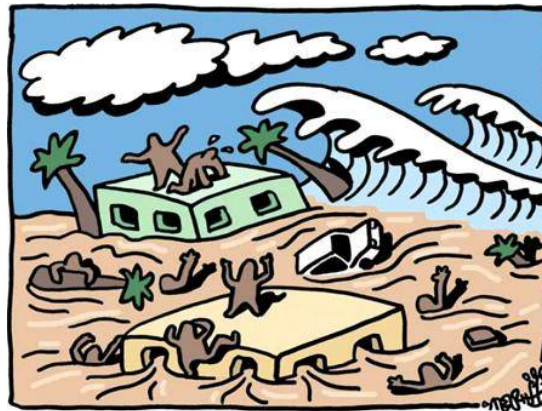
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# Chapter 1

## INTRODUCTION



## Chapter: 1 Introduction

In recent years earthquakes, floods, tropical storms, droughts and other calamities have killed millions of people, inflicted injury, disease and caused homelessness and misery to around one billion others in the world. These have caused damage to infrastructure worth millions of rupees. Disaster destroys decades of human effort and investments, thereby, placing new demands on society for reconstruction and rehabilitation. Disaster management thus requires a multidisciplinary and proactive approach. The community, civil society organizations, media and the proverbial man on the street, everyone has to play a role in case such exigency occurs. The various prevention and mitigation measures outlined below are aimed at building up capabilities as also how to deal with disasters.

### 1.1 OBJECTIVE

The objective of a District Disaster Management Plan (DDMP) is to localize a Disaster and contain its effect to the greatest extent so as to minimize its impact on life, environment and property. Response to any disaster, in the absence of a well-defined plan, would be arbitrary, leading to overemphasis of some actions and absence of other critical actions. A formal plan for Managing Disaster is therefore necessary. This Disaster management plan has a strong preparedness focus which aims at reducing our vulnerability to disasters and at the same time, it includes a plan of action/response mechanism for dealing with earthquakes, floods, cyclones, epidemics, industrial and chemical accidents, road accidents and fires.

This document provides basic information required for the management of disasters in Devbhumi Dwarka District to:

- Define the Risks and Vulnerabilities of citizens of the district,
- Identify private and public sector stakeholders with prime and supporting responsibilities to reduce or negate these vulnerabilities
- Define actions to be taken to avoid or mitigate the impacts of possible disasters in the district.

Subsidiary plans are developed at the:

- Village Disaster Management Plan (VDMP) at village level,
- Taluka Disaster Management Plan (TDMP) at taluka level,
- City Disaster Management Plan (CDMP) at Nagarpalika/Municipality Level,
- Off-site Emergency Management Plan for major industrial sites located in the district

Standard Operating Procedures (SOPs) of all Line Departments detailing how specific disaster response actions will be accomplished. Developing and maintaining SOPs are the responsibility of parties with designated prime or supporting tasks assigned by this plan. Keeping in view all the possible aspects of the aforesaid problem in mind and to keep the Administration prepared in all possible ways to respond properly to various Disaster situations with minimum delay, possible Disaster situations have been identified and the component plans have also been identified & mentioned in detail in this document.

Human play roles directly or indirectly behind the occurrence of disaster, but largely disasters can be classified in following two categories:

## **1. Natural Calamities**

- \* Floods
- \* Cyclone
- \* Biological Disaster or Epidemic of Human/livestock/crops
- \* Earthquake
- \* Fire

## **2. Man Made Calamities**

- \* Industrial Disaster
- \* Accidents
- \* Road
- \* Building Collapse
- \* Stampede at crowded Places
- \* Radiological Disaster
- \* Railways
- \* Air
- \* Bomb Blast (Terrorist Activities)
- \* Food Poisoning

The mode, degree and extent of response to fight out any Disaster depend upon the nature, degree and extent of Disaster, but some points are common to all kinds of situations. For example, first and foremost, appropriate and adequate steps for preventing the disaster should be undertaken. Secondly, preparedness is required to contain the damages and casualties resulting from the Disaster. Thirdly, steps for rehabilitation and restoration of community life within a reasonable time should be focused on.

Hence, some necessary and common steps are as below:

1. Establishment of Central Control Rooms and capacity enhancement of Emergency Operation Centers.
2. District Disaster Management Committee to meet post early warning or immediately post disaster occurrence.
3. A general line of action and some special duties to various officers and departments will have to be assigned, keeping in mind a timeline for finishing specific tasks.
4. Voluntary Organizations may have to be involved and their role will have to be clearly specified and coordinated.
5. Media may have to be briefed to suppress all kinds of rumors.
6. Information regarding resource inventory of Health Services, Transport Services, Evacuation & Rehabilitation Centers and Food etc. needs to be kept handy so that resources can be deployed where required.
7. Consistent follow-up of relief operations and constant reporting of pre and post disaster work.

Broad guidelines have been given in the following pages and "Standard Procedure" has been formulated which is to be adhered to by all concerned. Once the Disaster take place and the authorities are informed of the same, they will take the necessary action with the help of the individual Disaster management plans prepared for the respective Disaster/situations.

The main objectives of various preparedness measures are:

- i) Minimize the loss of human lives.
- ii) Minimize the loss of livestock.
- iii) Minimize the loss to property and infrastructure.
- iv) Minimize ill effects on the health of the affected population.
- v) Bringing the human activities in the locality to normal soon after.

To achieve the above objectives, different tasks have to be performed by Government Departments and other agencies before, during and after the Disaster. Each Department's role and responsibilities have to be clearly identified and an action plan needs to be drawn up by each department. For close cooperation between the various Department and Agencies, close coordination is required between the Collector at the District Headquarters and Prant Officers (SDM) at the Sub-division or taluka level. The responsibility to manage any type of Disaster in the district rests with the **District Disaster Management Committee** headed by the Collector Devbhumi Dwarka, who may, depending upon the gravity of the situation, seek the help of **State Disaster Management Committee** and the **National Disaster Management Committee**. This tiered and hierarchical structure ensures that the best possible response is accorded to any disaster situation, depending upon the severity of damage. For operational expediency, the level of Disasters have been categorized and classified as under:

### Level of Disasters

**L** concept has been developed to define different levels of disasters in order to facilitate the responses and assistances to States and Districts.

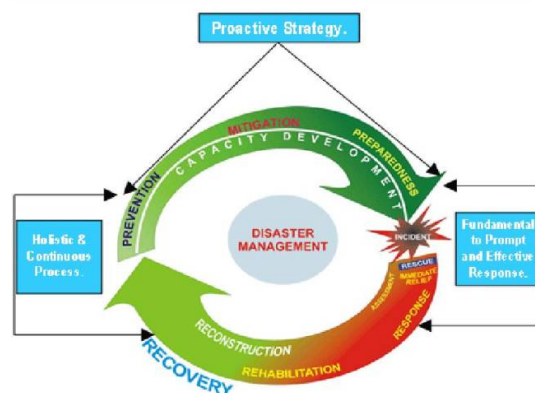
**L0 level** denotes normal times which will be utilized for close monitoring, documentation, prevention and preparatory activities. Training on search and rescue, rehearsals, evaluation and inventory updation for response activities will be carried out during this time.

**L1 level** specifies disaster that can be managed at the District level, however, the State and centre will remain in readiness to provide assistance if needed.

**L2 level** disaster situations are those, which require assistance and active participation of the state, mobilization of its resources for management of disasters.

**L3 level** disaster situation is in case of large scale disaster where the State and District authorities have been overwhelmed and require assistance from the Central Government for reinstating the State and District machinery as well as for rescue, relief, other response and recovery measures. In most cases, the scale and intensity of the disaster as determined by the concerned technical agency like IMD are sufficient for the declaration of L3 disaster.

### DISASTER MANAGEMENT CONTINUUM



## **1. Introduction:**

- a. What is Disaster?
- b. Aim/Objective/Necessity of the plan
- c. Authority and Responsibilities
- d. Approach to Disaster Management:-
- e. Plan Review and updation

### **a. 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.

### **b. Aim/ Objective of the Disaster Management Plan**

Recognizing the fact that most tasks and actions before and following a disaster are common at the district level, the Devbhumi Dwarka district administration has used a multi-disaster approach (all disasters covered by one plan) while developing disaster management plan for the district. 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. This is simply a multi hazard Management Plan consisting details regarding different hazards affect the district with the response structure to deal with , and having linkages of subsidiary DM plans of all levels and of sectors with it.

#### **❖ Following are the main objectives of this Plan.**

- To protect and minimize loss of human lives from effects of disasters.
- Promoting a culture of prevention, preparedness and safety by ensuring that disaster management receives the highest priority at all levels.
- Ensuring that community is the most important stakeholder in the disaster management process.
- To minimize sufferings of people due to different disasters.
- Mainstreaming disaster management concerns into the developmental planning process.
- To minimize property and Infrastructure damage and losses.
- Reduce vulnerability aspect of both people and infrastructure due to different disasters.
- Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society.
- To create awareness and preparedness and provide advice and training to the agencies involved in disaster management and to the community.
- To assess the risks and vulnerabilities associated with various disasters.
- To provide clarity on roles and responsibilities for all stakeholders concerned with disaster management so that disasters can be managed more effectively.
- To strengthen the capacities of the community and establish and maintain effective systems for responding to disasters.
- To strengthen the existing Response mechanism.
- To incorporate all concerned aspects of DM for pre, during and post disaster phenomena.
- To integrate and link up of all level specific and department specific DM plan.

## ❖ **Scope of the Plan:**

The Disaster Management and Response Plan for Devbhumi Dwarka District have been prepared for its operationalisation by various departments and agencies of the district and other Non-governmental Agencies expected to participate in disaster management. This plan provides for Vulnerability Assessment and Risk Analysis, Preventive Measures, Mainstreaming disaster management concerns into Developmental Plans, Preparedness Measures, Response Mechanism, and Partnership with Stakeholders, Financial Arrangement, Roles and Responsibilities of the various agencies interlinks in disaster management and the scope of their activities. An elaborate inventory of resources has also been formalized.

### **c. Authority and Responsibilities:-**

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 mitigate 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.

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

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

#### **D.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.

#### **D.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.

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.

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.

### **D.3 Finance:**

The financial arrangement is 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.

#### **a. Preparations and Revision of The Plan :-**

The District Collector is responsible for the preparation and revision 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.
- DDMC shall compile its learning and proposed new mechanisms for improvement of the capacity to deal with disasters

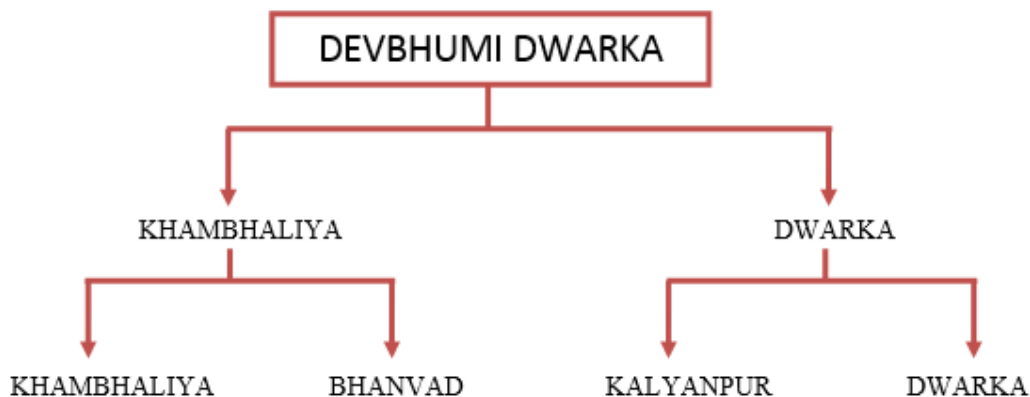
❖ **District Profile:**

**1. Introduction:-**

Devbhumi Dwarka District is located in southern coast of gulf of Kutchh in Gujarat state. The district was bifurcated on August 15, 2013 from Jamnagar District. The Headquarter of the Devbhumi Dwarka District is at Khambhaliya. Mainland of the district extends between 21-degree - 42 min and 22 degrees - 58-min north latitude and between 68 degree 58 Min and 70 degree - 40-min longitude. It is bounded by Gulf of Kutch in the north, Porbandar district in the south, Jamnagar district in the east and Arabian Sea in the west. The district is having an area of 4051 Sq. Kms. population of 738,520 lakhs persons (as per 2011 census) Density of population is 130 persons per sq. km. About 70 % of the population lives in the rural area. The literacy percentage of the district is 69%.

**2. Area & Administration: - Geographical Information**

The entire district is divided in to two Sub Divisions namely Khambhaliya and Dwarka for smooth and effective administration of the district. Each sub Division has two Taluka under jurisdiction as per the new policy of the Government of Gujarat of ATVT (Apno Taluko Vibrant Taluko).



249 Village  
Panchayat at Rural  
level



4 Taluka  
Panchayats



6 Nagar Palika  
at Urban level

Sr.no.	Name Of Taluka	Number of villages
1	Khambhalia	85
2	Bhanvad	53
3	Kalyanpur	66
4	Dwarka	45
	Total	249

Besides, there are 249 Village Panchayats at rural level, 4 Taluka Panchayats, A district Panchayat as Panchayati Raj system and 6 NagarPalika at the urban level for the administrative purpose. At the Sub Division level Prant Officer & SDM holds the office and a Mamlatdar in each Taluka Office for the smooth administration and quick disposal of services to the people of the district. District is headed by the Collector & District Magistrate.

The Police work under the supervision of the Superintendent of Police. The District Development Officer looks after the development activities of the district supported by the Taluka Development Officers in each Taluka and Heads of the various departments. At Village level, works of the Developements are done by Panchayat Mantri (formally known as Talati cum Mantri) under the Gram Panchayat and works of the Revenue are done by Revenue Talati under the Revenue Department.

### **3. Climate: - Coastal Villages**

The Climate of Devbhumi Dwarka District can be regarded as one of extreme kind 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. The Details of **coastal villages** are as under:

Sr. No.	Taluka	Number of Coastal Villages	Population
1	Dwarka	20	81,848
2	Khambhaliya	15	47,841
3	Kalyanpur	6	20,844
	<b>TOTAL</b>	<b>41</b>	<b>1,50,533</b>

### **4. River & Dams:-**

The District has no major river. There are seasonal rivers streams. Amongst these are the river Sani, Sinhan Vartu, Ghee, Kabarka and Ghee. Flow of the river is towards the Gulf of Kutch in the north and in north-west.

There are no major dams in Devbhumi Dwarka District. There are 10 medium and minor dams are in the district. Details of Dam are attached in separate Annexure-3 sheet.

### **5. Ports & Fisheries:-**

Out of 1600 Kms Length of Coastal line of Gujarat the coastal belt of Devbhumi Dwarka District is having 235 Kms of coastal line extending from Vadinar village in the northwest to Harshad village in south west. There are 7 ports in the Devbhumi Dwarka District. Viz. Okha, Vadinar, Beyt, Harshad, Rupen and Salaya, Navadra are fisheries ports. There are 2822 motor boats in Devbhumi Dwarka District, while Jamnagar and Devbhumi Dwarka district combines total 40904(20935 Male, 19969 Female) fishermen out of which 9330 are active in fisheries activities.

Fishing activities has been carried out in 7 villages in Devbhumi Dwarka District. There are 40904 (20935 Male and 19969 Female) fishermen in Jamnagar and Devbhumi Dwarka district out of which 9330 are active fishermen. Total 2822 And 385 non mechanical boats are available in the district. Total 29 fishing societies have been registered in this district, out of which 18 are active.

### **6. Salt works:-**

Due to large sea shore in the District, Salt Industries has developed very well. There are 5 Salt Works in the district and occupies 46678 acres of land (except Tata Chemicals Ltd.). Annual production of Industrial and table salt is around 27 Lacks M. Tones.

### **7. Live Stock:-**

Cattle wealth occupies pivotal place in the rural economy of the district, Livestock position is as below:

<b>Sr. no.</b>	<b>Name of Animal</b>	<b>No. of livestock</b>
1	Bullock/Cows	148849
2	Buffaloes	139843
3	Sheep & Goats	133423
4	Others Horse, donkey, camel	2131
	Total	424246

There are 13 Dispensaries and 07 First Aid Vaternity center available in the district as follows:

<b>Sr.No.</b>	<b>Taluka</b>	<b>Dispensaries</b>	<b>First Aid Center</b>
1	Khambhaliya	Khambhaliya, movan, Vadatra, Bhadthar	Salaya, Bhandariya
2	Dwarka	Dwarka, Soorajkaradi	Beyt
3	Bhanvad	Bhanvad, Gunda, Modpar	Pachhatar, bhangor
4	Kalyanpur	Kalyanpur, Lamba ,Bhatiya, Jamraval	Raan, Rajpara

### 8. Roads & Railway:-

The district has 1163 Kms length of pakka roads connecting to 432 villages/towns in the district. 249 villages are connected by kachha roads and 43 villages accessible only in fair weather. Out of the total 681 inhabited villages, 633 villages are connected by state road transport facilities.

Total length of railway track is 557 kms in the Rajkot region, out of that total covered under Broad Gauge. Total 13 Station is located in Devbhumi Dwarka district that is Jaliya Devani, Aliyabada, Jamvanthali, HAPA, Devbhumi Dwarka, Kanalus.

### 9. Health:-

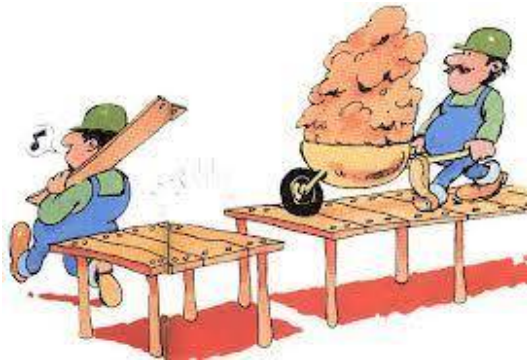
The district has 5 CHCs, 19 PHCs and 166 SHC in the District to cater the people. Location of the CHCs and PHCs and SHCs in different talukas of the District is as follows.

Sr. No.	Taluka	Name of CHCs	PHCs	SHC
1	Bhanvad	Bhanvad	5	35
2	Khambaliya	Salaya,	3	54
3	Kalyanpur	Kalyanpur, Raval	9	56
4	Dwarka	Dwarka	6	24
Total		5	23	169

### 10. Temperature and Rainfall data:

The temperature at Devbhumi Dwarka district headquarters ranges from 42.0 degree centigrade higher in the summer and 4.2 degree centigrade lowest in the winter.

The average annual rainfall is 898 mm. The soil found in the District may broadly be classified as alluvial, black, light brown and alkaline. The last ten years rainfall data is attached in Annexure-2



## Chapter 2

# HAZARD, VULNERABILITY AND RISK ASSESSMENT



## Chapter: 2 HAZARDS, VULNERABILITY AND RISK ASSESSMENT

All events or activities carry some risk and are associated with some level of vulnerability. Risk and vulnerability ranking is the process of assigning scores to the risk and possible impact of hazards to be able to compare the likely vulnerability and make informed management decisions about which hazards are of greatest concern and when planning and preparation efforts should be directed. A crude risk and vulnerability ranking process can be accomplished in five steps.

➤ Matrix of past Disaster-Flood:

Year	Magnitude	Talukas and No.Of villages affected	Life and cattle loss	Damage to Property	Economical loss
2013	4	Devbhumi Dwarka Taluka	11 Human Death and Cattle loss 74	As Per ABCD report	--

➤ Matrix of past Disaster-Earthquake:

Year	Magnitude	Talukas and No.Of villages affected	Life and cattle loss	Damage to Property	Economical loss
2001	4	Zone VI Devbhumi Dwarka, Khambhalia, Dwarka, Kalyanpur Zone III Bhanvad,.	--	--	--

➤ Matrix of past Disaster-Cyclone:

Year	Magnitude	Talukas and No.Of villages affected	Life and cattle loss	Damage to Property	Economical loss
1998	4	Very High Damage risk zone [50 m/s.] 1.717 million population an 17 ports in the district likely the be affected + 10 Taluka.	--	--	--

## Chapter: 2 HAZARDS, VULNERABILITY AND RISK ASSESSMENT

➤ Matrix of past Disaster-Industrial Accident/Chemical disaster:

Year	Magnitude	Talukas and No.Of villages affected	Life and cattle loss	Damage to Property	Economical Loss
	5	Devbhumi Dwarka,	--	--	--

**Step 1: Identify the Hazards of Concern**

Complete the hazards column for the following table. Typical hazards have already been identified, but these should be confirmed at this step and additional hazards added as appropriate.

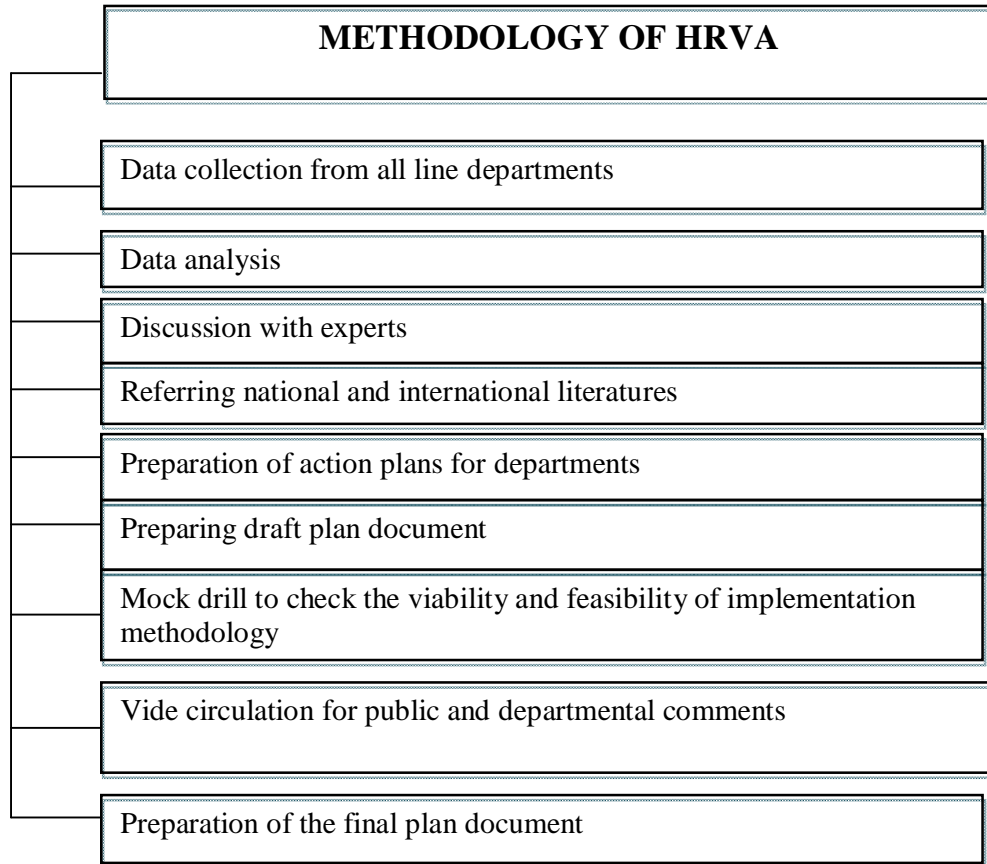
➤ Risk and Vulnerability Analysis-State Level:

Hazard	Probability	Impact	Vulnerability Rating (Probability times Impact)	Specific Locations and populations of concern.
Earthquake (resulting in damage)	4	4	16 [High]	Zone VI Devbhumi Dwarka, , Khambhalia., Dwarka, Kalyanpur, Zone III Bhanvad, .
Wind (cyclone)	4	3	12 (Medium)	Very High Damage risk zone [50 m/s.] Ports and 3 Talukas (Khambhaliya, Kalyanpur and Dwarka)
Sea surge (cyclone)	3	3	9 (Medium)	0.22 Million [2, 27,264] population and 41 coastal villages in 3 talukas are likely to be affected. Maximum surge record 3 meter.
Flood	5	4	20 (High)	May occur due to very heavy rainfall, sea surge or dam failure
Industrial Accident	4	5	20 (High)	Mithapur, Khambhaliya

Drought	3	2	6 (Low)	Whole District
Heat/cold wave	4	2	8 (Medium)	
Hail storm	1	1	1 [Low]	
Landslides Mudflows	1	1	1 [Low]	
Dam Failure	1	1	1 (Low)	
Mine fires/collapse	2	1	2 [Low]	Dist. has no major dams but having 15 medium/minor dams.
Road/rail/air accident	5	4	20 (High)	Devbhumi Dwarka High way connected villages.
Oil spill & Road (marine)	3	2	6 (Low)	Sea shore, coastal belt
Boat sinking	4	2	8 (Medium)	
Building collapse	4	3	12 (Medium)	6 ULB & Dwarka City
Communal Disease (epidemics)	3	3	9 (Medium)	
Food poisoning	3	3	9 (Medium)	
Animal disease (epidemics)	2	3	6 (Low)	
Terrorism (consequences)	1	3	3 [Low]	
Critical Infrastructure Failure (e.g. extended power outage)	4	3	12 (Medium)	The Hydrocarbon Cross-country pipeline running for Devbhumi Dwarka may be affected.
Civil Unrest	3	2	6 (Low)	
WAR	2	4	8 (Medium)	Whole District (19.05 Lacs)
TSUNAMI	2	4	8 (Medium)	Coastal Talukas : Kalyanpur Khambhaliya Dwarka (Okhamandal) Total 41 Coastal Villages

## Chapter: 2

### HAZARDS, VULNERABILITY AND RISK ASSESSMENT



#### **Step 2: Assign the Probability Ratings**

Assess the probability-or "livelihood" of each hazard by reaching a consensus on probability and then assign each hazard a "Probability Level," as indicated in the following table. Enter the score for each hazard in the probability column of the table in Step 1.

Probability	Score	Description
Almost certain	5	A regular event, on the average at least once in a 12 month period
Likely	4	Will occur at least once every two years.
Moderate	3	Will occur at least once every 5 years.
Unlikely	2	Will occur sometime in a 25 years period.
Rate	1	Can be expected to occur sometime in a 100 year period

#### **Step 3: Assign the Impact Ratings**

Assess the potential magnitude or impact of each hazard and assign each an "Impact Level" as in the following table. Enter the impact score for each hazard in the table in

Step 1.

## Chapter: 2

### HAZARDS, VULNERABILITY AND RISK ASSESSMENT

Impact	Scope	Description
Catastrophic	5	Massive insecurity, substantial loss of life likely. Large and generalized assistance urgently needed for large segments of population. Additional management, administrative, and technical expertise urgently needed. Large volumes of materials inputs needed.
Major	4	Security threatened for large segments of population; substantial impacts on vulnerable groups likely. Some loss of life likely. Life-saving programs likely needed to handle impact of emergency situation. Large volumes of material inputs and additional administrative staff and technical expertise likely to be needed.
Moderate	3	Security is threatened for potential target groups, some interventions may be needed, particularly for groups who likely face increase in vulnerability. Organization can likely respond with existing country/regional management structures.
Minor	2	Momentary insecurity local groups able to respond adequately to those in need. Some technical assistance by organization may be helpful to local respondents, although not urgently needed.
Insignificant	1	Little or no significant change in conditions, no expected loss of life, injuries or significant loss of property for usual target groups as the result of the hazard Normal operations continue.

#### **Step 3: Assign the "Vulnerability" Ranking**

Multiply the probability and the impact scores in the table in Step 1. The resulting score indicates crude vulnerability. Scores above 15 indicate high vulnerability; scores between 7 and 15 indicate medium vulnerability and scores below 7 indicate low vulnerability.

Probability Rating: Class and (score)	Impact Rating: Class and (score)				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost certain (5)	Low-5	Moderate - 10	Moderate - 15	High-20	High-25
Likely (4)	Low-4	Moderate-8	Moderate - 12	High-16	High-20
Moderate (3)	Low-3	Low-6	Moderate - 9	Moderate - 12	Moderate -15
Unlikely (2)	Low-2	Low-4	Low-6	Moderate - 8	Moderate -18
Rare (1)	Low-1	Low-2	Low-3	Low-4	Low-5

## Chapter: 2

### HAZARDS, VULNERABILITY AND RISK ASSESSMENT

These three classes related to the immediate vulnerability to disaster and provide guidance on disaster response planning. Assessing risk and vulnerability to low likelihood but high impact hazards (e.g., earthquakes) requires a different, more long-term focused, assessment process.

Note that the rating process presumes that:

- Populations are better able to respond to disaster which more likely and do not have severe (major) impacts and,
- Steps taken to prepare for moderate or high vulnerability events will also improve the ability to respond to low vulnerability events.

The divisions between low, moderate and high crude vulnerability can be changed but should be used consistently for all similar assessments in the state.

#### **Step 4: Identify Areas with Highest Vulnerability**

Once vulnerability ranks have been identified, the locations and populations considered most vulnerable should be identified. This aids in knowing where disaster assistance may be most needed, as well as providing a quick indication of where vulnerability reduction efforts could be most productive. Note that vulnerability reduction can include education, structural measures, and non-structural measures like evacuation planning. Where possible, the areas of high vulnerability should be mapped and included in disaster planning documents.

#### **➤ Outcome**

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 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**

The District is located in Zone-IV of seismic vulnerability as captured in the Vulnerability Atlas. While earthquakes cannot be predicted, a detailed mapping of seismic fault systems and seismic source regions, quantification of probability of experiencing various strengths of ground motion at a site in terms of return period for an intensity will be carried out and appropriate regulations put in place to decrease the vulnerability of built environment.

Different types of ground do shake with different severity in an earthquake. Softer soils and those with high water content generally shake more than rocky sites. Wherever possible site structures on firmer ground. This will reduce the severity of vibrations experienced in an earthquake. Capital intensive infrastructure, hazardous facilities and materials, and other important buildings should not be located in the vicinity of a known fault. Since early warning is not possible in case of earthquakes, the best choice is to ensure that seismicity is monitored and integrated with the GIS. Devbhumi Dwarka District's situation indicates that some parts of the District like Jodiya, Dhrol and Devbhumi Dwarka Taluka have been adequately provided with the seismic instrumentation. It is necessary that mitigation strategy considers instrumentation of all other areas in order to have a total assessment of the seismic activity. This would enable reconfirmation and up gradation of micro zonation activities.

### **2. Flood**

River flooding is a regular hazard faced by the District. All the major river systems in the District are vulnerable to flooding, as captured in the Vulnerability Atlas. The urban areas like Devbhumi Dwarka, Jodiya, Khambhalia and Kalyanpur are facing flooding primarily due to drainage and increased run-off loads in hard surfaces.

#### **Regulations would include.**

- Not permitting unrestricted new development in the hazard prone areas
- Anchoring and flood proofing structures to be built in known flood prone areas
- Built-in safe guards for new water and sewage systems and utility lines from flooding
- Enforcing risk zone, base flood elevation, and flood way requirements
- Prohibition on development in wetlands
- Prescribing standards for different flood zones on flood maps.

To meet these requirements, local governments will have to adopt specific flood plan Management into zoning and subdivision regulations, housing and building codes, and resource protection regulations.

In low-lying areas, close to the coast, and on flat land in river valleys, there may be a potential for coastal or river flooding. In geologically younger river valleys, in mountains, and foothills there may be a potential for flash-flooding.

It is important to check the history of flooding in the area. Wherever possible

- Map the extent of land covered by past flood waters
- Get an indication of the depth of past flood waters
- Find out about the severity of past floods; how much damage they have caused, how fast they flowed and how much debris they left behind and
- Find out how often flooding has happened, over at least the past 20 years.

### **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 Devbhumi Dwarka, Khambhalia, Kalyanpur and Dwarka -Okha 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 are 31 identified sites to construct Cyclone Shelter on Coastal Belt of Devbhumi Dwarka District. These shelters 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 shelters, for evacuation and temporary occupation.

#### **➤ Nilofar:**

The cyclone storm NILOFAR was originated in Arabian sea on 26/10/2014. The Cyclone storm, NILOFAR over west central and adjoining southwest Arabian sea move northwards, intensified into a severe cyclonic storm and lay centred at 05:30 hours of 27/10/2014 near latitude 14.8° N and longitude 62.0°E, about 1180km southwest of Naliya . Under the influence of this system, Rainfall at most places with isolated heavy to very heavy falls would commence along coastal districts of saurashtra and kutch intensity would increase gradually with heavy to very heavy falls at a few places from night 30<sup>th</sup> October. Squally winds speed reaching 45-55 kmph gusting to 65 kmph would commence along and off Gujarat coast from 30<sup>th</sup> October morning and would become 100-110 kmph gusting to 125 kmph at the time of landfall. Sea condition along and off Gujarat coast will be rough to very rough from 30<sup>th</sup> October morning and would become very high to phenomenal from afternoon 30<sup>th</sup> October. However, on 30/10/2014 as it come closer to Gujarat coast, it was weaken and dispersed in Arabian sea.

#### **📌 Action Taken:-**

- Collector, Resident additional collector, Liaison officer, Dy. Mamlatdar visited Gandhvi, Bhogat, Navadra, Harshad villages. They had held a meeting with villagers and aware them to be prepared for migration from
- village to safe shelters when they got a message from Control room.

## Chapter: 2

### HAZARDS, VULNERABILITY AND RISK ASSESSMENT

- Petrol pumps, FPS were instructed to keep stocks for emergency.
- Talatis were instructed to be alert and in communication with collector office.
- NGOs were instructed to be prepared for food packets needed during cyclone.
- At district Level, Meeting had been organized with District officials.
- The boat service had been canceled between Dwarka to Bet.
- Boats were called back which was gone in sea for fishery.
- NDRF, Special rescue teams were standing by at Dwarka.
- Do's and don'ts were published in local news paper.

#### 4. Chemical Disasters:

Growth of chemical process industry in Gujarat has received a dramatic accelerated momentum in last one decade. Sophisticated technology complex processes and a wide range of chemicals and chemical products have emerged to provide better standards and improved way of living to millions of people.

Devbhumi Dwarka district has specific chemical zone of factories. However the disaster preparedness as precautionary measures have envisaged by involving all the major Departments who are directly or indirectly responsible for Chemical hazard.

Total 6 MAH unit is in this district. most probability of chemical disaster in this district.

Industries involved in the production or transportation of inflammable, hazardous and toxic materials hold the responsibility for preparing an off-site plan and communicating the same to district collector. Simulation exercises are also undertaken in the adjoining communities.

- Poison centers established in Civil Hospital-Devbhumi Dwarka which lays near the industrial estates with facilities for detoxication and also in industries hospital.
- All transport of hazardous and toxic materials are communicating to the RTO.
- Small scale industries releasing toxic waste in water have to be encouraged to set up common effluent treatment facility.

#### 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 Devbhumi Dwarka District is concern there are 5 costal talukas and as per Analysis of Mean Sea level of Devbhumi Dwarka District there are 52 villages of 6 costal taluka are less then 2 km far from sea and on less then

10 meter of height from ocean level. 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.

- **Epidemics:**

The Public Health Department is the nodal agency responsible for monitoring and control of epidemics. Local governments and municipal authorities also have a responsibility for taking appropriate steps in this context. Therefore, success of mitigation strategy for control of epidemics is depending on the type of coordination that exists between the Health Department and local authorities. Mitigation efforts for control of epidemics would include

1. Surveillance and warning

- 2 Preventive and Primitive measures

3. Strengthening institutional infrastructure... Like...

- Promoting and strengthening community hospitals with adequate network of Para-professionals will improve the capacity of the Health Department for surveillance and control of epidemics.

- Establishing testing laboratories at appropriate locations in different divisions within the State will reduce the time taken for diagnosis and subsequent warning.

- Establishing procedures and methods of coordination between Health Departments and local authorities.

- **Nuclear Disaster: -**

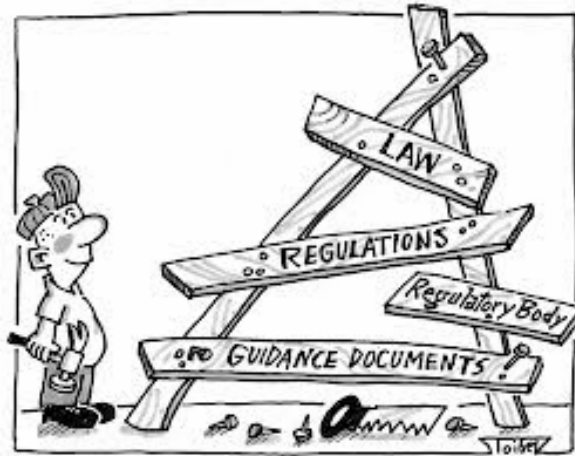
In the Past no nuclear disaster was occurred..

- **Drought:**

Low rainfall coupled with erratic behavior of the monsoon in the state make Jamnagar/Devbhumi the most vulnerable to drought. Of all the natural disasters, drought can have the greatest impact and affect the largest number of people. Drought invariably has a direct and significant impact on food production and the overall economy. Drought, however, differs from other natural hazards. Because of its slow onset, its effects may accumulate over time and may linger for many years. The impact is less obvious than for events such as earthquakes or flood but may be spread over a larger geographic area.

- **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.



## Chapter 3

# Institutionalisation and Multihazard Response Measures



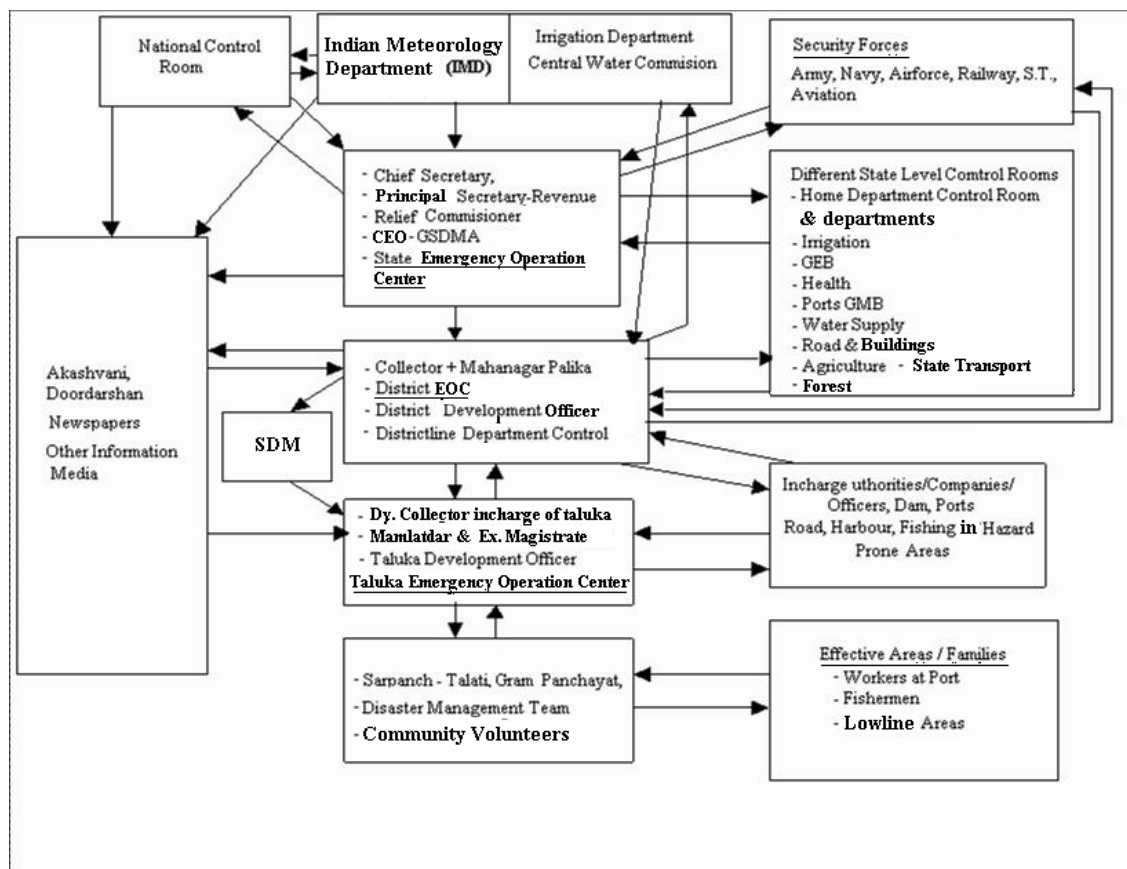
## Chapter 3

### Institutionalisation and Multihazard Response Measures

At the district level, the District Magistrate will be the focal point for coordinating all activities relating to prevention, mitigation and preparedness apart from his existing responsibilities pertaining to response and relief. The District Coordination and Relief Committee is being reconstituted/re-designated into Disaster Management Committees with officers from relevant departments being added as members. Because of its enhanced mandate of mitigation and prevention, the district heads and departments engaged in development will now be added to the Committee so that mitigation and prevention is mainstreamed into the district plan. The existing system of drawing up preparedness and response plans will continue. There will, however, also be a long term mitigation plan. District Disaster Management Committees have already been constituted in Devbhumi Dwarka districts.

The model bye-laws, DM Policy, Act and model health sector plan have also been included. Education and Training includes material for capacity building and upgradation of skills of policy makers, administrators, trainers, engineers etc. in planning for and mitigating against natural disasters. Basic and detailed training modules in disaster preparedness have been incorporated along with training methodologies for trainers, for community preparedness and manuals for training at district, block, panchayat and village levels. For creating a disasterresistant building environment, the Construction Toolkit addresses the issue of seismic resistant construction and retrofitting of existing buildings. BIS Codes, manuals and guidelines for RCC, Masonry and other construction methodologies as also for repair and retrofitting of masonry and low-rise buildings have been included.

#### 3.1 State Disaster Response Structure – Gujarat:

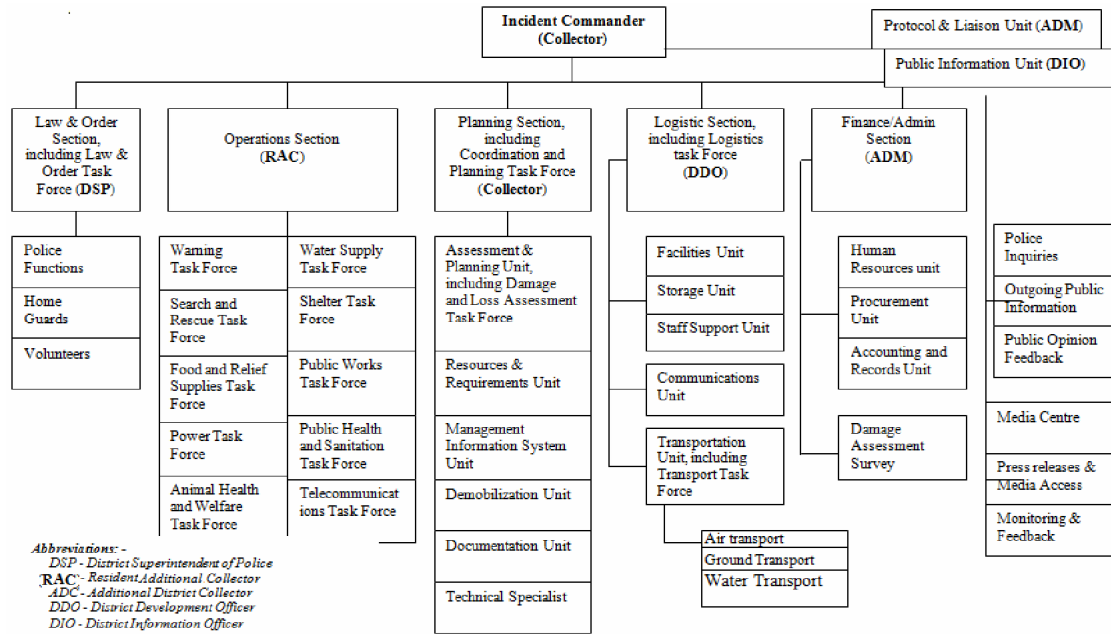


## Chapter 3

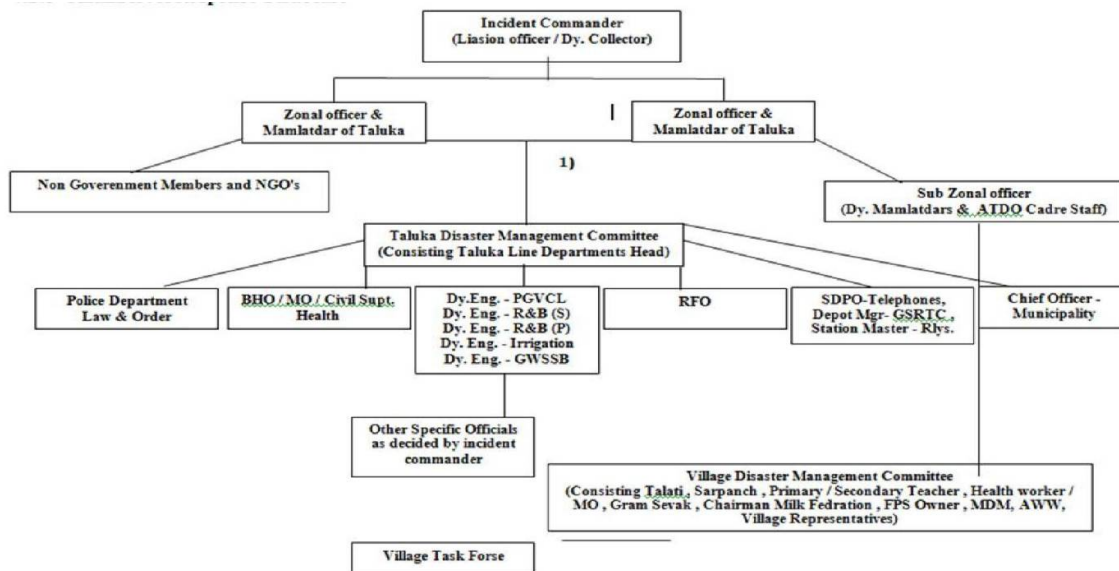
### Institutionalisation and Multihazard Response Measures

For effective response the Incident Command System (ICS), need to be put into place with clear responsibility. The commander for each tasks force need to be trained on the specific tasks. Incident Commander (IC) at block level instructs head of task forces to carryout emergency functions according to SOPs. Head of each task force reports to IC on progress (and any obstacles faced) until he/she is further instructed by IC.

#### 3.2 District Level Structure :



#### 3.3 Taluka Level Structure:



## Chapter 3

### Institutionalisation and Multihazard Response Measures

#### **3.4 SEOC-DEOC-TEOC and Other Control Rooms.: Emergency Operation Centers/Control Rooms**

##### ☐ **District Emergency Operation Center(DEOC)**

☐ The District Emergency Operation Center (DEOC) is located at District Collector's Office. 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 coordination for decision-making process.

##### ☐ **Facilities at District Control Room**

The District Control Room shall be equipped with but not limited to the following items:

- ☐ Hotline directly connected to State EOC/Control room
- ☐ Telephones
- ☐ Satellite Telephone
- ☐ Satellite Iridium
- ☐ One PC with e-mail, Internet and web site facilities
- ☐ Marker board - 2 Nos. with adequate markers
- ☐ Conference table with Chairs
- ☐ A copy of Disaster Management Plan
- ☐ Other relevant documents, if any

##### ☐ **Task Force Control Room (TFCR)**

Individual Task Force function shall activate & operate their respective control rooms in their office managed 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.

##### ☐ **Taluka Level Control Room (TLCR)**

The Taluka Level Control Room shall be 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 TFCR for mobilization of resources and dissemination of instructions received from TFCR/DEOC.

##### ☐ **Facilities at Taluka Level Control Rooms (TLCR)**

The following facilities are maintained inside TFCR:

- ☐ Telephones
- ☐ 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 : District Collector or any person nominated

TFCR : Respective Task Force Leader

TLCR : Respective Taluka Liaison Officer

## Chapter 3

### Institutionalisation and Multihazard Response Measures

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

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 3C (Command, Control and Communication) mechanism. ICS covers early warning, search and rescue, humanitarian assistance, medical response, relief, temporary shelter, water and sanitation, law and order, animal care, public grievance, recovery and rehabilitation.

#### 3.5 Early Warning System (EWS) and Post Disaster Advisories:

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 a 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.

#### 3.6 Information Dissemination:

The dissemination of information is the most critical function in order to give early warning to the community. It has to be fast in order to give a reasonable amount of time for communities to prepare for any eventuality. Due consideration has to be given to the points mentioned below before sending across the information.

- Information dissemination will be done to all the important stakeholders (as given below in the information dissemination format) at the Panchayat level in rural areas and Nagarpalika level in urban areas for early warning communication.
- Making use of the fastest means to communicate the message in the most lucid manner so as to prevent spread of rumor and panic among the masses.

*Bulk Voice SMS Service is the best means of communication to large masses without any effort and within no time. A voice recorded message from the District Magistrate from official number shall be sent to the database of numbers identified for information dissemination with the help of Mobile service providers & Telephone department.*

## Chapter 3

### Institutionalisation and Multihazard Response Measures

#### 3.7 Early Warning Action Plan :

The availability of early warning system is a must before early warning message could be disseminate to the people till the last mile. Thus for every type of disaster there is an agency designated with the responsibility of keeping track of developments in respect of specific hazards and inform the designated authorities/agencies at the district level about the impending disaster. Nodal agencies for early warning of different natural hazards are:

Type of Action	Flood	Cyclone	Chemical and industrial accident	Tsunami
Existing EWS	Irrigation department /dam authority/ IMD ↓ Collector ↓ Mamlatdar/TDO ↓ Villages	IMD ↓ Collector ↓ Mamlatdar/TDO ↓ Villages	Industrial Association/industries ↓ DCG ↓ LCG ↓ Mamlatdar	IMD ↓ Collector ↓ Mamlatdar/TDO ↓ Villages
Responsible Agency for warning dissemination	Mamlatdar office/TDO	Mamlatdar office/TDO	Mamlatdar office/TDO	Mamlatdar office/TDO
Trained personnel and operators available (Y/N)	Yes	Yes	No (Team to be formed and trained )	No (Team to be Formed and trained )
Villages covered	All risk prone villages			
Villages/habitation not covered or difficult to access	Communities in remote locations ( fisher folk, salt pan workers, maldharis etc)			
Measures required to improve timeliness and outreach (For example, voice enabled SMS)	Contact of communities in remote locations (fisherfolk, saltpan workers, Maldharis etc)			

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

Type of Hazard	Flood	Cyclone	Earth quake	Drought	Chemical and industrial accidents	Tsunami
Responsible Agency	Revenue & Panchyat offices					
Villages covered	All risk prone villages					
Villages/habitation not covered or difficult to access	communities in remote locations ( fisher folk, salt pan workers, Maldharis etc)					
Measures required for outreach	Contact of communities in remote locations ( fisher folk, salt panworkers, Maldharis etc)					

## Chapter 3

### Institutionalisation and Multihazard Response Measures

#### 3.8 VIP involvement and protocol

It is important to immediately inform VIPs and VVIPs on impending disasters and current situation during and after disasters. Appeals by VIPs can help in controlling rumours 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 & taluka liaison officer will liaise with the government press officer to keep their number to minimum.

#### 3.1.9 Media Management

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.

Devbhumi Dwarka Collectorate office has established an effective system of collaborating with the media 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. A similar set up is also active at the Taluka Control room (i.e. Mamlatdar office)

#### 3.10 Role of Emergency Organization :

The District Collector shall be the Overall Incident Command Officer of emergency operations as the District Devbhumi Dwarka Emergency Authority and S/he shall provide suitable instruction to the District Crisis Group.

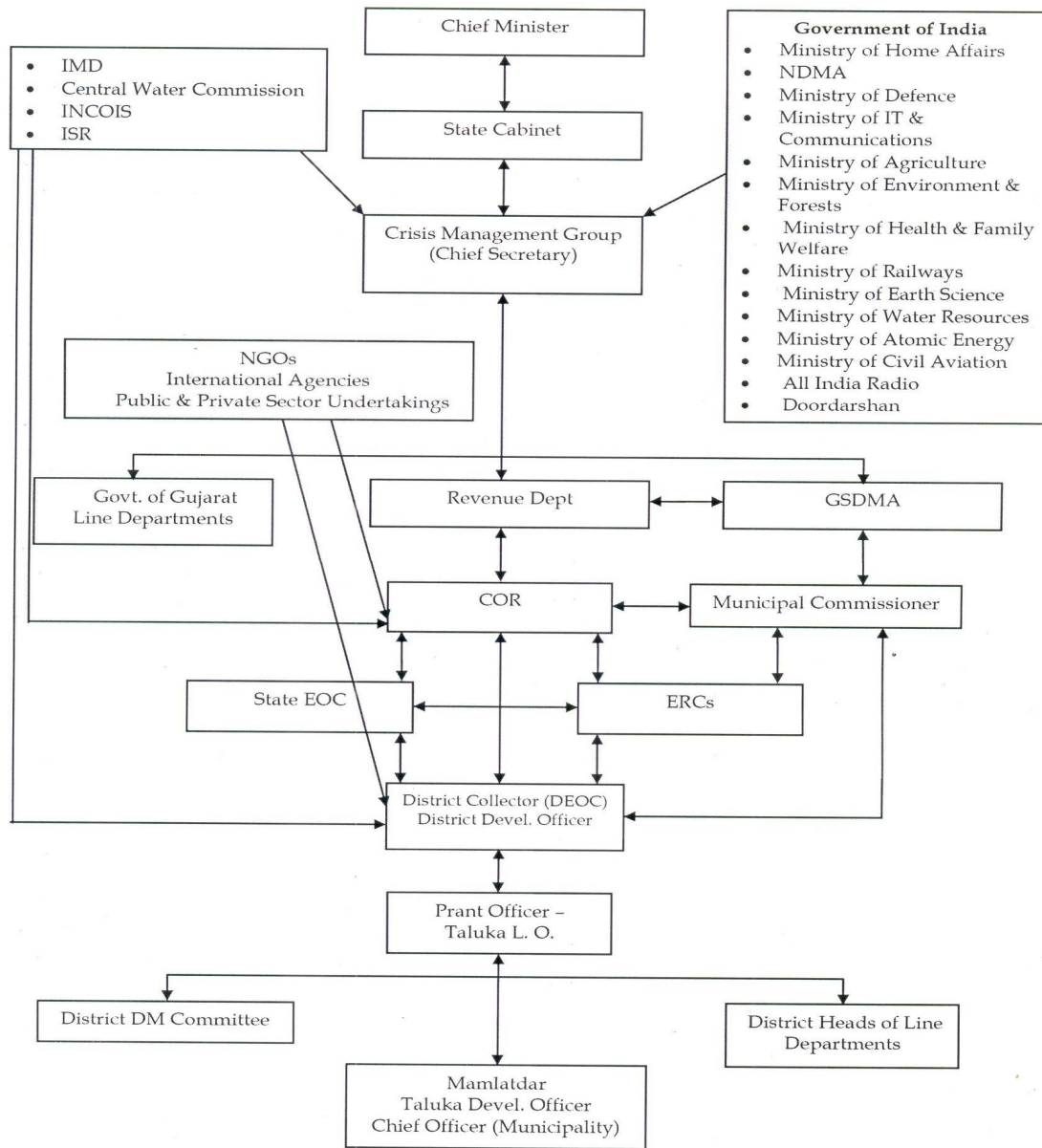
- The Collector shall seek help from Chief Secretary, Chairman, State Crisis Group, Gujarat State depending upon the state of emergency.

For this he shall be in touch with State Control Room, Gandhinagar or Chief Secretary, Gujarat State for progress of emergency.

#### Institutional Arrangement:

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 SDMA, 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.

### 1.10 DM Structure in the State



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 ne club at district level committee.

**B. DDMC: -District Disaster Management Committee:**

Sr. No.	Detail
1	Collector
2	DDO
3	SP
4	District supply officer
5	Exe. Engineer-R&B State
6	Exe. Engineer-R&B Panchayat
7	Exe. Engineer-R&B State Irrigation
8	Superintending Engineer- PGVCL
9	District Home guard commandant
10	Superintendent G.G.Hospital
11	Port Officer-GMB
12	District forest Officer
13	Dy. Director-Information Department
14	Chief fire officer
15	Regional Officer-GPCB
16	District Agriculture Officer
17	SDM
18	Regional Transport officer
19	Divisional Controller-State transport
20	Dy. Controller –Civil Defense
21	District Education Officer
22	District Primary Education officer
23	NGO Member
24	Media Person

**C. TDMC: - Taluka Disaster Management Committee:**

Block/Taluka level Disaster Management Committees will be constituted and will be headed by Mamlatdar as the case may be Officers from different departments and representatives of local panchayat body will be members of this Committee. The Committee will look into all the aspects of disaster management including mitigation preparedness, response and relief. Following member is club in TDMC.

### Chapter 3 Institutionalisation and Multihazard Response Measures

Sr. No.	Detail
1	Dy.Collector/ Dy.D.D.O.
2	Mamlatdar
3	Taluka Development Officer
4	Dy. Executive Engineer- R & B (State)
5	Dy. Executive Engineer- R & B (Panchayat)
6	Dy. Executive Engineer – Irrigation
7	Dy. Executive Engineer –GEB
8	Dy.Executive Engineer – Water Supply
9	Junior Engineer-Telecom
10	Medical Officer (Mother PHC)
11	Police Inspector/ Police Sub Inspector
12	Taluka Home Guard Commandant
13	Taluka Kelvani Nirikshak
14	Godown Manager- Civil Supply Corporation
15	Depot Manager – S.T.
16	Port Officer
17	Range Forest Officer (Head Quarter)
<b>❖ <u>Non- Government Members</u></b>	
18	Present-Taluka Panchayat
19	M.P.
20	M.L.A.
21	Chairman- Social Justice Committee (Taluka Panchayat)
22	Woman Member - Taluka Panchayat
23	NGO Representative

#### **D. CDMC: -City Disaster Management Committee:**

In each City / Nagarpalika, there shall be a Disaster Management Committee which will oversee all activities in disaster management. The ULB will also constitute a City Disaster Management Team consisting of officials and non-officials and organize training for them to be able to discharge their duties properly.

### Chapter 3

#### Institutionalisation and Multihazard Response Measures

Sr. No.	Department
1	Dy.Collector/SDM/Dy.DDO
2	Chief Officer
3	Chief fire officer
4	Mamlatdar
5	Town planning Head
6	Dy.Exe.Engineer-R&B state
7	Dy.Exe.Engineer-state-Irrigation
8	Dy.Exe.Engineer- PGVCL
9	Dy.Exe.Engineer-GWSSB
10	Junior Engineer Telecom
11	Medival Officer-C.H.C.
12	Medical Officer Municipality Health Centre
13	Head Transport committee
14	PI/PSI
15	Taluka Homeguard Commandent
16	Education Officer Municipality Education committee
17	Project Coordinator-UCD
18	Port officer
19	Range forest officer-Extension
`Non Governmental Member	
20	President Municipality
21	Member of Parliament
22	Member of Legislative assembly
23	Chairman- Standing Committee committee
24	Chairman-Water Supply committee
25	Chairman City planning committee
26	Chairman Construction Committee
27	Women Member of Municipality
28	Scheduled caste Member of municipality
29	Local N.G.O.
30	Other-Decide By CDMC

### Chapter 3

#### Institutionalisation and Multihazard Response Measures

##### **F. VDMC: - Village Disaster Management committee:**

Each village shall have a Disaster Management Committee consisting of officials and nonofficials. The Committee will be constituted to oversee by the gram sabha. The Committee will be responsible for awareness generation, warning dissemination, community preparedness plan, adoption of safe housing practices and organizing and cooperating relief in post disaster situations. The member is.

Sr. No.	Detail
1	Sarpanch-Chair Person
2	Talati cum Mantri
3	Primary Principal
4	Health Worker
5	Anganwadi Worker
6	President Seva Co operative
7	President Milk cooperative
8	Community Representative
9	Community Representative
10	Fair price shop holder

## Chapter 3

### Institutionalisation and Multi hazard Response Measures

#### Emergency Rescue Kit-EOC Set up and Facilities available

As a part of preparedness following equipment were allocated in this district

#### **EMMERGENCY RESCUE KIT AT TALUKA PLACES OF DEVBHUMI DWARKA DISTRICT:**

No.	Name of Taluka Mamlatdar Office	Artical each ECRs includeed in		
		Life Saving Jacket	200 ft. Ropes	100 ft.Ropes
1	Mamlatdar Office – Khambhalia	20	2	4
2	Mamlatdar Office – Dwarka	20	2	4
3	Mamlatdar Office – Kalyanpur	20	2	4
4	Mamlatdar Office – Bhanvad	5	0	0

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

Sr. No.	Municipality	Water Bouser	Fire Tender	Inflatable Light	Fire Bullet	Remarks
1	Bhanvad	1	1	2	-	-
2	Khambhalia	1	2	2	-	-
3	Rawal	1	--	2	-	-
4	Dwarka	2	2	2	1	1 Boat
5	Okha	1	1	2	1	1 Boat
6	Salaya	1	1	2	1	15 Boat

#### And Health Sector as following

Sr. No.	Taluka	Name of CHCs	PHCs	SHC
1	Bhanvad	Bhanvad	5	35
2	Khambaliya	Salaya,	3	54
3	Kalyanpur	Kalyanpur, Raval	9	56
4	Dwarka	Dwarka	6	24
Total		5	23	169

## Chapter 3

### Institutionalisation and Multihazard Response Measures

#### ➤ Forecasting and warning agencies:

#### 9.4 Warning or Occurrence of Disaster

On the receipt of warning of alert from any such agency which is competent to issue such a warning, or on the basis of reports from Divisional Commissioner/ District Collector of the occurrence of a disaster, all community preparedness measures including counter-disaster measures will be put into operation. The Chief Secretary/ Relief Commissioner will assume the role of the Chief of Operations for Disaster Management.

It is assumed that the district administration would be one of the key organizations for issuing warnings and alert. Additionally, the following agencies competent for issuing warning or alert are given below.

Sr. No	Hazard/Disaster	Agency
1	Earthquake	Indian Meteorological Department
2	Flood	Indian Meteorological Department, Irrigation Department
3	Cyclone	Indian Meteorological Department
4	Epidemics	Public Health Department
5	Road Accidents	Police
6	Industrial/Chemical Accidents	Industry, Police, Mutual aid Control Room
7	Fire	Fire Brigade, Police
8	Rail Accidents	Railways, Police
9	Air Accidents	Airlines, Police
10	Ammunition Depot-Fire	Army, Police

#### ➤ The occurrence of the disaster will be communicated to :

The Governor, Chief Minister, Home Minister, Relief Minister and non-officials namely MPs and MLAs from the affected district. Chief Secretary, Principal Secretary, Disaster Management & Relief Department, Secretary, Disaster Management & Relief Department, Cabinet Secretary, Secretary, Home and Defense, Government of India. Secretary, Agriculture, and Joint Secretary, NDM, Ministry of Agriculture, GOI Local Area Commander of the Army.

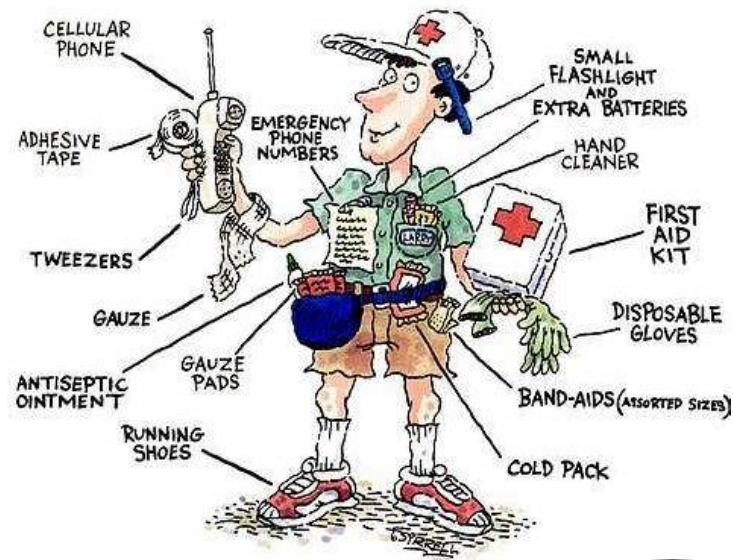
### Chapter 3

#### Institutionalisation and Multihazard Response Measures

➤ **The Occurrence of the Disaster would essentially bring into force the following :**

- ❖ The Emergency Operations Centre will be put on full alert and expanded to include Branch arrangements, with responsibilities for specific tasks, depending on the nature of disaster and extent of its impact. The number of branches to be activated will be decided by the Chief of Operations.
- ❖ All Branch Officers and Nodal Officers will work under the overall supervision and administrative control of the Chief of Operations. All the decision taken in the EOC has to be approved by the Chief of Operations.
- ❖ Immediate access to the disaster site.
- ❖ Telephonic and VSAT, wireless communication and hotline contact with the Divisional Commissioner, and Collector/s of the affected district/s will be activated.

The EOC in its expanded form will continue to operate as long as the need for emergency relief and operations continue and the long-term plans for rehabilitation are finalized for managing long-term rehabilitation programmes, such as construction of houses, restoration of infrastructure etc. the responsibilities will be that of respective line departments. This will enable EOC to attend to other disaster situation, if the need be.



## Chapter 4

# Preparedness, Prevention & Mitigation Measures



Personal preparedness focuses on preparing equipment and procedures to use when a disaster occurs, i.e., planning. Preparedness measures can take many forms including the construction of shelters, implementation of an emergency communication system, installation of warning devices, creation of back-up life-line services (e.g., power, water, sewage), and rehearsing evacuation plans. Proper Preparation can save time, money and lives. Planning for all different types of events to magnitudes in at utmost importance for disaster. Proper planning is instrumental during times of chaos to make situations less stressful. With proper planning duties will be pre-assigned to different agencies, so that when disaster does occur responders can jump right into action.

Two simple measures can help to prepare the individuals for either sitting out the event or evacuating, as necessary.

For evacuation, disaster supplies kit may be prepared and for sheltering purposes a stockpile of supplies may be created.



### ➤ **Prevention and Mitigation Plan:**

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 Measures**

**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>
Desilting and deepening of water chanel (kaans)	Irrigation and Rural Development, GLDC	Departmental program & MGNREGS,	2014-15
Construction of embankments/ protection wall	Rural Development, Forest	Departmental program & MGNREGS, watershed,	2014-15
Repair of embankments/ protection wall	Rural Development, R & B	Departmental program & MGNREGS	Regularly
Repair and maintenance of Flood Channels, canals, natural drainage, storm water lines	Irrigation department	Departmental or special plan	2014-15
Construction of Safe Shelters (new construction through Indira Awas, Sardar Awas and Ambedkar Awas)	Collectorate and R&B	NCRMP	Regularly
Protection wall and mangroves and vegetative cover against sea level intrusion and land erosion	Forest and Rural development department	Department schemes, MGNREGS, IWMP	2014-15
Desilting of water bodies like river and ponds	Irrigation DDO Rural Development	MGNREGA and Land Development	2014-15

➤ **Non-Structural Mitigation Measures for Flood**

<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 Awaas and other rural housing schemes	Regularly
Promotion of Traditional, local and innovative practices like bamboo/plastic bottle rafts etc	DDMC, SHGs and youth groups, NGOs	Training and capacity building plan for disaster management	2014-15
Capacity building of volunteers and technicians	DDMC	Training and capacity building plan for disaster management	2014-15
Awareness generation on health and safety of livestock	veterinary officer, rural development	Departmental Scheme	Regularly

➤ **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 41 villages	Forest department, Port Authority, DIC, TDO, Rural development department	Departmental schemes, MGNREGS	2014-15
Identification and repair/ retrofitting of houses and buildings unsafe for cyclone		R & B (Zila Panchayat)	Departmental Scheme	Regularly

➤ **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 41 villages	DDMC		Regularly
Training and awareness generation for use of safety jackets/rings/buoys/rope etc for fisher folks		DDMC, TDMC, VDMC	TDMP	2014-15
Enforcing strict compliance to coastal regulation zone		Department of Environment & Forest		2014-15
Registration of fishing boats		Fisheries Department		2014-15
Regulate and issue orders for poor quality hoardings/buildings or any other objects		R & B Department		Regular Intervention

➤ **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	EQ prone 3 Taluka under zone 4	R & B (State and Panchayat), DDO, Rural department		-
Retrofitting of unsafe rural houses		DDMC	Rural housing schemes and departmental programs	-
Identifying and safely dismantling unsafe structures		R & B department		-

<b>Non-Structural measures</b>	<b>Location/ coverage area</b>	<b>Implementing Departments</b>	<b>Convergence with agency/program</b>	<b>Time Frame</b>
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Capacity building of architects, engineers and masons on earthquake resistant features	EQ prone 3 Taluka under zone 4	R & B (State and Panchayat), DDMC		Regular Interval
Registration of trained and certified mason		R & B (State and Panchayat), DDMC		Regular Interval
Strict enforcement of guideline pertaining to seismic safety for government rural housing		DDO	Rural housing schemes	Regular Interval
Mock-drills for Schools, Hospitals and , Public Buildings and trainings for mason, engineers and architects		DDMC, Schools	DDMC	Regular Interval

➤ **Non Structural Mitigation Measures for Earthquake**

➤ **Structural Mitigation Measures for Drought**

Structural measures	Identified Locations and Villages	Implementing Departments	Convergence with Scheme/ Program	Time Frame
Development of Pasture land in common property, seed farms and trust land	Drought prone villages	Forest, Rural Development, Panchayat	Departmental Scheme	2014-15
Rain Water Harvesting storage tanks at household level and public buildings		GWSSB, (WASMO), Rural Development,	MGNREGS, Swajaldhara	2014-15
Structures for water harvesting and recharging like wells, ponds, checkdams, farm ponds, etc		DDO, Rural development, irrigation department	MGNREGS ,Watershed program, departmental schemes	2014-15

➤ **Non-Structural Mitigation Measures for Drought**

Non-Structural measures	Locations/ coverage area	Implementing Departments	Convergence with agency/ program	Time Frame
Listing/developing shelf of work for drought proofing/scarcity works including Identification of potential sites of water bodies	Drought prone villages	Rural Development	MGNREGS	2013-14
Farmer education to practice drought resistant crops and		Agriculture & horticulture	Departmental schemes	2013-14

Non-Structural measures	Locations/ coverage area	Implementi ng Departmen ts	Convergen e with agency/ program	Time Frame
efficient water use		department		
Set up control mechanism for regulated water use (ponds, small dams, check dams) on the early onset.		Panchayats		Regularly

➤ **Industrial (Chemical) Structural Measures (in coordination with LCG, DCG district and state level authorities):**

Structural measures	Activities	Implementin g Department s	Convergence with agency/ program	Time Frame
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	--	Regular interval
Safety assessment	Carry out structural safety inspection/audit	DISH, DCG (Asst. Director . Industrial safety and health)	--	regular interval
	Any Other	--	--	--

➤ **Industrial (Chemical) Non-Structural Measures (in coordination with LCG, DCG, district and state level authorities):**

Non structural Measures	Activities	Implementing Departments	Convergence Agencies	Time Frame
Planning	Prepare an onsite and offsite emergency plan	Occupier, DISH	--	regular interval
	Conduct mock drills as per the regulations	DISH and LCG	--	regular interval
	Update the plan as per the requirement	Occupier, DISH	--	regular interval
	Monitor similar activities in all	DISH and LCG	--	regular

<b>Non structural Measures</b>	<b>Activities</b>	<b>Implementing Departments</b>	<b>Convergence Agencies</b>	<b>Time Frame</b>
	the factories/ industries			interval
Capacity Building	Develop IEC material for Publication & Distribution	TDMC	--	Periodicall ly
	Awareness generation to general public and medical professional residing near MAH factories for immediate steps	TDMC, LCG	--	Periodiccal ly
	Organize training programmes, seminars and workshops (e.g. for drivers of HAZMAT transport, line departments officers, Mamlatdar etc)	TDMC, LCG	--	Periodiccal ly
	List of experts/ resource person/ subject specialist (District emergency Off site plan)	TDMC, LCG	--	Periodiccal ly
	Encourage disaster insurance	Labour & employment department	--	Periodiccal ly
Medical	Listing of hazardous chemicals and gases.	Occupier, LCG, DISH, THO	--	--
	Keep check on availability and validity of relevant antidotes for chemical hazards prevalent in Taluka	Occupier, LCG, DISH, THO	--	--
	Workshops and trainings for medical professionals to handle potential chemical and industrial hazard	THO, Occupier, LCG, DISH	--	Regularly
Compliance	Environmental Protection Act, Factory Act, Mutual Aid SOPs	DISH , GPCB	--	Regular interval
	Any other			

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. At Taluka level Local Crisis Management Group (LCG) is formed for coordination of activities and executing the operations.

➤ **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>
Constructing shelter belts in coastal areas	31 villages	Rural Development, GSDMA	Departmental programs , MGNREGS, NCRMP

➤ **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>
Provisions of Coastal Regulation Zone to be effectively implemented	--	Department of Environment &	as per norms
Capacity building of task forces in coastal villages		TDMC	Periodically

➤ **List Of Ongoing Project**

• **DRM :**

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.

• **NCRMP:**

Gujarat being prone to cyclones, it is the topmost priority of the State Government to reduce the effect of cyclone and minimize the loss to property and lives in the coastal regions of the State through creation of suitable infrastructure. Gujarat has therefore been included in the Natinal Cyclone Risk Mitigation (NCRMP) initiated by the National Disaster Management Authority and funded by the World Bank.

Under NCRMP Project 31 Multi purpose Cyclone shelters will be constructed in the villages of three blocks namely Kalyanpur, Dwarka and Khambhaliya.

- **National School Safety Programme:**

Gujarat School Safety Initiative (GSSI) – I & II. The pilot programs were designed for promoting a culture of disaster safety in schools and reduce risk through structural and non-structural measures in the schools.

### **Gujarat School Safety Initiative – I**

One hundred and fifty schools were selected from the cities of Ahmadabad (100), Jamnagar (15) and Vadodara (35) cities on basis of the school's disaster vulnerability, number of students and willingness to implement the suggested measures. The following activities were conducted in each of the project schools:

School management was first approached and a presentation was made about why and how the concerned school can work on school safety

A School Safety Committee was formed with the help of school administration

A three day programme on orientation of the school disaster management committee on school disaster management planning

Orientation about basic disaster awareness to coordinators and members of the school task forces

Detail training of the task force members on task force skills such as activities to be done for search and rescue, first aid, etc

Imparting lessons on emergency response in each classroom

Conducting mock drill and holding a debriefing meeting to evaluate the mock drill

Gujarat School Safety Initiative – I is completed in all the 152 schools, covering training of 1,00,000 students (primary and secondary standards) and 1,500 teachers in the basics of disaster management. School based DM plans were prepared for all the 152 schools. Earthquake drills were conducted in 80 schools attended by around 40,000 students and 640 teachers. As part of the long-term sustainability of the program, an assessment of non-structural mitigation measures was completed and school safety clubs have been opened in all the project schools. A short play on disaster awareness was also organized in 68 schools.

### **Gujarat School Safety Initiative – II**

This initiative was designed for creation of cadre of master trainers and a pool of trained teachers at district level in disaster risk reduction across all the 25 districts of the State. It was designed for creating a pool of 100 Master Trainers (4 from each district). These master trainers would provide training to 625 teachers (25 from each district). Twenty five model schools were selected & School DM Plans were prepared involving the trained teachers. It was planned that trainings will be conducted for 1,000 teachers and 7,500 students in model schools.

### **Gujarat School Safety Week Programme-2017**

For the year 2017 the programme is expanded to all government primary, secondary and

higher secondary schools are covered. The training to celebrate the school safety week in school was given to more than 1000 teachers from all schools of the district. School disaster management plan in all schools of the district has been prepared in April-2017.

### **Aapda Mitra**

Aapda mitra is a key initiative which involves training of community volunteers in search and rescue operation, first aid, flood rescue. These volunteers will also support the district administration in responding to the disaster

### **Structural: Structural Mitigation Measures**

- a. Retrofitting of Buildings: In Jamnagar region maximum buildings are non-engineered or kuchcha, having lower seismic resistant capacity. There are mainly four major types of constructions:

Category A:	Adobe, fieldstone Masonry Buildings
Category B:	Brick Construction Masonry Buildings
Category C:	R. C. C. Construction
Category X:	Traditional & Conventional Construction

The buildings of Category A are very weak and may get damaged even due to a lower intensity earthquake. There is a need for detailed assessment of buildings, which are vulnerable and may cause losses to life. Assessment of these buildings will help to evolve a strategy for their retrofitting.

.After assessment of vulnerability of buildings the priority for structural mitigation has to be defined. Generally public buildings are given first priority because they are lesser in number and at the time of disaster people can take shelter in these public buildings. Some examples of important buildings are hospitals, clinics, communication buildings, fire and police stations, water supply, cinema halls, meeting halls, schools and cultural buildings such as museums, monuments and temples. The second priority goes to other type of buildings like housing, hostels, offices, warehouses and factories.

- b. Construction control: The best protection against earthquake is a strong built environment. The quality of buildings, measured by their seismic resistance is of fundamental importance. Minimum design and construction standards for earthquake and flood resistant structures legislated nationally, are an important step in establishing future minimum levels of protection for important structures. India now has building codes and regulations for seismic and flood resistant design. These codes are in constant review by the experts. The below mentioned building codes are generally practiced in India:

- **IS: 1893, 1984** - Criteria for earthquake resistance design of structures
- **IS: 13828, 1993** - Guidelines for improving low strength earthquake resistant masonry buildings
- **IS: 13920, 1993** - Ductile detailing of reinforced concrete structures subjected to seismic forces- code of practice
- **IS: 13827, 1993** - Guidelines for improving earthquake resistance of earthen buildings
- **IS: 13935, 1993** - Guidelines for repairing & seismic strengthening of buildings

In Hoshangabad, building by-laws and the Seismic Code must be enforced by the municipal and panchayat bodies.

### **NON STRUCTURAL:**

Land use planning: Damage to a building depends primarily upon the soil conditions and topology of the area. Jamnagar district comes under moderate risk zone in terms of earthquake (Zone 3) and flood disaster. But a part of it is also recommended by DMI to be included under zone 4 of earthquake as it lies on a cross fault Junagadh region.

Training and awareness programmes: Mitigation also includes training of people for making the houses safe from earthquakes and floods. Training modules have to be prepared for different target groups viz. engineers and masons about safe building practices and general 'do's and don'ts' for general public.

### **Mitigation strategies**

The mitigation strategy for Jamnagar district involves the following elements:

- Further growth of human settlements in the low lying areas should be checked through land-use planning. Such areas are vulnerable not only from flood hazards but are also vulnerable to earthquake liquefaction, which may increase the damage manifold. The department of Town and Country Planning will take care of seismic hazards while preparing the development plans for the district;
- Appropriate building codes will be made applicable for new engineered & non engineered constructions, and should be strictly enforced by local body. The Municipal Corporation of local area will ensure the construction as per Indian Standard Building Codes;
- Infrastructure department will do the retrofitting of public buildings under their maintenance charge. Generally PWD, Rural Engineering Services and Housing Board maintain the public buildings. The expenditure for such retrofitting will be taken care under maintenance head.
- Community awareness will be raised regarding seismic resistant building construction techniques and seismic retrofitting of existing buildings. Housing Board will be the nodal agency to provide training through workshops and demonstrations. PWD and RES will support MPHB in these efforts;
- Community awareness will be raised regarding 'do's and don'ts' in the event of an earthquake with the involvement of Panchayati Raj institutions and CBOs. Revenue department will be the nodal agency for this activity.
- **Development schemes:**

NREGS: The MGNREGA achieves twin objectives of rural development and employment. The MGNREGA stipulates that works must be targeted towards a set of specific rural development activities such as: water conservation and harvesting, a forestation, rural connectivity, flood control and protection such as construction and repair of embankments, etc. Digging of new tanks/ponds, percolation tanks and construction of small check dams are also given importance. The employers are given work such as land leveling, tree plantation, etc. It has a very broad spectrum which can be used for the benefit of the population that are vulnerable and are likely to be affected.

1. Construction of Tube wells can be done.

2. Building of Roads for places which are not connected to other parts of the district.
3. Leveling of low lying areas during flood to a higher level to prevent those areas.
4. Construction of check dams and embankments and drainage systems to prevent flooding of those areas.

**IAY:**

This scheme can be used for the rehabilitation of the affected villages by making constructions for the affected population.

**Sarva Shiksha Abhiyan:**

This scheme can be used for creating awareness about mitigation and preparedness about accidents that are in control of man, in collaboration with educational institutions to the people so that they can make use of it when required.

**NRHM:**

This scheme can be used to facilitate for voluntary first aid during disaster and training the local population to deal with minor injuries so that they do not have to wait for professional help to help any individual. Training of nurses can be carried out as a preparatory plan.

**Mukhyamantri Avas yojana:**

The scheme can facilitate the rehabilitation programs among the affected villages or the ones that are likely to be affected and lie in the vulnerable zone. They can come up with collaboration with the construction norms.

**Jal- Abhishekh Abhiyan:**

The aim of the scheme is to provide safe drinking water so it can be used to provide for clean drinking water during response and relief period .It can work in collaboration with sanitation systems during relief period and help in avoiding any kind of future epidemics in the affected region.

**Samagra Swachta Abhiyan:**

This scheme can also be used for providing sanitation in the relief camps to the affected population. Since relief camps are the places where lot of diseases and epidemics may break out, proper defecation and sanitation should be ensured by this scheme.

**Madhyanah Bhojan Karyakram:**

The scheme can provide for food supply during emergency situations in the affected areas or even in the relief camps.

**JNNURM**

Localization and Project Uday Institutionalization with replication

• ***Risk Management Funding***

Short term provisions are expected to cover the immediate loss, incurred due to disasters. Whereas long term provisions include the set up of fire stations, watershed management, planting trees along the river etc.

Insurance schemes are important source of funds for restoration of private business enterprises. The Collector will coordinate with Insurance Companies to speed up settlement of insurance claims. It will help in restoration of private business enterprises. He will also coordinate with commercial banks for ensuring smooth flow of financial assistance from commercial banks for restoration of private business enterprises.

Agriculture department shall provide seeds and the required finance as loans through local banks for the resumption of agriculture activities. The district administration shall elicit the support funding of agencies like Care, CRS etc. for the resumption of agriculture and livelihood activities.

Revenue/Book Circulars contains standing instructions of the Government for distribution of ex-gratia payments to poor families, who suffer from disasters to initiate their recovery process. This assistance will be provided very promptly to the poor families by the functionaries of the Revenue Department.

In order to achieve the objectives, rollout workshop was held for sensitization of education department officials, district level administrators (District Education Officers & District Primary Education Officers), teachers and students. Eighty six master trainers were trained in 4 regional workshops, 593 teachers were trained throughout the State in 3 day workshops. Twenty five model schools were selected where 25,543 students and 861 teachers have been trained. One model school developed for each district. Methodology for School Safety program has been developed and tested, including templates for developing a School Disaster Management Plan. Training and awareness material has been developed. Also, draft text books for class VII, VIII, IX were prepared incorporating the basics of Disaster Management. 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.



# **Chapter: 5**

## **Preparedness measure**

❖ **Identification of Stake holder involve in disaster management**

**1. 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**

S.No.	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>

## **2. 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.

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### Preparedness Measures

- 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 the purpose of 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 cyclones.

#### ➤ **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 on the basis of 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 mentioned:

- 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

➤ **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 assessed 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 colour 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 to be 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 phases viz. Rapid Damage Assessment and Detailed Damage Assessment.

✚ **Training need analysis -Education and Capacity Building and arrangement for training:-**

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 25 districts independently embark on education and capacity building it will be hard to coordinate and standardize the results across districts. A significant consequence would be an inequality in capacities across districts, and thus uneven mitigation and prevention results.<sup>5</sup> 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.

➤ **Training, capacity building and other proactive measures Training:**

<b>Task</b>	<b>Activity</b>	<b>Responsibility</b>
Training	1. Training to civil defence personal in various aspect of disaster management 2. Training to home Guards personal in various aspect of disaster management including search and rescue	<input type="checkbox"/> Home Dept. <input type="checkbox"/> District Home Guards Commandant <input type="checkbox"/> Dy.Controller Civil Defence
3. Training to NCC and NSS personal in various aspect of disaster management		<input type="checkbox"/> Education Dep. <input type="checkbox"/> NCC <input type="checkbox"/> Collector Office
4. Training to educational and training institutions personal in various aspect of disaster management		DDMC

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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 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

### ➤ Awareness

Task	Activity	Responsibility
Information education And communication	1. 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, - 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"/> Municipal Commissioners <input type="checkbox"/> Other Dist. Authorities

### ➤ Activation of Incident Response System in the District and identification of quick response team

#### • 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 – nt of contact for agency to agency issues.

1. **Operations:** this section carries out the response activities described in the 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 information collection
- Inter agency coordination at field level
- Management of field operations, planning, logistics, finance and administration



**Awareness Generation: -**

As a part of Preparedness Awareness generation among community will be 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.

➤ **NGO and Other stake Holder coordination -**

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.

➤ **Seasonal preparedness: -**

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 collectors, 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, 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 prudent 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? Vulnerabilities.

Are yed? 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 firesuppression 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 a 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 adjustors, 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 Warning System**

✚ **SDRN/IDRN data updation: -**

State disaster Resource network and India Disaster Resource Network is a crucial database 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 Visualizer does not require any GIS software. The GIS visualizer contains multi layered options depicting roads-highways, taluka, district boundaries, rivers, ports, airways, etc.

**India Disaster Resource Network (IDRN) : -**

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 situation. 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.

**DRM Programme: -**

**i) 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 Defence, 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.

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

 **For the Prepared level specific plan following process will followed.**

 **District Level Process**

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

 **Taluka level process**

- Orientation cum sensitize Taluka level officers and PRI members.
- Formation of Taluka Disaster Management Committee.

## Chapter: 5

### Preparedness Measures

- Capacity building of government officials
- Development of the TDMP
- Use of IEC material and media sources for create awareness at taluka level
- 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**

- Formation Cluster within 10 to 12 village and conduct cluster meetings over 10-12 villages
- Organize gramsabha in each village
- Undertake PRA exercise at village level for hazard, vulnerability assessment and resource analysis
- Facilitate the formation of the Village Disaster Management Committee (VDMC)
- Conduct training programs for DMT and DMC Members and volunteers
- Awareness campaigns on risk reduction mechanisms, Risk Transfer- insurance, disaster resistant construction
- Developed Village Disaster Management Plan (VDMP)
- Conduct mock drills for test the VDMP
- Update VDMP twice in a year (by VDMC)

Devbhumi Dwarka 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 stake holders 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 Devbhumi Dwarka 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<sup>3</sup>.

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.



#### **District-level Approaches to Mitigation, Prevention and Preparedness**

##### **Preventive measure (for all disasters)**

Preventive actions have 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;

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

✚ **Mitigation measure (for all disasters)**

1) Town and Country Planning Acts and their related provisions:

The Department of Disaster Management, being a member of all regulatory bodies will coordinate with the Town & Country Planning Board and constitute a committee of experts to evaluate the provisions of the State Town & Country Planning Act in place. The Committee will consist of experts from the fields of disaster management, town and country planning and legal experts and will be chaired by the State Relief Commissioner.

✚ **Zoning Regulations and their related provisions:**

The State Urban Development Department, in consultation with the Department of Disaster Management will constitute a committee of experts with members from the Institute of Town Planners, town development, State Pollution Control Board, Chairpersons of major Development Authorities/Notified Area Authorities, eminent faculty from planning, architecture and civil engineering departments of engineering colleges, eminent resource persons and such other experts nominated from time to time to study the existing zoning regulations and suggest necessary amendments to incorporate components for vulnerability reduction. The State Chief Town Planner will be the Convener of the Committee.

✚ **Development Control regulations:**

The same committee of experts constituted to evaluate the zoning regulations will also evaluate the development control regulations and suggest measures to incorporate the disaster management concerns into them.

✚ **Government-sponsored programmes and schemes:**

The State Planning Department will prepare a report on the government sponsored programmes and schemes running in the State and how far each programme/scheme addresses the issue of disaster management and submit to the government. The Disaster Management Group which is constituted under the chairmanship of the Chief Secretary with concern Secretaries of the Departments of Disaster Management, Urban Development, Rural Development, Health, Home, Finance, Science & Technology, Transport, and Agriculture to evaluate and suggest disaster mitigation measures to be incorporated.

➤ **Community Warning system-Early Warning System (EWS)**

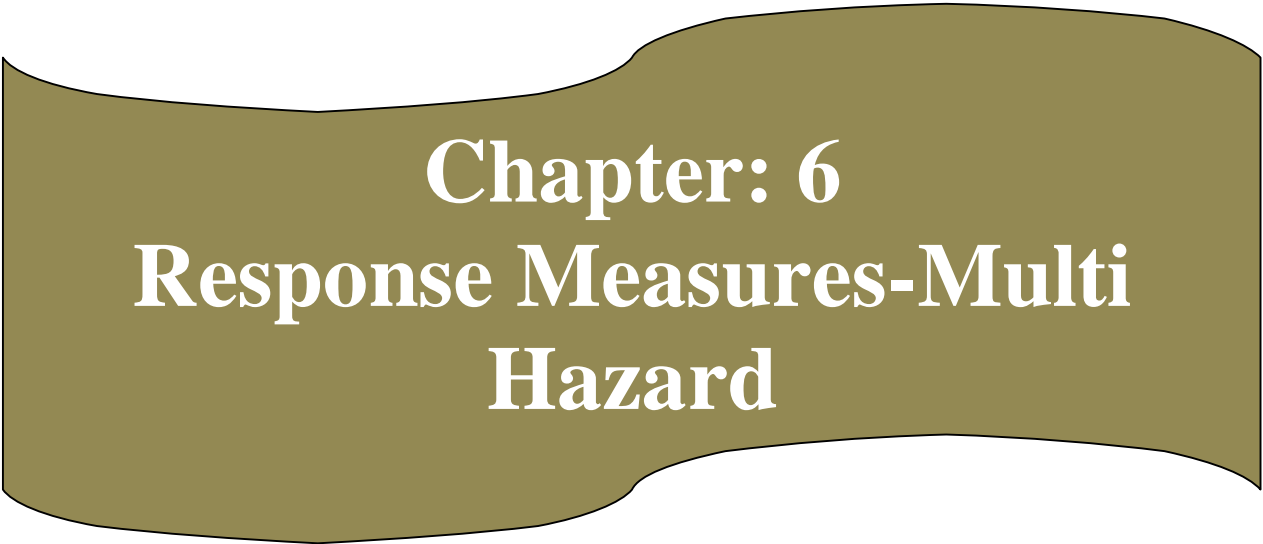
It is often observed that communities living in remote and isolated locations do not receive timely and reliable warnings of impending disasters. Hence, it is necessary to have robust and effective early warning systems, which can play crucial role in saving lives and limiting the extent of damage to 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.

## Chapter: 5 Preparedness Measures

### ➤ During and Post Disaster Advisory Action Plan:

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

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. A similar set up is also active at the District Emergency Operation Centre (DEOC).



# **Chapter: 6**

## **Response Measures-Multi Hazard**

## 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 activated with full strength.

#### ➤ **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 situation. The details of agencies competent enough for issuing warning or alert pertaining to various types of disasters are given below;

<b><u>Disaster</u></b>	<b><u>Agencies</u></b>
Earthquakes	IMD/ISR
Floods	Meteorological Department, Irrigation
TSuamnis	IMD/ISR/INCOIS
Cyclones	IMD
Epidemics	Public Health Department
Road Accidents	Police
Industrial and Chemical Accidents	DISH, Police, Collector
Drought	Agriculture
Fire	Fire Brigade, Police, Collector
Rail Accident	Railways, Police, Collector
Air Accident	Police, Collector, Airlines
Ammunition Depot-Fire	Army, Police, Collector.

➤ **District CMG meeting**

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. 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 an L1 Disaster the Local Control room will be activated, in case of an L2 disaster DEOC will be activated along with the SEOC.

➤ **Role & Responsibilities of each department.**

- **Each Department and Govt. agency involved in Disaster Mgmt and Mitigation will :**

1. Designate a Nodal officer for emergency response and will act as the contact person for that department/agency.
2. Ensure establishment of fail-safe two-way communication with the state, district and other emergency control rooms and within the organization.
3. Emphasis on communication systems used regularly during LO with more focus on the use of VHF's with automatic repeaters, mobile phones with publicized numbers, VHF radio sets etc. It should be remembered that SAT phones fail during prolonged emergencies and electric failure if the phones cannot be re-charged.
4. Work under the overall supervision of the IC / the District Collectors during emergencies.

 **Other Departmental plan incorporated in DMRP**

**1. Agriculture**

**0.1 Prevention Activities:**

1. Awareness generation regarding various plant diseases, alternate cropping practices in Disaster-prone areas, Crop Insurance, provision of credit facilities, proper storage of seeds, etc.
2. Hazard area mapping (identification of areas endemic to pest infections, drought, flood, and other hazards).
3. Develop database village-wise, crop-wise, irrigation source wise, insurance details, credit etc.
4. 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.

## Chapter: 6

### Response Measures-Multi Hazard

5. 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.
6. Develop IEC materials to advise the farming communities on cropping practices and precautionary measures to be undertaken during various disasters.
- 7 Improving irrigation facilities, watershed management, soil conservation and other soil, water and fertility management
8. Measures keeping in mind the local agro climatic conditions and the proneness of the area to specific hazards.
9. Promotion of alternative crop species and cropping patterns keeping in mind the vulnerability of areas to specific hazards.
10. Surveillance for pests and crop diseases and encourage early reporting.
11. Encourage promotion of agro service outlets/enterprise for common facilities, seed and agro input store and crop insurance.

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

1. 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.
2. 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.

#### **0.3 Response Activities:**

- Management of control activities following crop damage, pest infestation and crop disease to minimize losses.
- Collection, laboratory testing and analysis of viruses to ensure their control and eradication.
- Pre-positioning of seeds and other agro inputs in strategic points so that stocks are readily available to replace damage caused by natural calamities.
- 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.
- 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.

#### **0.4 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.

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### Response Measures-Multi Hazard

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.

## 1. Health Department

### 1.1. 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 hospitals.
- 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.

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### Response Measures-Multi Hazard

- **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 sites.
- 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.

#### 2.2 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 Centres 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 minimise the probable outbreak of epidemics.
- Identification of areas prone to certain epidemics and assessment of requirements to control and ultimately eradicate the epidemic.

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### Response Measures-Multi Hazard

- 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 Panchayats 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.
2. **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.

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### Response Measures-Multi Hazard

- 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.
- Raising 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 mobilisation 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.

### 3. Police:

- **Prevention Activities:**

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### Response Measures-Multi Hazard

- 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.

#### 4. Civil Defence:

- **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.

**5. 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 are 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.

**6. Civil Supplies:**

- **Preventive Activities**

- Construction and maintenance of storage godowns 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, unutilised 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.

**7. 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 mobilise 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.

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### Response Measures-Multi Hazard

- Mobilisation 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.

#### 8. Energy:GEB

- **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, modernise electric installation, 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, Collectorate Control Rooms and other vital emergency response agencies. v 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.

**9. 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.

**10. 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.

**11. 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.

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- Cooperate and appropriation of relief materials.
- **Recovery Activities**
- Provision of personal support services e.g. Counselling.
- 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.

#### 13. Panchayati Raj:

- **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 prioritise prevention and preparedness activities while ensuring active community participation.
- **Response Activities**
- Train up 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.
- PRLs to be a part of the damage survey and relief distribution teams to ensure popular participation.
- Operationalise 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 L1
- Provision of building materials such as bamboos etc for construction of shelters.
- **Recovery Activities :**

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#### 14. 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 liaisoning 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 L1 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 programmes.

#### 15. 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 L1/L2 disasters
- Mobilization of finance

#### 16. Home Department

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

#### 17. 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.
- Co-opt doctors into the team.

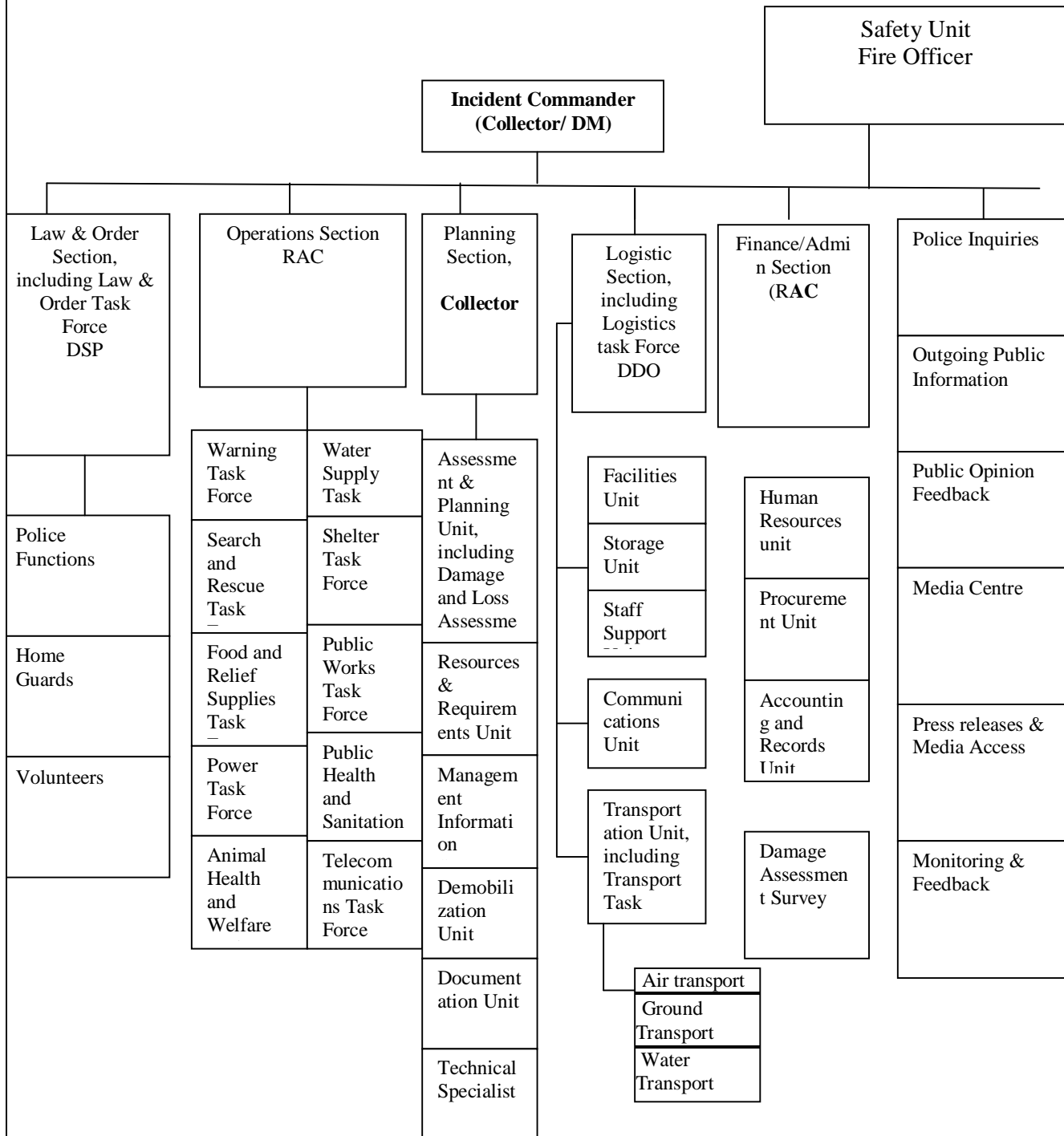
#### Disaster Response and District Incident Command System

The response to disasters in the district will be organized according to the Incident Command System as adapted 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 Devbhumi Dwarka 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(DEOC)** under the command and control of the District Collector.

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**Abbreviations: -**

DSP - District Superintendent of Police

RAC - Resident Deputy Collector

RAC - Additional District Collector

DDO - District Development Officer

DIO - District Information Officer

## ICS-Basic Functions

The basic functional descriptions for key elements in the district Incident command System are described below. Not all these functions need to be filled (activated) in every disaster. But the ensemble of these functions represents all the key tasks which need to be accomplished in a well planned manner and executed in effective and cost efficient disaster response effort.

**I. Incident Command:** responsible for overall management of an incident based on clearly stated mandate from higher authority and based on focused objectives responding to the immediate impact of the incident. The Incident command is led by an Incident Commander, who can be assisted by a Dy. Incident Commander. In each incident will have as many as many commanders and other staff as there are shifts in the incident operation. Shifts will normally not exceed 12 hours at a time and should be standardized to 8 hours each as soon as possible after the start of the incident.

### II. Command Staff Units

#### **Safety unit:**

Responsible for ensuring the safe accomplishment of all activities undertaken in response to the incident. This task is accomplished through developing incident specific safety guidance documents, reviewing and advising on the safety of plans and monitoring actual operations to ensure safety of personnel and survivors

#### **Protocol and Liaison unit:**

Responsible for all official visits as well as liaison between the incident command and organizations providing personnel or material support being used to manage the incident. The first point of contact for NGOs and others coming to the disaster as well as responsible for managing coordination meetings (some of which may actually be held by taskforces or sections).

#### **Public Information Unit:**

Responsible for all media and public information tasks related to the incident. To accomplish its task, the unit can have the following sub units:

- **public inquiries:** to handle non media requests for information
- **outgoing public information:** to handle public information dissemination
- **Public opinion feedback:** to collect information from the public (incident survivors and the non-affected)
- **Media center:** to provide a single point of contact for all media involved in the incident.
- **Press release and media access:** produce all releases and provide a single point of contact to arrange media access to the incident.
- **Monitoring and Feedback:** to monitor media reports and provide feedback to the incident management on coverage of the incident and to also take corrective measures and issue contradictions if required.

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#### III. Law and Order Section

Responsible for assuring the execution of all laws and maintenance of order in the area affected by the incident. The law and order section incorporates law and order taskforce which may be created to deal with a disaster.

**Police functions:** as determined by the normal mandate for and special duties assigned to the police service

**Home guard:** as determined by the normal mandate for and special duties assigned to the home guard

**Volunteers:** supporting police and home guards in non-enforcement tasks, such as patrolling, monitoring and evacuations

#### IV. Operation Section

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 Devbhumi Dwarka has identified 16 expected task forces for key response operation functions that are described 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 supported by other organizations.

Emergency Taskforce	Operation	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(includingFirst aid and all medical care)		Provide personnel and resources to address pressing public health problems and re-establish normal health care systems.

**Chapter: 6**  
**Response Measures-Multi Hazard**

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 analyse 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, and 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.

**V. Planning Section**

Responsible for collecting and analyzing information and developing plans to address the objectives set to address the incident. The overall work of the planning section will include efforts undertaken by any planning and coordination taskforce which is established as part of the response to a disaster. Units under the section include:

1. Assessment and planning
2. Resources and Requirements
3. Management information system
4. documentation
5. Demobilization and
6. Technical specialists

**VI. Logistic section**

Responsible for all task and functions related to provision of material and other resources needed for operations and the physical and material support and operation of the incident management team. This section includes transportation taskforce established to support disaster operations. Logistics tasks are through the following units:

1. storage and supply
2. Facilities
3. staff support
4. communications
5. transportation (include ground, air water):

**VII. Finance and Administration**

Responsible for managing all financial and administrative tasks related to incident field operations. These tasks may, but would not usually include disbursement of financial aid to those affected by an incident. The task of this section are accomplished through following units: 1. Human resources; 2. procurement; and 3. accounting and records



## Chapter 7

# Recovery Measures



## 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 utilised for building a better and more safe and resilient society.

**Strategies for restoring physical infrastructure and lifeline services may be:**

**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, power supply and sanitation facilities

## Chapter: 7

### Recovery Measures

- Damage Loss Assessment
- Restoration of Essential Services and Infrastructure
- Following tables are to be filled after an event of disaster

#### ❖ Power

Item/Services	No. of unit damaged	No of villages affected	Population affected	Recovery measures	Implementing agency	Tentative Duration (Months)	Budget
Feeder							
Transformers							
HT Lines							
LT Lines							
Electric Poles							

To be planned after initial damage assessment by departments

#### ❖ Health

	PHC (village name)	CH C	Sub Centre	Drug Store	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget
No of buildings damaged								
No of health centres inaccessible								
Refrigeration and other vital equipment for storage								
Drugs and medicines perished	(Location and qty)							
No of Ambulance damaged								

To be planned after initial damage assessment by departments

## Chapter: 7

### Recovery Measures

#### ❖ 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

#### ❖ Water Supply

Type	Village	No. of unit affected	Faliya/ Population affected	Recovery Measures	Implementing agency	Tentative Duration (Months)	Budget
Well							
Borewells							
Pond							
Water Supply Disrupted							
Contamination							
ESR damaged							
GLR Damaged							
Sump damaged							
Pipe lines damaged							
Standpost damaged							
Cattle trough damaged							
Handpump							

## Chapter: 7 Recovery Measures

### ❖ Road and Transport

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

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

### ❖ Communication

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

### ❖ Food Supply

List of village affected by disruption in food supply

Type	No. of godown damaged	Type of grains perished (Ton)	Qty of grain perished (Ton)	Qty of grain at risk (Ton)	Recovery Measures	Implementing Agency	Tentative Duration (Months)	Budget

**Chapter: 7**  
**Recovery Measures**

Civil Supply								
APMC								
Other								

**Housing**

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

**Public Utilities**

Public Buildings	Partial damage (No. of units)	Fully Damaged / Collapsed (No. of Unit)	Recovery Measures	Prog/ Scheme	Implementing Agency	Tentative Duration (Months)	Budget
Panchayat							
Educational Buildings							
Anganwadi							
Hospitals							
Office Buildings							
Market							
Police station							
Community Halls/ Function plots							

**Restoration of Livelihood**

**Provisioning of Employment**

Occupational category	No. of workers	Implementing Agency	Tentative Duration (Months)	Budget
Skilled labourers				

**Chapter: 7**  
**Recovery Measures**

Unskilled and Agricultural labourers				
Small and marginal farmers				
Construction workers				
Salt pan workers				
Fisher folk				
Weavers				
Other artisans				

**Land Improvement**

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

**Agricultural**

Crop failure (Hectare)	HHs affected	Recovery Measures	Implementing Agency	Tentative Duration (Months)	Budget

**Non farm livelihood**

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

## Chapter: 7 Recovery Measures

### 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 are 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 collaborations focus on the community level and rely on the expertise of community planning and economic development professionals. Other collaborations focus on individual and family recovery and are coordinated 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.

### **Grievances Redressal System**

Grievance redressal 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 Redressal System**

<b>No.</b>	<b>Key Person/ Establishment</b>	<b>Contact No</b>	<b>Address</b>
1	DEOC/ RAC	02833-233804 02833-232620	Collector Office-District Emergency Operation centre
2	DDO	0288-2553901	District Panchayat
3	Police	02833-232002	S.P.Office,Devbhumi Dwarka



## Chapter 8

# Financial Arrangement



## **6.1 Sources of Funds**

### **Funds available at the National and State Level**

1. **The Ministry of Finance** has allocated funds for strengthening Disaster Management Institutions, capacity building and response mechanisms, as per the recommendation of 13<sup>th</sup> Finance Commission.

2. **Prime Minister's Relief Fund:**

At the National level, Prime Minister's Relief Fund was created shortly after Independence with public contribution to provide immediate relief to people in distress for:

- a. Immediate financial assistance to victims and next of kin.
- b. Assist search and rescue.
- c. Provide Health care to the victims.
- d. Provide Shelter, food, drinking water and sanitation.
- e. Temporary restoration of roads, bridges, communication facility and transportation.
- f. Immediate restoration of education and health facilities.

3. **Chief Minister Relief Fund:**

At the state level, provisions have been made to provide immediate support to the distressed people affected by natural calamities and road, air and railways accidents under the Chief Minister's Relief Fund.

4. **Calamity Relief Fund**

To provide for relief for famine, drought, floods and other natural calamities, funds are provided in the state budget under the head “**2245-Relief on account of Natural Calamities**”. Besides establishment charges, funds are provided for the grant of gratuitous relief in the shape of concessional supply of food, cash payment to indigent persons, cash doles to disabled supply of seed, fodder, medicines, prevention of epidemics, provision for drinking water, transport facilities for goods and test relief works. Funds are also provided to meet unforeseen expenditure in connection with the natural calamities and other allied purposes.

### **6. Finance and Budgeting**

Budget planning is a comprehensive exercise for annual financial planning. For Disaster Management, there can be two categories of budget heads—

- a) Line Department's own fund through various schemes and programmes;
- b) Additional budget required particularly for DM activities.

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

### **State Disaster Response Fund**

To carry out Emergency Response & Relief activities after any disaster the State Disaster Response Fund is made 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 13<sup>th</sup> Finance Commission.

## Chapter: 8

### Financial Arrangement

#### State Budget

The State Disaster Management Authority submit to the State Government for approval of 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.

#### District Planning Fund

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

#### 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 model State Government along with Private organizations or with Central Government share their part.

#### 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	50% Centre, 50% State	Cash and kind relief	Revenue Department



## Chapter 9

# Maintenance of the Plan



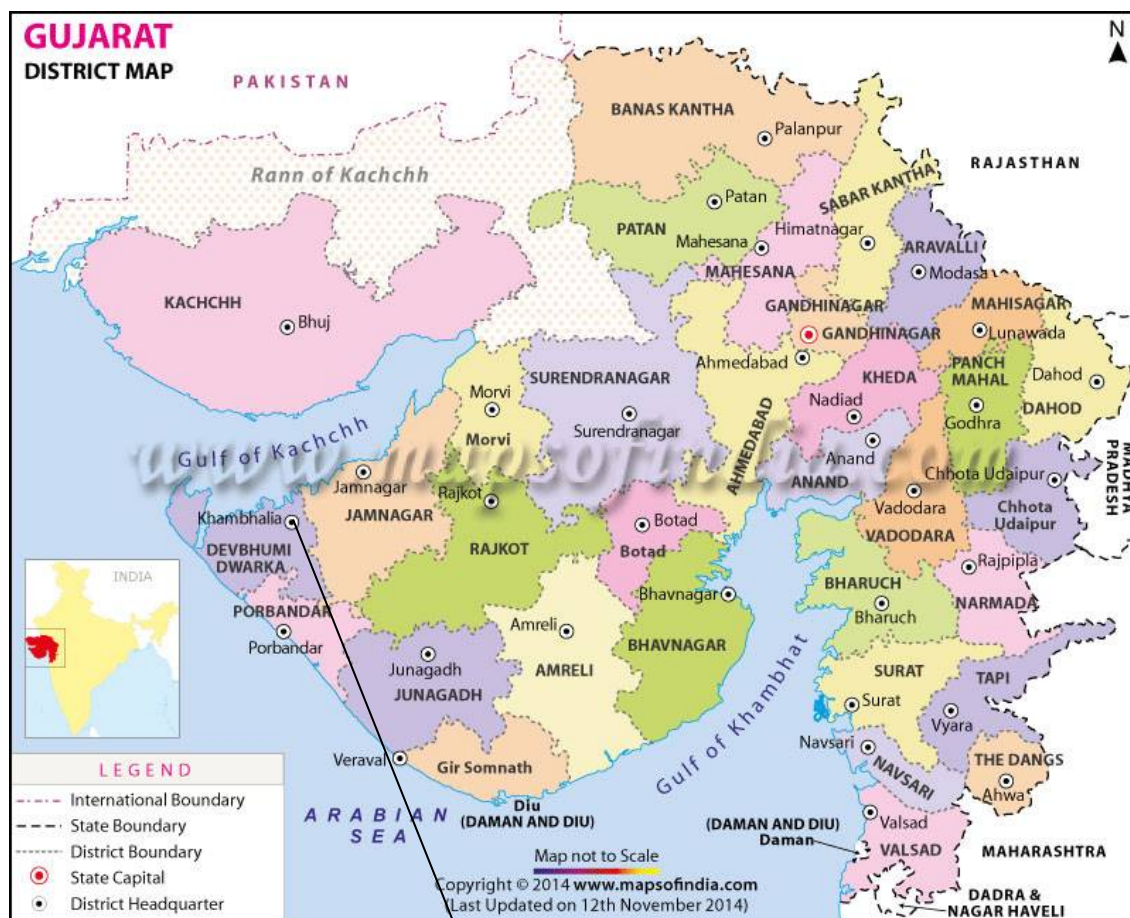
## Chapter: 9 Maintenance plan

District Disaster Management Committee (DDMC) shall compile its learning and propose new mechanisms for improvement of the capacity to deal with disasters. As a part of Pre-Monsoon DDMC will update District Disaster Management Plan in the month of May-June and also revise in the month of October-November every year.

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

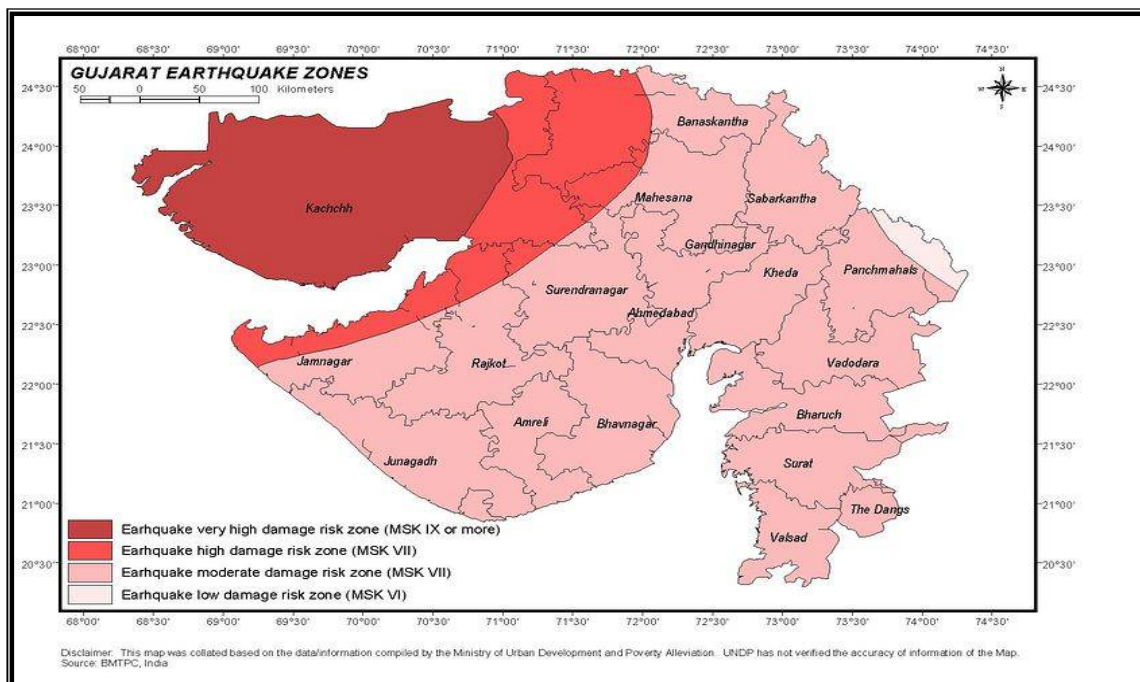
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## Annexure-1 Gujarat Map

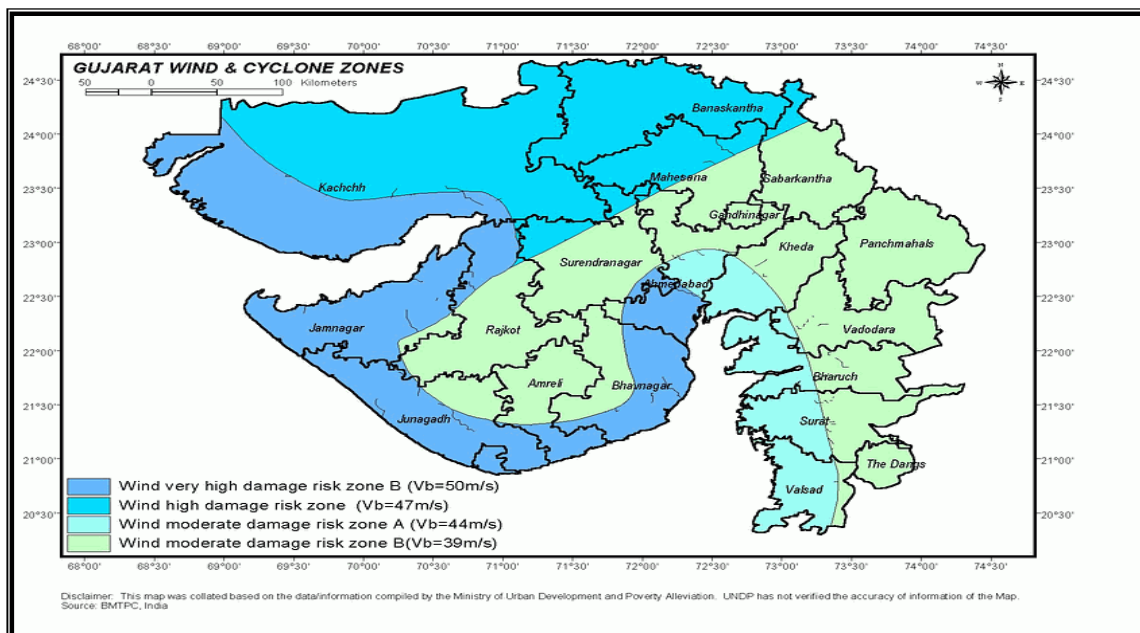


## Annexure: 1 Hazard Prone Map

### ❖ Earthquake Prone Map:

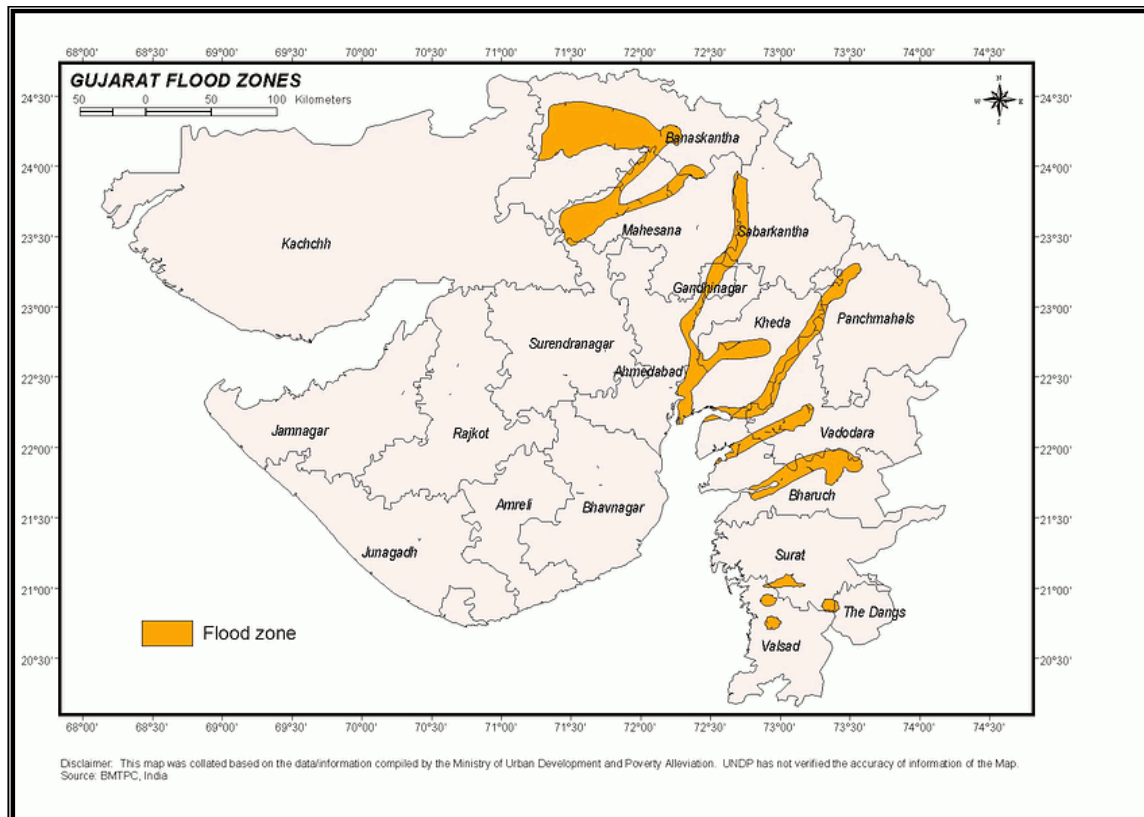


### ❖ Cyclone Prone Map:



## Annexure: 1 Hazard Prone Map

### ❖ Flood Prone Map:



## Annexure: 2 Rainfall Data

### ❖ Rainfall Detail for Devbhumi Dwarka District from 2004 to 2016 in MM

Sr	Taluka	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	Khambhalia	642	681	997	501	825	2645	619	545	1865	506	423	993	853
2	Kalaynpur	353	1524	1426	835	1203	1950	1359	380	987	570	308	436	788
3	Dwarka	413	642	903	554	816	1246	1117	470	414	891	462	335	400
4	Bhanvad	500	959	1177	730	1156	1451	866	319	1062	675	459	706	714
Total	-	<b>1908</b>	<b>3806</b>	<b>4503</b>	<b>2620</b>	<b>4000</b>	<b>7292</b>	<b>3961</b>	<b>1714</b>	<b>4328</b>	<b>2642</b>	<b>1654</b>	<b>2470</b>	<b>2755</b>
Average Rain(1986-2017)		<b>477</b>	<b>951</b>	<b>1125</b>	<b>655</b>	<b>1000</b>	<b>1823</b>	<b>990</b>	<b>428</b>	<b>1082</b>	<b>660</b>	<b>596</b>	<b>608</b>	<b>689</b>

**Annexure: 3**  
**Dam site and Affected villages**

❖ Detail of Dam site and affected villages:

Sr.No.	Name Of Dam	N o.	Flood Prone Villages		Popu latio n	Distanc e From Dam KM.	Contact Number of Section officer
			Village	Taluka			
1	Sani Dam 02891-228257	1	Dangarvad	Kalyanpur	1067	4	Shri M R Dabhi- 9879171516
		2	Jepur		183	0.50	
		3	Ranparda		629	3.80	
		4	Rawal		15366	6.30	
		5	Suryavadar		2124	1080	
		6	Chandravada		1989	10	
		7	Harshad		325	14	
		8	Gandhavi		1863	13	
		9	Ashiyavadar		906	0.60	
2	Singhani 02891-276504	1	Chachlana	Kalyanpur	1655	0.50	Shri R M Varma- 9328119307, 9687630426
		2	Gangani		1657	12	
		3	Devaliya		5327	3	
		4	Karshad		325	12	
		5	Gandhvi		1863	11	
3	Shedhabhadathari 02833-273204	1	Kanpar Sherdi	Kalyanpur	653	0.50	Shri R M Varma- 9328119307, 9687630426
		2	Chapar		1603	5	
		3	Chur		1375	6	
		4	Mangariya		320	8	
		5	Haripar		2422	12	
4	Vartu-1 02896-277821	1	Morzar	Bhanvad	2352	0.50	Shri J C Joshi- 9879176858
		2	Navagam		1888	3	
		3	Shedhakhai		1404	0.50	
		4	Rupamora		2252	8	
		5	Ranparda		456	10	
		6	Ambaliyara		710	12	
		7	Bhenakvad		2075	15	
		8	SevakDevaliya		1128	2.50	
		9	Sanala		1250	16.20	
5	Sonmati 02896-247868	1	Sanal	Bhanvad	1730	1	Shri J C Joshi- 9879176858
		2	Jampar		1128	3	
		3	Sevak Devaliya		1888	4.50	
		4	Rupamora		2252	9	
		5	Ranparda		456	11	
		6	Ambaliyara		710	13	
		7	Bhenakvad		2075	15	

6	Sorathi (Porbandar District) 0286-2276400	1	Gorana	Kalyanpur	2788	5.50	Shri M R Dabhi- 9879171516
		2	Gandhvi		1863	15	
		3	Harshad		325	16	
		4	Rawal		15366	10	
		5	Ranparda		2500	26	
		6	Chandravada		2800	19.50	
		7	Zarera	Bhanvad	4000	3.50	
		8	Dhebar		5000	3.50	
7	Kabarka 02896-277578	1	Kabarka	Bhanvad	2000	2	Shri N G Taviyad- 9712874706
		2	Bhoriya		1500	03	
		3	Fotdi		2000	5	
8	Gadhki 02833-273269	1	Sidhdhapur	Khambhaliya	1500	0.50	Shri R J Akbari- 9427247132
		2	Jampar	Kalyanpur	1200	3	
		3	Dhumthal		300	2.50	
9	Veradi-1 02896-274424	1	Verad	Bhanvad	5000	0.50	Shri N G Tavivad- 9712874706
		2	Sai Devaliya		2000	8	
10	Sinhan	1	Nana Mandha	Khambhaliya	1330	12	Shri S M Patel- 9904745889
		2	Mota Mandha		1446	15	
		3	Nana ambala		1443	18	
		4	Mota ambala		594	20	
11	Veradi-2 02896-291583	1	Sai Devaliya	Bhanvad	2500	0.30	Shri S M Vardiyavadara- 9879284058
		2	Bhanvad		20000	10	
12	Vartu-2- 02896-232968	1	Zarara	Bhanvad	4000	1	Shri J K Chudasama- 9714721797
		2	Gandhvi	Kalyanpur	1800	40.00	
		3	Gorana		2788	21.00	
		4	Harshad		325	41.00	
		5	Raval		15366	27.00	
		6	Ranpara		629	26.00	
13	Minsar- Vanavad- 02896-241286	1	Vanavad	Bhanvad	1477	0.5	Shri N G Tavivad- 9712874706
		2	Shiva		2245	2.00	
		3	Katkola		2644	3.50	
		4	Jasapar		1690	5.00	
		5	Vansjaliya(Jam jodhpur- Jamnagar)		3500	7.50	
14	Mahadeviya	1	Mahadeviya	Khambhaliya	900	1	Shri N G Tavivad- 9712874706
		2	Charantungi		1200	2	
15	Kandorna	1	Kandorna	Khambhaliya	1000	0.5	Shri R J Akbari- 9427247132
		2	Kota		800	2	

**Total flood affected Villages are- 41**  
**Total Gated Dam: - 2 Sani and Vartu-2**  
**Total Non Gated Dam: - 13**  
**Total No. Of Dam: - 15**

**Important Contact Numbers in flood situation**

<b>Sr. No.</b>	<b>Officers details</b>	<b>Phone/Address</b>
1	Shri T.T. Zala, Sub-focal officer, Executive engineer(I/C) Irrigation Department-Rajkot	0281-2441125(O) 0281-2472625(Fax) 9099013233(M)
2	Shri B P Chovatiya Focal Officer-Saurashtra, Rajkot irrigation circle, Rajkot	0281-2440485(O) 0281-2472605(F) 9978405564(M)

**Annexure: 4**  
**Coastal Villages list**

❖ **List of Coastal Villages:**

There are 41 coastal villages located in the district. Following is the block wise list of Coastal Villages.

<b>Sr.No.</b>	<b>Name of Taluka</b>	<b>Name of village</b>
<b>1</b>	<b>Kalyanpur</b>	<b>Mota Asota</b>
<b>2</b>		<b>Pindhara</b>
<b>3</b>		<b>Gandhvi</b>
<b>4</b>		<b>Gojinesh</b>
<b>5</b>		<b>Sanosari</b>
<b>6</b>		<b>Gangadi</b>
<b>7</b>	<b>Khambhalia</b>	<b>Beh</b>
<b>8</b>		<b>Kalavad Simani</b>
<b>9</b>		<b>Chudeshwar</b>
<b>10</b>		<b>Goinj</b>
<b>11</b>		<b>Parodiya</b>
<b>12</b>		<b>Mota ambala</b>
<b>13</b>		<b>Nana Ambala</b>
<b>14</b>		<b>Bharana</b>
<b>15</b>		<b>Nana Mandha</b>
<b>16</b>		<b>Vachhlabara</b>
<b>17</b>		<b>Sodasala</b>
<b>18</b>		<b>Vadinar</b>
<b>19</b>		<b>Ajad Tapu</b>
<b>20</b>		<b>Nana Asota</b>
<b>21</b>		<b>Mota Mandha</b>
<b>22</b>	<b>Dwarka</b>	<b>Bet</b>
<b>23</b>		<b>Bhimrana</b>
<b>24</b>		<b>Padli</b>
<b>25</b>		<b>Mojap</b>
<b>26</b>		<b>Shivrajpur</b>
<b>27</b>		<b>Hamusar</b>
<b>28</b>		<b>Shamlasar</b>
<b>29</b>		<b>Poshitra</b>
<b>30</b>		<b>Rajpara</b>
<b>31</b>		<b>Varvala</b>
<b>32</b>		<b>Baradiya</b>
<b>33</b>		<b>Okhamadhi</b>
<b>34</b>		<b>Kuranga</b>
<b>35</b>		<b>Meripur</b>
<b>36</b>		<b>Tupni</b>
<b>37</b>		<b>Makanpura</b>
<b>38</b>		<b>Okha Port</b>
<b>39</b>		<b>Mithapur</b>
<b>40</b>		<b>Arambhada</b>
<b>41</b>		<b>Surajkaradi</b>

**Annexure: 5**  
**Contact Detail of Control room**

**Control Rooms- Contact Numbers**

On receipt of information about the incident, all Task force leaders shall report immediately to the collector in the District EOC. The coordinator of each taskforce shall send communication to their members to report immediately in their respective control rooms. Taluka liaison Officers shall report to Mamlatdars in their respective Taluka control rooms.

<b>Sr. No</b>	<b>EOCs/ Control rooms</b>	<b>Contact Numbers</b>
<b>1</b>	State EOC – Gandhinagar	079-23251900
<b>2</b>	Relief Commissioner	(079) 23251509 @ 23251591
<b>3</b>	Director of Relief	(079) 23251611 @ 23234364
<b>4</b>	Additional CEO, GSDMA	(079) 23259220 @23259275 (M) 9978407003
<b>5</b>	<b>TASKFORCE Operation Room</b>	
	1. Warning and Communications (RAC)	02833-233804
	2. Law & Order	02833-232002
	3. Public Works R&B (M)9099071919	02833234719
	4. Shelter	02833-233804
	5. Water Supply GWSSB M 9978406833	0288-2678726
	6. Food & Relief supplies DSO 7567032435	02833-235990
	7. Public Health & Sanitation M 9712154004	02833-235974
	8. Power (PGVCL Eng)	02833-234791,234794
	9. Logistics DDO (M) 9978406492	02833-235947
	10. Animal Health & Welfare	9979270240
	11. Damage assessment/Survey	02833-233804
	12. Media/public Information,Dy.Dire.Information	02833-235932/9429551734
	13. Planning and coordination (Collector)	02833-23380
	14. Finance/ Administration/ protocol	02833-233804
	15. District Emergency operation center	02833-232125
<b>7</b>	<b>Taluka EOCs</b>	
	1. Bhanvad	02896-232113
	2. Khambalia	02833-234788
	3. Kalyanpur	02891-286227
	4. Dwaraka	02892-234541

**Annexure: 6**  
**Department Wise senior officer list**

**Devbhumi Dwarka**

**(STD Code :- 02833)**

Sr. No	Designation	Name	Office	Resi	Mobile	Fax	Email ID
1	2	3	4	5	6	7	8
1	Collector	Shri J. R Dodiya (IAS)	232803	232456	9978405933	232102	collector-devbdwarka@gujarat.gov.in
2	Superintendent of police	Shri Rohan Anand (IPS)	233223	-	9978405976	232002	<a href="mailto:sp-jam-dbdwarka@gujarat.gov.in">sp-jam-dbdwarka@gujarat.gov.in</a> , <a href="mailto:spdevbhumi@gmail.com">spdevbhumi@gmail.com</a>
3	D D O	Shri .R R Raval	235947	-	9978406492	235947	<a href="mailto:ddo-dev@gujarat.gov.in">ddo-dev@gujarat.gov.in</a>
4	Dy. SP (Rural)		232833	-		-	
5	Resi. Addl. Collector	Shri H.K. Vyas	232620	-	9727763794	232102	<a href="mailto:adl-collector-dev@gujarat.gov.in">adl-collector-dev@gujarat.gov.in</a>
6	DRDA	Shri V P Patel	235997	-	9825228049	-	<a href="mailto:drda.dwarka@gmail.com">drda.dwarka@gmail.com</a>
7	DSO	Shri A S Mandot	235990	-	9879014770	232102	<a href="mailto:supp-devbdwarka@gujarat.gov.in">supp-devbdwarka@gujarat.gov.in</a>
8	Dy. DDO (Revenue)	Shri D V Vithalani	235947	-	7567863903 9429453251	-	<a href="mailto:dy.ddo.gen@gmail.com">dy.ddo.gen@gmail.com</a>
9	CDHO	Dr. S.P.Singh	234001	-	9712154004	2671097	<a href="mailto:cdho.health.dwarka@gmail.com">cdho.health.dwarka@gmail.com</a> <a href="mailto:dpmcc.health.dwarka@gmail.com">dpmcc.health.dwarka@gmail.com</a>
10	DEO (City)	Shri S J Dumraniya	235976	-	9925292171	-	<a href="mailto:deodevbmhidwarka@gmail.com">deodevbmhidwarka@gmail.com</a>
11	DPEO	Shri B.H Vadhel	236376	-	7567806316 7069008475	-	<a href="mailto:dpeodevbmhidwarka@gmail.com">dpeodevbmhidwarka@gmail.com</a>
12	General Manager DIC	Shri J H Raval	2670380	-	9979872775	2660392	<a href="mailto:gm-dic-dbd@gujarat.gov.in">gm-dic-dbd@gujarat.gov.in</a>
13	Dy.Dir. Info	Shri V .I.Bhatt	235932	-	9429551734	232073	<a href="mailto:informationdevdwarka@gmail.com">informationdevdwarka@gmail.com</a>
14	Assistant Director, Industrial Safety & Health	Shri B. S Patel	0288-2678206	-	9408872078	-	<a href="mailto:ad4-dish-brd@gujarat.gov.in">ad4-dish-brd@gujarat.gov.in</a> <a href="mailto:astdish-jam@gujarat.gov.in">astdish-jam@gujarat.gov.in</a>
15	District Chairman, Red Cross	Shri Kirit K. Majithiya	234212		9825214212		<a href="mailto:shreejiservices2007@yahoo.co.in">shreejiservices2007@yahoo.co.in</a>
16	Port Officer, Okha	Shri Rakhesh Mishra	02892-262001,049,039	-	9601254062	262002	<a href="mailto:portofficerokp@gmail.com">portofficerokp@gmail.com</a>
17	Control Room Mam.Disa.	NA		-	-	-	-
18	DPO Disaster	Shri Mohit Sisodiya		-	9407115141, 8770399561	232102	<a href="mailto:dpo.dwarka@gmail.com">dpo.dwarka@gmail.com</a> , <a href="mailto:mohitsisodiya.610@gmail.com">mohitsisodiya.610@gmail.com</a>

### Contact details of Taluka and Nagarpalika Officers

Taluka Name	Designation	Officer Name (Shri)	Code	(O)	Mobile	Police Station	Email ID
<b>Khambhalia</b>	Prant Officer	D C Joshi	02833	234577	9978405354	02849-231401, 02849-231406,	sdm-kham-jam@gujarat.gov.in
	Mamlatdar	C H Vaisnav		234788	7567014800		mam-khambhalia@gujarat.gov.in
	TDO	Niles chavada		234792	9427773687		tdo-khambhalia@gujarat.gov.in
	Chief Officer khambhaliya	A.K.Gadhavi		285448	9426276847		tdo-khambhalia@gujarat.gov.in
	Chief Officer salaya	N.S. Shaikh		285448	9427054411		np_salaya@yahoo.co.in
<b>Bhanvad</b>	Prant Officer	D C Joshi	02896	234577	9978405354	Bhanvad	sdm-kham-jam@gujarat.gov.in
	Mamlatdar	G S Bariya		232113	7567002729		mam-bhanvad@gujarat.gov.in
	TDO	D M Solanki		232024	8866774848 7567013217		tdo-bhanvad@gujarat.gov.in
	Chief Officer	M.M.Khalifa		232159	7600983995		<a href="mailto:np_bhanvad@yahoo.co.in">np_bhanvad@yahoo.co.in</a>
<b>Kalyanpur</b>	Prant Officer	P A Jadeja	02891	235733	7567009674	Kalyanpur	<a href="mailto:po-dwarka-jam@gujarat.gov.in">po-dwarka-jam@gujarat.gov.in</a>
	Mamlatdar	G S Bariya (I/C)		286227	7567002729		mam-kalyanpur@gujarat.gov.in
	TDO	D V Khunti		286223	7567018989 9913041872		tdo-kalyanpur@gujarat.gov.in
	Chief Officer Raval	N.S. Shaikh (I/C)		228249	9427054411		<a href="mailto:np_jamraval@yahoo.co.in">np_jamraval@yahoo.co.in</a>
<b>Dwarka</b>	Prant Officer	P A Jadeja	02892	235733	7567009674	238233	<a href="mailto:po-dwarka-jam@gujarat.gov.in">po-dwarka-jam@gujarat.gov.in</a>
	Mamlatdar	R J Desai		234541	7567012400 9879660650		mam-okhamandal@gujarat.gov.in
	TDO	B K Katara		234052	7567019789 9427282910		tdo-okhamandal@gujarat.gov.in
	Chief Officer Dwarka	C B Dudiya		234449	9909017970		<a href="mailto:np_dwarka@yahoo.co.in">np_dwarka@yahoo.co.in</a>
	Chief Officer Okha	C B Dudiya (I/C)		262035	9909017970		np_okha@yahoo.co.in

**Annexure: 6**  
**Department Wise senior officer list**

❖ **Defense Forces:-**

**1. Coast Guard:**

<b>Sr.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Office no</b>	<b>Mo.No.</b>	<b>Fax no</b>
1	Shri Raman Kumar	Commanding Officer ICGS - Vadinar	02833256560,256336	9099028767	02833256560
2	Shri H H More	Commandant ICGS-Okha	02892862257	9442114540	--

**2. Army:**

<b>Sr.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Office no</b>	<b>Mo.No.</b>	<b>Fax no</b>
1	Colonel Vikram Nalawade	Commanding Officer- Jamnagar military Station	02882540670	7063955111	02882540670

**3. Navy:**

<b>Sr.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Office no</b>	<b>Mo.No.</b>	<b>Fax no</b>
1	Shri Kumar Nair	Commodore	0288-3987200	--	02882550825

**4. Air Force:**

<b>Sr.No.</b>	<b>Name</b>	<b>Designation</b>	<b>Office no</b>	<b>Mo.No.</b>	<b>Fax no</b>
1	VSM Sanjay Nimesh	Air CMDE	02882569500	--	02882720017

**Annexure: 7**  
**Fire Facility at MAH unit**

❖ **Fire Fighting Facilities At Major Accident Hazard Units :**

Sr. No.	Name	Phone1	Phone2	Fire Tenders	Water (m3)	Fire E Suits	Fire P Suits	Water Hoses
1	GSFC Ltd. – Sikka Unit	0288 2432200	2344100	2		-	1	20
2	RIL / SEZ / RPTL - Motikhavdi	0288 2310000	2312157	12 +1Rescue	156000	1	2	800
3	TCL - Mithapur	02892 665247	223207	2	Sea water	0	1	12
4	Essar Oils Ltd. Vadinar	02833 661444	Fax 241414	1	60000	0	1	72

❖ **Resources Available at Fire Stations:**

Sr. No.	Name	Phone	Manpower	Number of Fire Tenders	Ambulance	Fire Suits	SCBA
1	GSFC Ltd. – Sikka Unit	0288 2432200	12	2	1	2	4
2	RIL /SEZ / RPTL - Motikhavdi	0288 2310000	28	12+ rescue	4	2	120
3	TCL - Mithapur	02892 665247	8	2	1	1	6
4	Essar Oils Ltd. Vadinar	02833 661444	8	5	3	2	65

**Annexure: 7**  
**Fire Facility at MAH unit**

**❖ Medical facilities at MAH units**

Sr No	Name	Phone	Amb. Van	OHC 5bed	First aid boxes	Stretchers	Availability of		Details of other facilities/equipment
							Doctor	Nurses	
1	GSFC Ltd. Sikka Unit	0288 2432200 2344100	1	Y	2	2	Y	Y	Oxy. Cyl Set - 1 Stethoscope - 1, Baloon type respirator - 1, Self care kit - 1, Blood pres. measuring equipment – 1
2	Tata Chem. Ltd.Mithapur	02892 665247	2	Y	4	4	Y	Y	Oxy. Cyl Set - 1, SBS Sets - 3, Stethoscope - 1, Baloon type respirator - 1, Peak flow meter - 1, Self care kit - 1, Blood pres. measuring equipment – 1 Comp.Blood Test Lab.
3	Essar Oils Ltd.	02833 661444	3	Y	50	10	Y	Y	Oxy. Cyl Set - 1 Stethoscope - 1, Baloon type respirator - 1, Self care kit - 1, Blood pres. measuring equipment – 1

**Annexure: 7**  
**Fire Facility at MAH unit**

**❖ Personal Protective Equipment Available at Major Accident Hazard Units:**

<b>Sr No</b>	<b>Name</b>	<b>Phone No</b>	<b>SCB A</b>	<b>Canister Masks</b>	<b>Full Body PVC Suit</b>	<b>Air line BA</b>	<b>Chem. Splash suit</b>	<b>Emergency Kit</b>	<b>Water Gel</b>
1	GSFC Ltd. Sikka Unit	0288 2432200 2344100	20	25	15	15	2	-	4
2	RIL / SEZ / RPTL Motikhavdi	0288 2310000 2319922	120	200	50	4	2	1	4
3	TCL Mithapur	02892 665247	6	50	4	4	4	4	-
4	Essar Oils Ltd. Vadinar	02833 661444	65	20	2	5	2	-	2

**Annexure: 8**  
**Other Facility at MAH unit**

**Special Resources available at major Industrial Sites**

**Tata Chemicals Limited-Mithapur**

<b>Sr.no.</b>	<b>Details of Equipment</b>	<b>Quantity</b>	<b>Capacity</b>	<b>Contact Person Name</b>	<b>Contact Numbers</b>
1	MOBILE CRANE WITH CAPACITY 1-05 MT	05	10 ton - 4 numbers 40 ton - 1 number	Mr. D K Thakur (AGM - Safety & Health)	02892 – 665247, +91 9227676113
2	FIRE WATER TENDERS	01	5000 Ltr. Water 800 Ltr. Foam Pump - 2250 LPM		
3	FOAM TENDERS	01	5000 Ltr. Water 800 Ltr. Foam Pump - 2250 LPM		
4	AMBULANCE	02	--		
5	TRAILER PUMP	02	1800 LPM		
6	PORTABLE PUMP	01	275 LPM		
7	LIFE SAVING JACKETS	10	----		
8	SCBA SETS	55	6 Ltr, 300 bar		
9	PUBLIC ADDRESS SYSTEM	01			
10	Safety Harness	15			
11	Jeep	01	3+1 seating capacity		

### **Essar Oils limited- Vadinar**

<b>Sr.no.</b>	<b>Details of Equipment</b>	<b>Quantity</b>	<b>Capacity</b>	<b>Contact Person Name</b>	<b>Contact Numbers</b>
1	Hydra Crane (Truck Mounted)	03	10 Metric Tonnes	Essar Control room (Shift Incharge)	02833 661386
2	Groove Crane	02	20 Metric Tonnes		
3	fireFire fighting Foam	01	1000 ltrs.		
4	Foam Tender	01	3000 ltrs water & 4000 ltrs foam		
5	High visible vest	05	-		
6	First aid kit	02			
7	Chemical PVC suit	02			
8	Walkie talkie set	02			
9	Fire Hoses	05			
10	Gas cutter	01			
11	Life jacket	05			
12	Life Buoy ring	05			
13	Breathing apparatus set	02	For 2 persons		
14	Stretcher	01			

### **Cairn India-Bhogat**

<b>Sr.no.</b>	<b>Details of Equipment</b>	<b>Quantity</b>	<b>Capacity</b>	<b>Contact Person Name</b>	<b>Contact Numbers</b>
1	Hydra Crain-F15	01	14 Tonnes	Mr. Misbahuddin Khan	0288 3982304, 9662539451
2	Floating Storage Tank	01	05 Tonnes		
3	Wilden Pump	03	20 Tonnes (Each)		
4	High Pressure Jet cleaner	01	35-40 Bar Pressure		
5	Fire extinguisher	05	10 Kgs.		
6	Fire Tender	02	4000 Ltrs. Water+1000 Ltrs. Foam	Mr. Aniruddhsinh Rathod	0288 3982303, 8980801904
7	Ambulance	01	Upto 2 Casualty		
8	GTA-50	01	50 Tonnes		
9	Generator	01	5 K.V.		
10	Air Compressor Unit	01	150 CFM		

### **IOCL-Vadinar**

<b>Sr.no.</b>	<b>Details of Equipment</b>	<b>Quantity</b>	<b>Capacity</b>	<b>Contact Person Name</b>	<b>Contact Numbers</b>
1	Fire Tender	03	3600 Litters Water & 3600 Litters	Mr. Lokesh sing	9717091086

## **Bombay Minerals Limited**

Sr.no.	Details of Equipment	Quantity	Capacity	Contact Person Name	Contact Numbers
1	Gas Cutter	1	-	Bhavesh J Pandya Manager	02833 235370, +91 7567870313
2	Jack	1	5 Tonnes		
3	Gloves	1	25000 volt		
4	Chains 6 Feet	1	3 Tonnes		
5	Lifting tackle	1	3 Tonnes		
6	Generator	1	50 KVA		
7	Dumper	1	-		
8	Forklift	1	-		
9	Fire Extinguisher	20	ABC, CO2, Foam And DCP type		
10	Medical Wan	1	-		
11	Loader	2	-		
12	Tractor	1	-		
13	Water Tanker	1			
14	Four wheel drive vehicle	5	-		
15	Stretcher	1	-		
16	Mini bus	1	-		

**Annexure: 9**  
**Chemical and their Antidotes**

❖ Details Of Chemicals Properties, Fire Fighting Agents, Antidotes, First Aid & Medical Treatment :

Sr No	Name Of Chemical	Hazard Characteristics	Fire Fighting Agent	Antidote / First Aid / Medical Treatment
1	Acetic Acid	Corrosive	Carbon Dioxide, Dry Chemical Powder, Water Spray and Alcohol Resistant Foam	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. If heartbeats are absent, give external Cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open and obtain medical treatment urgently.
2	Ammonia	Flammable, Toxic	Stop flow of gas, use water spray to cool fire exposed containers. Exposed fire fighter must wear positive pressure self-contained breathing-apparatus and full protective clothing.	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Inhalation of steam or vinegar vapour is recommended. If substance has gone in eyes, wash with plenty of water for 15 minutes To relieve restlessness, ingestion morphine 15mg to relieve Dyspnoea, Oxygen inhalation.
3	Ammonium Carbonate	Corrosive	Non-flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open.
4	Ammonia Nitrate (Melt)	-	Use plenty of water to cool fire exposed containers. Exposed fire fighter must wear positive pressure self-contained breathing apparatus and full protective clothing. Container may explode in fire.	In case of burns due to hot Ammonium Nitrate solution, part should be flushed with large quantity of water and treated according to usual burns.
5.	Carbon Dioxide	Asphyxiant	Non-flammable	It is simple asphyxiant and can cause oxygen deficiency in confined space / non ventilated areas. Respiratory protection is required.

6.	Carbon	Flamm-able,	Carbon	Remove the victim to fresh air. If there is a
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	Monoxide	Toxic	monoxide, dry chemical powder, wear self contained breathing apparatus. Let fire burn, shut off gas while using the chemicals.	difficulty in breathing, give oxygen. If hearts beats are absent, give external cardiac compression. Do not use mouth to mouth ventilation. Administer 100% oxygen till carboxyhemoglobin level is measured. Cerebral edema and convulsions must be controlled. Ethylene blue must not be injected.
7.	Chlorine	Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give external cardiac compression. In case of eye exposure, wash with copious amount of water for 15 minutes, keeping eyelids apart
8.	Coal	Flamm-able	Dry chemical powder, water supply	Incomplete combustion may produce CO1, sulphur dioxide, hence respiratory protection may be required to fight the fire.
9.	Formic Acid	Flamm-able, Corrosive	Carbon dioxide, dry chemical powder, water spray and alcohol resistant, foam all purpose foam.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If hearts beats are absent, give external cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open and obtain medical treatment urgently.
10.	Fuel Oil	Flamm-able	Carbon dioxide, dry chemical powder, foam	Remove the contaminated clothes. Wash the affected parts of skin with plenty of soap and water and seek medical advice immediately for inhalation of vapors / fumes.
11.	High Speed Diesel	Flamm-able	Dry chemical powder, foam	- do -
12.	Hydro-chloric Acid	Corrosive	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give artificial respiration. Do not give alkaline substances or carbonate preparation. Skin should be treated with 5% Trietanol amine. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open and obtain medical treatment urgently.
13.	Hydrogen	Flamm-able, Explosive	Dry chemical powder, halon. Let fire burn under control. Stop flow of gas.	It is simple asphyxiant and can cause oxygen deficiency in confined space / non ventilated areas. Move victim to the fresh air and apply resuscitation methods.
14.	Hydrogen Iodide	Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If hearts beats are absent, give external cardiac compression. Incase of eye exposure, wash with copious amount of water for 15 minutes, keeping eyelids apart.

15	Hydrogen Sulphide	Flamm-able, Toxic	Carbon dioxide, dry chemical powder. Wear self-contained breathing apparatus. Alcohol resistant foam is also advisable to be used to stop fire.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Patient with significant exposure, should be hospitalized for 72 hours of medical observation for delayed pulmonary edema. The respiratory centre may be stimulated by injection of LOBGIN and nika thamide. Vitamin C may be injected intravenously. In case of eye exposure, it should be treated with boric acid solution.
16	Iodine	Toxic	Use water spray or carbon dioxide. Do not use foam or dry chemical. Wear full protective clothing and self contained breathing apparatus for fire fighting.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If heart beats absent, give external cardiac compression. Patient with significant exposure should be hospitalized for 72 hours of medical observation. Consider administration of multiple metered doses of topical steroid hormone or 30 mg/kg of methyl prednisolone IV.
17.	LPG	Flamm-able, Explosive	Carbon dioxide, dry chemical powder, water spray	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance has gone in eyes, wash with plenty of water for 15 minutes holding eyes open.
18.	Methane	Flamm-able, Explosive	Carbon dioxide, dry chemical powder. Shut off gas.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance has gone in eyes wash with plenty of water.
19.	Methanol	Flamm-able, Toxic	Carbon dioxide, dry chemical powder, water spray and alcohol resistant foam.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Never administer anything by mouth if a victim is losing consciousness. Do not induce vomiting. Do not use mouth to mouth respiration. Massive alkalization in life saving and eye saving measures. Give small quantity of Ethyl alcohol every 4 hourly. If substance has gone in eyes, wash with plenty of water for 15 minutes holding eyes open.
20.	Methyl Acetate	Flamm-able, Toxic	Carbon dioxide, dry chemical powder and alcohol resistant foam. Water may be ineffective.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance heart beats are absent, give external cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes holding eyes open and obtain medical treatment urgently.
21	Methyl Formate	Flamm-able, Toxic	Carbon dioxide, dry chemical powder, water spray and alcohol resistant foam.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance heart beats are absent, give external cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes holding eyes open and obtain medical

				treatment urgently.
22	Methyl Iodide	Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance heartbeats are absent, give external cardiac compression. Do not use mouth to mouth ventilation. Keep under medical surveillance for 48 hours. Consider administration of multiple metered doses of topical steroid by inhalation and or upto 30 mg / kg of methyl prednisolone. Incase of eye, contact immediately, refer to ophthalmologist.
23	Mono Ethylene Glycol	Flamm-able, Toxic	Carbon dioxide, dry chemical powder and alcohol resistant foam.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If heartbeats are absent, give external cardiac compression. If substance has gone in eyes, wash with plenty of water.
24	Naphtha	Flamm-able	Foam dry chemical powder, carbon dioxide. Apply water fog from as far distance as possible.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. The decision of whether to induce vomiting or not should be made by an attending physician. If heartbeats are absent, give external cardiac compression. If substance has gone in eyes, wash with plenty of water.
25	Natural Gas	Flamm-able	Stop flow of gas. Dry chemical powder, carbon dioxide.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open.
26	Nitric Acid	Corrosive, Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Do not induce vomiting. If heartbeats are absent, give external Cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open and obtain medical treatment urgently.
27	Nitric Oxide	Corrosive, Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Do not allow to walk. Fatal symptoms may be delayed upto 48 hours even though victim may seem normal after exposure. If hearts beats are absent, give external cardia compression. If substance has gone in eyes, wash with plenty of water for 15 minutes holding eyes open and obtain medical treatment urgently. Methemoglobinemia due to no resolve in hours with oxygen therapy.
28	Nitrogen	Asphy-xiant	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If hearts beats are absent, give external cardia compression. Treat for frostbite with lukewarm water.

29	Oxygen	-	Non flammable	Inhalation of 100 % oxygen can cause nausea, dizziness, irritation of lungs, pulmonary edema, pneumonia and collapse. Liquid oxygen will cause frostbite.
30	Nitrogen Dioxide	Corrosive, Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Enforce complete rest for 24 to 48 hours. Incase of high exposure keep patient under medical observation for atleast 72 hours. Some individuals who had symptoms of acute exposure with or without edema, develop in immune reaction 10 days or 6 weeks after exposure. Symptoms include severe cough, cyanbosis (tuning blue) fever hypoxemia and X ray may show fire scattered nodes in the lungs are vulnerable to virus.
31	Pottasium Hydroxide	Corrosive Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If substance heart beats are absent, give external cardiac compression. Incase of eye contact immediately refer for ophthomological opinion. Treat skin burns conventionally.
32	Potta-ssium Methoxide	Flamm-able, Toxic	Only dry chemical powder is allowed to be used. In reacts with water and CO <sub>2</sub> .	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Never administer anything by mouth if a victim is losing consciousness. Do not induce vomiting. Do not use mouth to mouth respiration. Backing soda in glass of water should be given.
33	Propionic Acide	Flamm-able, Toxic, Corrosive	Foam, dry chemical powder, carbon dioxide. Apply waster fog from as far distance as possible.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If heart beats are absent, give external cardiac compression. Incase of eye contact flush with plenty of water for about 15 minutes. Remove wet clothese and wash affected area with water & soap.
34	Rhodium Triodide	-	Non flammable	Remove the victim to fresh air. Material cause irritation of nose, throat and respiratory tract. Repeated exposure to skin can cause allergic sensitilization. Incase of eye contact, flush with plenty of water for 15 minutes.
35	Sodium Hydroxide	Corrosive, Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Incase of eye contact flush with plenty of water for about 15 minutes. Remove wet clothese and wash affected area with water & soap.
36	Sulphur	Corrosive,	Non flammable	Remove the victim to fresh air. If there is

	Dioxide	Toxic		a difficulty in breathing, give oxygen. If hearts beats are absent, give external cardia compression. Atropic rhinitis and phayngitis may be treated by inhalation of 5% solution of sodium chloride, followed by inhalation of 5% solution of sodium chloride, followed by inhalation of vitamin A. Incase of of eye contact, flush with 2% sodium bicarbonate solution, drops of 2 to 3 % phedrine should be instilled in the nose.
37	Sulphuric Acid	Corrosive, Toxic	Non flammable, react with water to form large amount of heat and corrosive fumes. Do not use water to existing fire in the nearby area.	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Incase eye contact flush with plenty of water for 15 minutes. Remove wet clothes and wash affected area with plenty of water.
38	Trichloro Ethylene	Flamm-able, Toxic	Carbon dioxide, dry chemical powder, water spray and alcohol resistant foam.	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Do not induce vomiting If heart beats are absent, give external Cardiac compression. If substance has gone in eyes, wash with plenty of water for 15 minutes, holding eyes open and obtain medical treatment urgently.
39	Ortho Dichloro Benzene	Flame-able, Toxic	Foam dry chemical powder, carbon dioxide. Apply water fog from as far distance as possible.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. In case of eye contact flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
40	Trichloro Acetyl Chloride	Corrosive, Toxic	Foam dry chemical powder, carbon dioxide.	It is very corrosive liquid. Exposure will produce tears in the eyes and severe chemical burns. Move the person to fresh air. If not breathing, perform artificial respiration. If required, give oxygen. Wash the affected skin thoroughly with soap and water. Flush and irrigate eyes with copious quantity of water for atleast 15 minutes. Do not induce vomiting.
41	Acrylo-nitrile	Flamm-able, Toxic	Carbon dioxide, dry chemical powder	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If the unconscious, crush an amyl nitrile ampule in a cloth and hold it under the nose for 15 seconds in every minute. Do not interrupt artificial respiration during this process.
42	Copper Comp-ounds	-	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If heart beats are absent, give external cardia compression. If substance has

				gone in eyes wash with plenty of water for about 15 minutes, holding eyes open and obtain medical treatment urgently.
43	Aniline	Flamm-able, Toxic	Foam, dry chemical powder, carbon dioxide	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Aniline is very toxic, if splashed on skin. It passes through the skin, causing methamoglobinemia. Antidotes is methylene blue. Incase of eye contact flush with plenty of water for 15 minutes. Remove wet clothes and wash affected area with plenty of water.
44	<i>Benzene</i>	Flamm-able, Toxic	Foam, dry chemical powder, carbon dioxide	Remove the victim to fresh air. If there is a difficulty in breathing, give Oxygen. Benzene is very toxic or if splashed on skin. Cronic exposure may lead to leukemia. Incase of eye contact flush with plenty of water for 15 minutes. Remove wet clothes and wash affected area with plenty of water.
45	Nitro-benzene	Flamm-able, Toxic	Foam, dry chemical powder, carbon dioxide	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. NB is very toxic if splashed on skin. It passes through the skin causing methamoglobinemia. Antidote is methylene blue. Incase of eye contact flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
46	<i>Phosgene</i>	Corrosive Toxic	Non flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Phosgenen is very toxic incase of inhalation. It has very low TLV – 0.1 ppm. Keep the person under observation for 72 hours for possibility of delayed effect. Incase of eye contact, flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
47	Toluene	Flamm-able, Toxic	Foam, dry chemical powder, carbon dioxide	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Toluene is very toxic if splashed on skin. Incase of eye contact flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
48	Di Nitro Toluenen	Flammable, Explosive	Use plenty of water to cool fire exposed containers. Exposed fire fighter must wear positive self contained breathing apparatus.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Di Nitro Toluene is very toxic if splashed on skin. Incase of `eye contact flush with plenty of water for about 15 minutes. Remove wet clothes and wash

			Foam and dry chemical powder and carbon dioxide can be used.	affected area with plenty of water.
49.	Metaol-uene Di Amine	Flamm-able, Toxic	Foam dry chemical powder, carbon dioxide. Apply water fog from as far distance as possible.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Metaoluene Di Amine is toxic, if splashed on skin. Incase of eye contact flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
50	Toluene Di Isocyanate	Corrosive, Toxic	Dry chemical powder, carbon dioxide. Do not apply water as it reacts violently with water at elevated temperature.	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. Toluenen Di Isocynate is very toxic if inhaled.. In cause pulmonary edema. TLV of TDI vapour is ver low i.e. 0.0005 ppm. If splashed on skin, incauses sensitization of skin tissue. Incase of eye contact, flush with plenty of water for about 15 minutes. Remove wet clothes and wash affected area with plenty of water.
51	Methyl Iodine	Toxic	Non Flammable	Remove the victim to fresh air. If there is a difficulty in breathing, give oxygen. If heart beats are absent, give external cardiac compression. Do not use mouth to mouth ventilation. Keep under medical surveillance for 48 hours. Consider administration of multiple metered doses of topical stercoid aerosol by inhalation and or upto 30 mg / kg of methyl prednisolone. Incase of eye, contact immediately, refer to ophthalmologist.
52	Chloro Sulphonic Acid	A poision to irritant, corrosive	Use DCP, foam if exposes to fire.	Remove victim to fresh air. If there is a difficulty breathing, give oxygen. Do not induce vomiting. Obtain medical treatment urgently.
53	Carbon Di Sulphide	Flamm-able, Explosive	Use DCP, CO2	Remove victim to fresh air. If there is a difficulty breathing, give oxygen. Do not induce vomiting. Obtain medical treatment urgently.
54	Etyhlene Oxide	Flamm-able, Carci-nogen	Use DCP	Remove victim to fresh air. If there is a difficulty breathing, give oxygen. Do not induce vomiting. Obtain medical treatment urgently.
55	Acephate Anilo-phose Ethion Phorate Quinal-phos	Non flamm-able	Use DCP, foam if exposed to fire.	Atropine sulphate in dose 2 – 4 mg for adult, 2 pam 1000 – 2000 mg / im.
56	Alachor Carbenda-	Non flamm-able	Use DCP, foam is exposed to fire	Inject 1 gm of Eralidioxime chloride IV. Do not induce vomiting if the injected

	zim Thiophanate – M			poison is principally a hydrocarbon solvent.
57	Mancozeb Thiram	Non flamm- able	Use DCP, foam is exposed to fire	Low toxicity, no specific treatment.
58	Allethrin Cyperm- ethrin Fevalrate	<i>Toxic</i>	Use DCP, foam is exposed to fire	The treatment is symptomatic.
59	Alumi-nium Phosphate	Non flamm- able	Use DCP, foam is exposed to fire	Injection copper sulphate 0.25 gm.
60	Isopro-turon	Non flamm- able	Use DCP, foam is exposed to fire	Supportive treatment.
61	Hexa- conazole Propi- conazole	Non flamm- able	Use DCP, foam is exposed to fire	There is no specific antidotes and treats the victim symptomatically.
62	Propane	Flamm-able, Explosive	DCP, Water	First aid.
63	Butadine	Flamm-able, Explosive	DCP, Water	First aid.
64	Propylene	Flamm-able, Explosive	DCP, Water	First aid.
65	Styrene Monomer	Flamm-able	DCP, Foam compound	-
66	Phosphoric Acid	Corrosive	-	Skin Contact: - Wash with clean water. Apply dry sterile dressing. Eye Contact: Through wash with clean water, apply denominated (novelized) drop (0.4%). Inhalation: Administer O <sub>2</sub> , Give him fresh drink water. Ingestion: Milk of magnesia, fresh egg, administer him oxygen.

**Annexure: 10**  
**Trained People in Flood Rescue**

Sr No.	Name	Designation	Office Address	Contact	
				Office	Resident
1	L. B. Zala	Pancha Sahayak	T.D.O. Office, Kalyanpur	02891 286223	9824318740
2	R. J. Bhogayata	Supervisor	Mamlatdar Office, Kalyanpur	02891 286227	---
3	D. V. Bela	Pancha Sahayak	T.D.O. Office, Kalyanpur	02891 286223	9974565770
4	Digvijaysinh Jadeja	Volunteer	Khambhalia	--	9099653710
5	Mayursinh Jadeja	Volunteer	Khambhalia	--	9687852272
6	Padhiyar RasikLal	Volunteer	--	--	--
7	Kartik B.Vara	Homeguard	Dwarka	--	9824401819
8	Mukund B.Dudhrejiya	Homeguard	Dwarka	--	9979931744
9	Rahul C.Gondaliya	Homeguard	Dwarka	--	9428986963
10	Viral R.Gondaliya	Homeguard	Dwarka	--	9737254054
11	Parag R.Jethva	Homeguard	Dwarka	--	7874123224
12	Mohit S.Mehta	Homeguard	Dwarka	--	9723342433
13	Abdul A.Manek	Homeguard	Dwarka	--	9276850404
14	Omkarsinh J.Zala	Homeguard	Dwarka	--	9925585079
15	Ashish J.Vara	Homeguard	Dwarka	--	9099576402
16	Kiritbhai Vegad	GRT	Dwarka	--	8530256108
17	D. B. Chaudhri	P.T. Teacher	Shri Hathi G.L. High School. At: Raval. Kalyanpur	02891 228244	02891 228814
18	H. H. Nakum	P.T. Teacher	Shri Sharda High School. Bedak Road,	02833 232795	--

			Khambhalia		
<b>19</b>	G. S. Kardiya	Staff	Nagarpalika, Dwarka	02892 234449	9725029843
<b>20</b>	D. B. Motivaras	Staff	Nagarpalika, Dwarka	02892 234449	9725029844
<b>21</b>	J. J. Kapdi	Staff	Nagarpalika, Dwarka	02892 234449	9725029842
<b>22</b>	V. M. Ker	Staff	Nagarpalika, Dwarka	02892 234449	8511157223
<b>23</b>	P. V. Bhatt	Staff	Nagarpalika, Dwarka	02892 234449	9725029587

**Annexure: 11**  
**HAM Radio Exam Passed**

❖ **List Of government official who had passed HAM radio exam:**

Sr No	Regi.No	Class	Name	Office	Resi. Address	DoB	Other qualification	Remarks
1	61	3	Sunil K. Thakar Steno English	Superintendent, G.G. Hospital, Jamnagar	4/5 Patel Colony, Road No.2, Jamnagar Ph.02882753835	15/03/61	B.Com	

❖ **List of Civilian who had passed HAM radio exam:**

Sr. No.	Regi .No	Name	Resi. Address	DoB	Other qualification
1	4	Chandresh M. Mamtora	Abil-Gulal, Solarium Road, Jamnagar Ph.02882540085	08/08/71	D.Pharm B.Pharm
2	32	Dr. Urvish K. Joshi	Medical Campus, G.G. Hospital, Jamnagar	22/08/81	M.B.B.S. M.D.
3	57	Chandani P. Patel	“Ushadip” Panchavati Gaushala, Opp. Happy Home Pro. Store, Jamnagar	16/01/86	B.Sc.
4	Licen No. 3239 5	N.P.Mehta	“MATRUCHHAYA” ,Rajgor street- Jamnagar	6/11/75	S.Y.B.com

**Annexure: 12**  
**NGO**

Sr.No.	NGO Name	Contact Person	Contact Number
1	Tata Chemical For rural Development Mithapur, Dwarka Dwarka - 361335	H.V.KAMANI	+(91)-2892-665367 +(91)-9227891655
2	Khambhalia Grain Marchant Association, Khambhaliya	Kishor Dattani Anilbhai Tanna	+(91)-2833 233187 +(91)-9228455223
3	Gram Vikas Trust Nr.S.P.College Dwarka Dwarka - 361335	Prof.DS.Ker	+(91)-2892-236551/236552, +(91)-9824069942
4	Swaminarayan Temple Dwarka	--	+(91)-2892-234230
5	Lions Club Barcha Pado, Gayatri Nagar, Khambhaliya	Sudhirbhai Popat Vijaybhai Kataria	+(91)-2833 234070 +91 9426233660 9913699999
6	Sharda Math Bhojan House Dwarka Temple Dwarka - 361335	--	+(91)-2892-234230,
7	Ladies Chamber of Commerce Khambhaliya	Ritaben Chag	+(91)-9998165865
8	Sarvoday Mahila Mandal Navi Bazar, Okha Dwarka - 361335	Pushpaben Somaiya	+(91)-2833 262309/262291, +(91)-9714507739
9	Akhlen Mahila Mandal Dwarka	Namrataben Gokani	+(91)-2892-234911 +91 9925799522
10	Mahila Mandal Khambhalia	Prafullaben Barcha and Veenaben M Barcha	+(91)-2833 234323 +(91)-9409208192
11	Mahajan Panjrapol Bhanvad	Dhansukhbhai	+(91)-02896-232072 +91 9428316930
12	Giriraj Seva Trust Rawal Kalyanpur	Gokani Vinubhai	+(91)-9427259108
13	SEWA Bhatiya, Kalyanpur	Bhimshibhai Ahir	+(91)-9426757606
14	Swaminarayan Transport Devaliya, Kalyanpur	Bhikhubhai Vadher	+(91)-0288-2674540 +(91)-9825714516
15	Raghuvanshi Social Group Bhanvad	Jayesh Raichura	+(91)-94272 40278
16	Jain Social Group Bhanvad	Rashmikant Lalchand aheta	+(91)-96380 72254
17	Goverdhan Guashala Mandali Kharavad Bhanvad	Ranchhodbhai Nakum	+(91)-94280 78104
18	Dudheswar Yuvak Mandal Dwarka	Kailash P HIndocha	+(91)-99044 21768

19	Prajapita Brahmakumari Ishwariya Vishva Vidhyalaya Trilok Darshan Art Gallery, State Highway, Dwarka - 361335	Brahmakumari Madhuben	+91 9427445956 E-mail : <a href="mailto:jamnagar@bkivv.com">jamnagar@bkivv.com</a>
20	Medical Stores Association C/o. Ashish medical stores , Nagar Gate Khambhaliya	Hitesh D. Gokani	+(91) 9824327100
21	Fps Association, Kalyanpur at:kalyanpur, Ta: kalyanpur	Devshibhai Hardasbhai Karangiya	+(91) 9879358805
22	Peacock conservation Centre at: Kenedi Kalyanpur	Naranbhai Meramanbhai Karangiya	+(91)-9426289192
23	Devbhoomi Dwarka district Perol Pump Association C/o.Shree Krushna Trading Co. (petrol Pump) Dharampur, Near Ashok Baal Vatika, Jamnagar High Way, Khambhaliya	Parag Arvindbhai Barachha	+(91) 9825214101 E-mail : <a href="mailto:pabarchha@yahoo.com">pabarchha@yahoo.com</a>
24	Abol Tirth C/o.Shree Krushna Trading Co. (petrol Pump) Dharampur, Near Ashok Baal Vatika, Jamnagar High Way, Khambhaliya	Parag Arvindbhai Barachha	+(91)-09825214101 E-mail : <a href="mailto:pabarchha@yahoo.com">pabarchha@yahoo.com</a>
25	Revenue Bar Association, Khambhaliya Near Bus Station, Khambhaliya	Advocate C M Buddhbhatti R.A.Mundra	+(91) 9426260204 9426259264
26	Jalaram Satsang Mandal Trust "B/h. Mohan Oil mill, Jodhpur Gate, Khambhaliya	Natubhai Babubhai Kundaliya	+(91) 9998111233
27	Rajyaguru Charitable Trust Palika Shopping Centre, Jodhpur Gate Khambhaliya	Vijaybhai N. Rajyaguru	+(91)-09913699999 E-mail : <a href="mailto:rajyaguruvijay73@gmail.com">rajyaguruvijay73@gmail.com</a>
28	Art of Living Soni Bazar, Near Harshad mata Temple, Khambhaliya	Ashokbhai Vaya	+(91) 09824029137 E-mail : <a href="mailto:ashok.vaya@gmail.com">ashok.vaya@gmail.com</a>

29	Lioness Club Ramnath Society, Near Vidhyashankar Temple, Khambhaliya	Ritaben B chhag	+(91)- 9998165865
32	Sanskar Education Trust porbandar Gate, Khambhaliya	Parag Arvindbhai Barachha	+(91) 9825214101 E-mail <a href="mailto:pabarchha@yahoo.com">:pabarchha@yahoo.com</a>
33	Satvara Samaj Navi Vadi, Harshadpur, Khambhaliya	Nakum Haribhai Valjibhai	+(91)-09904294585
34	APMC, Bhatiya, kalyanpur	Masaribhai N Goriya	+(91)-09426209561
35	Gokaldas Jamnadas charitable Trust Harshad Road, At: Bhatiya, Kalyanpur	Dwarkadas K Raichura	+(91)-2891-233155
36	Raghuvanshi Charitable Trust Harshad Road, At: Bhatiya, Kalyanpur	Dwarkadas K Raichura	+(91)-2891-233155
37	manav seva samiti shyam Enterprise, Opp. Akashganga Appartment Station Road, Khambhaliya	Rajubhai Majithia	+(91)-9879846920
38	Gayatri Parivar yogeshvar Nagar, Khambhaliya Khambhaliya	Aebhabhai Karmur	+(91)-9228216339
39	youngster Group Near Bus Station, Khambhaliya Khambhaliya	Rameshbhai Motani	+(91)-9727859600
40	Doctors' Association Saket Hospital, Railway Station Road, Khambhaliya	Dr. Sumat Chetariya	+(91)-9825407535

**Annexure: 13**  
**Resources**

**Resources available at Government offices**

**1.Collector Office-Devbhumi Dwarka**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Inflatable light	02	1.Deputy Mamlatdar (Disaster Management)	02833 232125
			2.D.P.O. ( Disaster Management)	+91 9407115141

**2.Sub-Divisional Magistrate office-Khambhaliya**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Diesel Generator Set	01	1.Sub Divisional Magistrate-Khambhaliya	02833234577, +91 9978405354

**3.Mamlatdar Office-Khambhaliya**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Life Buoy	01	Mamlatdar-Khambhaliya	02833-232804,
2	Life Jacket	03		
3	Ropes 200 Ft.	01		

**4.Mamlatdar Office-Kalyanpur**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Life Buoy	20	Mamlatdar-Kalyapur	02891 286120, +91 9726592027
2	Life Jacket	05		
3	Ropes 200 Ft.	02		

**5.Mamlatdar Office-Dwarka**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Life Buoy	20	Mamlatdar-Dwarka	02892 234541, +91 9662339614
2	Life Jacket	05		

**6.Mamlatdar Office-Bhanvad**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1.	Life Buoy	15	Mamlatdar-Bhanvad	02896 232116,+91 9824290604
2	Life Jacket	13		
3	Ropes 100 mt.	01		
4	Ropes 200 mt.	04		

## Resources available at Municipalities

### **7. Khambhaliya Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Water Bouser	01	J. B Dagra	+91-9979887406
2	Fire Tender	02		
3	Inflateble Light tower	02		
4	Fire Bullet	02		
5	JCB	01		
6	Ambulance	01		
7	Life Jacket	05		
8	Life Buoy	05		
9	Roap	02		
10	Mini Fire tanker	05		
11	Tracktor	04		
12	Electric cutter	01		
13	Dewatering pump	01	M.L Jani	+91-9979887409

### **8. Bhanvad Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Water Bowser	01	Tulshibhai Ghela-Driver	+91 9427444150, 02896232159
2	Fire Tender	01	Narendrasinh Jadeja-Driver	+91 9924866259, 02896232159
3	Inflatable Light tower	02	Nagarpalika office-Driver	02896232159
4	JCB	01	Indrajitsinh Jadeja-Driver	+91 8460123863, 02896232159
5	Loader	01	Manubhai Vaghela-Driver	+91 99042 83609, 02896232159
6	Water tanker	05	Kishorchandra-Driver	+91 9726601640, 02896232159

### **9.Dwarka Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Water Bouser	02	C.B Dudiya, Chief officer, Dwarka Nagar Palika	+91-9725016543
2	Fire Tender	01		
3	Inflateble Light tower	02		
4	Fire Bullet	01		
5	Mini Fire tender	02		
6	Rescue Boat	01		
7	Speed Boat	01		
8	Dewatering pump	03		
9	Life Jacket	05		

### **10.Okha Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Water Bowser	01	Mandanbha N. Jagatiya- Fire In charge	02892 262035, +91-82643 78101
2	Mini Fire tender	01		
3	Inflateble Light tower	02		
4	Fire Bullet	01		
5	Fire Boat	01		
6	Life Jacket	10		
7	Life Buoy	11		
8	Speed Boat	01		
9	Dewatereing pump	09	Nasir khan ji Shekh- Clarck	+91-9904295513

### **11. Salaya Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Water Bouser	01	N.S Shekh,Chief Officer- Salaya	02899 285448, +91-9427054411
2	Mini Fire tanker	01		
3	Inflateble Light tower	02		
4	Fire Bullet	01		
5	Ambulance	01		
6	Boat	15		
7	Tracktor	06		
8	JCB	01		
9	Dewatering pump	03		

### **12.Raval Municipality**

Sr.no.	Details of Equipment	Quantity	Contact Person Name	Contact Numbers
1	Fire Tender	01	N.S Shekh,Chief Officer- Salaya	02899 285448, +91-9427054411
2	Inflateble Light tower	02		
3	Water Bouser	01		
4	Tracktor	03		
5	Life Buoy	05		
6	Life Jacket	05		
7	Roap	01		
8	JCB	01		

**Annexure: 14**  
**Taluka wise CHC, PHC and SHC**

❖ **Taluka wise CHC,PHC,SHC of Devbhumi Dwarka:**

Sr. No.	Taluka	Name of CHCs	PHCs	SHC
1	Bhanvad	Bhanvad	5	35
2	Khambaliya	Salaya,	6	54
3	Kalyanpur	Kalyanpur, Raval	9	56
4	Dwarka	Dwarka	3	24
Total		5	23	169

**Equipment with District Health Department**

No	Name of Equipment	DH	SDH	CHC	PHC	ESSAR
1	Ventilator	2	0	0	0	0
2	O <sub>2</sub> Cylinder	20	13	8	7	4
3	Enchotrachal tube	145	0	0	1	4
4	Laryngoscope	20	3	1	1	1
5	Defibrication	2	1	2	0	1
6	Refrigerator	10	8	3	8	1
7	Lagrange Mask Airway	5	2	1	6	2
8	Ambu Bag	20	5	6	12	4
9	PPE (Personnel Prevention Examination) Kit.	6	0	3	2	4
10	Pulse Oximeter	5	4	5	5	2
11	ECG Machine	2	2	2	0	2
12	Endotracheal tube	-	30	0	0	0
13	Straturas	7	3	0	5	4
14	Wheel Chair	6	3	4	5	1
15	Pulse Monitor	20	0	0	0	0
16	Cervical Collar	0	0	0	0	1
17	Long Spring Board	0	0	0	0	1
18	N – 95 Masks	10	0	0	269	0
19	Autoanalyser	3	0	1	0	1
20	X – ray Machine	4	1	1	0	0
21	Generator	1	2	2	0	0
22	Invetor	0	0	1	8	0

**Annexure: 15**  
**Health Department Resources**

**Locations of EMRI 108 in Devbhumi Dwarka District**

Sr. No	Taluka	Location	Number of 108
1	Kalyanpur	Kalyanpur	1
		Ran	1
2	Dwarka	Dwarka	1
		Mithapur	1
		Okha	1
3	Khambhaliya	Khambhaliya	1
		Jakhar Bhatiya	1
4	Bhanvad	Bhanvad	1
<b>Total</b>			<b>8</b>

**Human Resource**

Human Resource	DEVBHUMI DWARKA	
	Sanction	Filled
CDHO	1	1
ADHO	1	0
RCHO	1	0
QAMO	1	0
EMO	1	0
DTO	1	0
DMO	1	0
THO	4	1
MO - MBBS	23	8
MO - AYUSH	23	14
Lab. Tech	23	19
Pharmacist	23	15
FHW	169	156
MPW	169	139
FHS	23	7
MPS	23	15
ASHA	560	478

**Annexure: 16**  
**Health Department Team Formation**

**District Repid Response team-2018**

Sr. No	Designation	Name	Address	Phone	
				Office	Mobile
1	CDHO	Dr. S P Singh	District Panchayat-Devbhumi Dwarka	02833-235974	9712154004
2	Microbiology Dep.	Dr. Payal Mankodi	General Hospital-Devbhumi Dwarka	-	9825600736
3	DSO	Dr. B.N.Ravat (I/C)	District Panchayat-Devbhumi Dwarka	02833-234171	7567880071
4	Entomologist/DMO	Dr. B.N.Ravat (I/C)	District Panchayat-Devbhumi Dwarka	02833-234171	7567880071
5	Medicine Department	Vacant			
6	Public Health Specialist (PSM) Department	Vacant			
7	Pediatric Department	Vacant			

**Taluka Repid Response teams**

**Block: Bhanvad**

No	Name of Officer / Employee	Designation	Head Quatar	Phone No	
				Office	Mob / Resi
1	Dr. S.R.Rathod	Medical Officer	Gunda	-	7069094821
2	V.K.Khant	Pharmacist	Verad	02896-274340	9979022611
3	D.M.Parmar	TMPS	Bhanwad	02896-274340	9727782090
4	H.K.Rathod	MPS	Gunda	-	9727782089
5	M.K.Ravaliya	FHW	Ambardi	02896-24434	7567879754
6	Basir Juma	Driver	Pachtar	02896-275217	9913027862

Vehicle No. GJ 18 G 1478

**Block: Khambhalia**

No	Name of Officer / Employee	Designation	Head Quatar	Phone No	
				Office	Mob / Resi
1	Dr. A N Tiwari	MO	Movan	02833-273323	7567879460
2	R P Gojiya	TMPHS	Khambhaliya	02833-234732	7567889125
3	J.H Kulbhani	Phramisist	Vachlabara	02833-283238	7984996050
4	D C Pandya	MPHW	Bhinda	-	8530906901
5	Tejasvani Kanjariya	FHW	Khambhaliya	02833-234732	7874363512
6		Driver			

Vehicle No.

**Block: Kalyanpur**

No	Name of Officer / Employee	Designation	Head Quatar	Phone No	
				Office	Mob / Resi
1	Dr. Prakash J Chandegra	MO	Ran	02892234075	7567879244
2	Karshan Gojiya	Pharmacist	Lamba	-	9998676464
3	N K Khandhar	TMPHS	Bhatiya	02892234075	7573996199
4	B H Kanzariya	MPHS	Gadhaka	02892234075	7573996197
5	M N Karangiya	FHW	Bhatiya	02892234075	7567879284
6	Kishor R. Nukum	Driver	Kalyanpur	02892234075	

Vehicle No. GJ 18 G 8068

**Block: Dwarka**

No	Name of Officer / Employee	Designation	Head Quatar	Phone No	
				Office	Mob / Resi
1	Dr Ankita Goswami	MO	Varvala	02892-234048	7567879241
2	Taru Patel	Pharmacist	Surajkaradi	02892-234075	7574841026
3	R.K.Gojiya	TMPS	Dwarka	02892-234075	9427224417
4	K K Vansdaliya	MPHS	Varvala	02892-234048	7567880064
5	K N Chandarana	MPHW	Varvala	02892-234048	9909671070
6	S K Bhagad	FHW	Varvala	02892-234048	7567879275
7	Rameshbhai Rathod	Driver	Varvala	02892-234048	9898642836

Vehicle No. GJ 18 G 8369

**Annexure: 17**  
**Taluka Wise Swimmer list**

Sr No	Swimmer Name	Village / City	Address	Mo. No.	Working place	Taluka
1	RAMSHIBHAI NATHUBHAI	Rupamora	Rupamora, Ta Bhanvad	9924866259	Rupamora	Bhanvad
2	KARUBHAI PANCHOLY	Bhanvad	Ranjitpara	8460123863	Ranjitpara	Bhanvad
3	J.H.JADEJA	Bhanvad	Darbar street	-	Bhanvad	Bhanvad
4	S.S,CHELAVAD A	Bhanvad	Ranjit para	-	Ranjit para	Bhanvad
5	PUNJA MALDE	Bhanvad	Ranjit para	9924866259	Ranjit para	Bhanvad
6	K.M. JETHVA	Bhanvad	Ranjit para	8460123863	Rajit para	Bhanvad
7	GAFAR RINDANI	Bhanvad	Ghanchi street	9924866259	Bhanvad	Bhanvad
8	MERAMAN RAVIDE	Bhanvad	Ghanchi street	8460123863	Bhanvad	Bhanvad
9	Harishbhai dudhrejiya	Rawal	Bus station area	9913029220	Raval	Kalyanpur
10	Harishbhai Kudecha	Rawal	Near bus station	9913029220	Raval	Kalyanpur
11	Rambhai Mistri	Rawal	Jamod street	9979291937	Raval	Kalyanpur
12	Karabhai Rambhai Gami	Rawal	Mayurnagar	9925341415	Raval	Kalyanpur
13	Lakhubhai Makwana	Rawal	Near gaushala	9979054480	Raval	Kalyanpur
14	Dayabhai Patel	Rawal	Vadi area	9879786037	Raval	Kalyanpur
15	Sanjaybhai Vaghela	Rawal	Near sharif ghanti	9904830990	Raval	Kalyanpur
16	Nitin D.Kagadiya	Rawal	Near bus station	9033626728	Raval	Kalyanpur
17	Rajeshbhai J.Kagadiya	Rawal	Khariyavad	9299045972	Rawal	Kalyanpur
18	Rakesh m.Thanki	Rawal	Mayurnagar	9099059559	Rawal	Kalyanpur
19	kisor uauswami	Chachlana	Chachlana	9558436156	Chachalana	Kalyanpur
20	MASiD bLOS	Kalyanpur	Atpkalyanpur	9998256756	At.kalyanpur	Kalyanpur
21	Manoj P.Shingrakhia	Rawal	Vankarvas	909945971	Rawal	Kalyanpur
22	Narendrasinh Jadeja	Bhanvad	Bhanvad	9924866259	Bhanvad	Bhanvad
23	Indrajit P.Rathod	Bhanvad	Bhanvad	8460123863	Bhanvad	Bhanvad
24	sunil kanjariya	Kalyanpur	Main bazar	9428125433	Na	Kalyanpur
25	Anavar Umar Jokhia	Khambhalia	Dwarka gate, khambhalia	9275177888	Dwarka gate, khambhalia	Khambhalia
26	Mansinh C Rathod	Khambhalia	Near jodhpur naka, khambhalia	9428865669	Near jodhpur naka, khambhalia	Khambhalia
27	Anavar Eliash Bhagad	Salaya	Bhim pado, salaya	0	Bhim pado, salaya	Khambhalia

28	Ismail Abdul Sumbhani	Salaya	Nakarakar pado, salaya	2833285327	Nanakarakar Pado, Salaya	Khambhalia
29	Javed Ali Sanghar	Salaya	Salaya	9924695529	Nanabarlo Vas, Salaya	Khambhalia
30	Junas Kasam	Salaya	Salaya	9924695529	Nabandar Road, Salaya	Khambhalia
31	Bachu Sidiq	Salaya	Salaya	9724521961	Bandar road, salaya	Khambhalia
32	Farik Ismail Sanghar	Salaya	Salaya	9714558814	Banda rooad, salaya	Khambhalia
33	Samim Adam Bhaya	Salaya	Salaya	9998165813	Coustom road, salaya	Khambhalia
34	hanif junas sanghar	Salaya	Salaya	9898572786	Station road, salaya	Khambhalia
35	Isha Ismail Gajiya	Salaya	Salaya	9328078333	Station road, salaya	Khambhalia
36	DAUD OSMAN SANGHAR	Vadinar	Vadinar	8238969191	Vadinar	Khambhalia
37	Bipinbhai	Vadinar	Vadinar	9427239025	Vadinar	Khambhalia
38	M I BHAYA	Bharana	Vadinar	9099593562	Vadinar	Khambhalia
39	K M BHAYA	Bharana	Vadinar	-	Vadinar	Khambhalia
40	J M BHAYA	Bharana	Vadinar	-	Vadinar	Khambhalia
41	D J CHAMDIYA	Bharana	Bharana	9099593562	Bharana	Khambhalia
42	HARUN IBRAHIM	Bharana	Bharana	9099593562	Bharana	Khambhalia
43	Jusab Kasam Chamadiya	Salaya	Salaya	9904137602	Salaya	Khambhalia
44	Razak aliyas Chaba	Salaya	Salaya	9898161784	Salaya	Khambhalia
45	Gani Haji Chaba	Salaya	Salaya	9724972439	Salaya	Khambhalia
46	Gafar Musa Sodha	Okha	Bhunga vistar	9601550755	Okha	Dwarka
47	Abbash Musa Sodha	Okha Port	Bhunga vistar	9624013110	Okha	Dwarka
48	Haji Satar Shodha	Arambhada	Indira nagar, arambhada	9824413039	Okha	Dwarka
49	Kasam Daud Betara	Arambhada	Endira nagar, arambhada	9821691876	Okha	Dwarka
50	Mamad Ebrahim Vadha	Arambhada	Endira nagar, arambhada	9824971019	Okha	Dwarka
51	Ali Mamad Vadha	Arambhada	Endira nagar, arambhada	8347210863	Okha	Dwarka
52	Akbar Musa Sodha	Bhunga	Okha	9724474659	Okha	Dwarka
53	Harun Abdulraheman Sodha	Okha	Navi nagri	9904083669	Okha	Dwarka
54	Esani Kasamhaji Suleman	Dwarka	Rupen bandar, Dwarka	9824569836	Dwarka	Dwarka
55	Esani Gulmamad Haji	Dwarka	Rupen bandar, Dwarka	9879176612	Dwarka	Dwarka

56	Bahadur B.Sariya	Dwarka	Dwarka	9898717126	Dwarka	Dwarka
57	Idrish D.Modi	Dwarka	Dwarka	9879756560	Dwarka	Dwarka
58	Ashok T.Chanpa	Dwarka	Dwarka	8128151667	Dwarka	Dwarka
59	Kasam Jaku	Dwarka	Rupen bandar, Dwarka	9879176612	Dwarka	Dwarka
60	Kirit B.Vegad	Dwarka	Birla colony, Dwarka	9638963421	Dwarka	Dwarka
61	MANDANBHA NANDHABHA	Okha Port	Okha	8264378101	Okha	Dwarka
62	GAGUBHA MANEK	Okha Port	Okha	9737656101	Okha	Dwarka
63	SATAR SUMANIYA	Okha Port	Okha	9924028393	Okha	Dwarka
64	VASRAM MOHAN	Okha Port	Okha	8128150860	Okha	Dwarka
65	ISWAR LAKHAMAN	Okha Port	Gaytri nagar,Okha Port	7600541537	Okha	Dwarka
66	RAMESH BABU	Arambhada	Okha Port	9879051712	Okha	Dwarka
67	SURESH NARAN	Arambhada	Okha Port	9172118002	Okha	Dwarka
68	DINESH LAKHA	Okha Port	Okha	9874833965	Okha	Dwarka
69	BHUPAT MOHAN	Okhamadhi	Okha	9723841712	Okha	Dwarka
70	NAYABHA MURUBHA	Surajkaradi	Okha	9824810156	Okha	Dwarka
71	BHIMBHA DHADHABHA	Surajkaradi	Okha	9662583511	Okha	Dwarka
72	DHIRAJ CHANA	Okha Port	Valmikivas,ok ha	9662789944	Okha	Dwarka
73	Mandanbha Jagatiya	Okha	Okha	8264378101	Okha	Dwarka
74	Kirit B.Vegad	Dwarka	Dwarka	9638963421	Dwarka	Dwarka
75	Vidhabhai M.Ker	Dwarka	Dwarka	9408164264	Dwarka	Dwarka
76	Dabhi Hasmukh L.	Dwarka	Dwarka	8102622648	Dwarka	Dwarka
77	Hanif Hasam	Okha	Okha	9904137848	Okha	Okha
78	Abdul Karim	Okha	Okha	9723686430	Okha	Okha
79	Sakar Aamadbbhai	Okha	Okha	9737660171	Okha	Okha
80	Akbar Harun	Okha	Okha	9638723568	Okha	Okha
81	Ayud Hanif	Okha	Okha	7623935107	Okha	Okha
82	Firoj Akbar	Okha	Okha	8347150200	Okha	Okha
83	AAmin Karim	Okha	Okha	7704133805	Okha	Okha

84	Ramjan Mamad	Okha	Okha	9824682017	Okha	Okha
85	Nurmamad Karim	Okha	Okha	9714904942	Okha	Okha
86	Ikbal Karim	Okha	Okha	9824485227	Okha	Okha
87	Rajak Ayub	Okha	Okha	9804033238	Okha	Okha
88	Tajudin Alarakha	Okha	Okha	9723427848	Okha	Okha
89	Ikbal Kasam	Okha	Okha	8347589936	Okha	Okha

**Annexure: 18**  
**Aapda Mitra list**

**Aapda Mitra Volunteers, Devbhumi Dwarka**

<b>S.No.</b>	<b>Name</b>	<b>Taluka</b>	<b>Mobile</b>
1	Parmar Chandu Somabhai	Bhanvad	9879781745
2	Piparotar Suryakiran Khimabhai	Bhanvad	9998496174
3	Jogal Dilip Kanabhai	Bhanvad	8980642842
4	Mori Raju Punabhai	Bhanvad	9726929636
5	Sumaniya Subhash Nandabha	Dwarka	9998825989
6	Rathod Mithun Rajpal	Dwarka	9974136494
7	Nirmal Singh D Rayjada	Dwarka/Okha	9739983034
8	Gagubha Gajubha Manek	Dwarka/Okha	9737656101
9	Sagar K Manek	Dwarka/Okha	9537779254
10	Hitesh Malade Kagadiya	Kalyanpur	8264338030
11	Sanjay Hardasbhai Kagadiya	Kalyanpur	9898834396
12	Satish K Kagadiya	Kalyanpur	8264254399
13	Chavda Geetaben Arajnabhai	Kalyanpur	9601437934
14	Puriben Ranmalbhai Chavada	Kalyanpur	9725036172
15	Khira Basir Salim Bhai	Kalyanpur	9664870354
16	Kagadiya Ravi Arajn bhai	Kalyanpur	9687314625
17	Kagadiya Dinesh Jetha bhai	Kalyanpur	9904650335
18	Kagadiya Keshu Ramsibhai	Kalyanpur	9106043693
19	Chaki Imran	Kalyanpur	9909445420
20	Piyushbhai P Nakum (H)	Khambhaliya	9904966127
21	Harjug Vikrambhai	Khambhaliya	9879870406
22	Bharatbhai S Kanjariya (H)	Khambhaliya	9712215225
23	Nakum Arvind Muljibhai	Khambhaliya	9601460803
24	Jod Rana Ashwinbhai	Khambhaliya/Salaya	9067431810

**Annexure: 19**  
**Siren Tower list installed by Civil Defense**

**Dwarka Block (Okha)**























<b>Sr. No.</b>	<b>Location</b>	<b>Address</b>
1	Dwarka Railway Station-Not Install	Dwarka City
2	Okha Railway Station-Not Install	Okha City
3	Fire station Dwarka	Dwarka City
4	Pri.School Dwarka, Nr.TV station	Dwarka City
5	Gram Panchayat Vasai	Vasai
6	Bet Nagar Panchayat Office	Beyt
7	Okha S.T. Depot	Okha City
8	Arambhada Gram Panchayat	Vill-Arambhada,Ta-Dwarka
9	Suraj Karadi Municipality Building	Surajkaradi-Dwarka
10	Mithapur Township High school	Mithapur-Dwarka
11	Shivrajpur Panchayat Office	Shivrajpur-Dwarka
12	Varvada Gram Panchayat Building	Vill-Varvada, Ta-Dwarka
13	Mojap Gram Panchayat Building	Vill-Mojap, Ta-Dwarka
14	Bhimrana Gram Panchayat Office	Bhimrana-Ta-Dwarka
15	Suraj Karadi Health Centre-Eye Hospital	Suraj Karadi
16	Rupen Port Primary school	Rupen, Dwarka
17	Bet Jetty	Okha
18	Guest House,PWD,Okha	Okha
19	Taluka School-3, Dwarka, Temple Road	Dwarka City
20	Civil Defence Unit Okha	Okha

**Khambhaliya Block**

<b>Sr. No.</b>	<b>Location</b>	<b>Address</b>
21	Civil Defence unit Vadinar	Vadinar
22	Dhar Primary School Building	Vadinar
23	Singach Gram Panchayat Office	Singach
24	Zankhar Gram Panchayat Office	Zankhar
25	Bharana Primary School Building	Bharana
26	Kajurda Primary School	Kajudra
27	Nana Mandha Primary School	Nana Mandha
28	Mamlatdar office-Khambhaliya	Khambhaliya City
29	Taluka Panchayat Office	Khambhaliya City
30	Police Station-Milan Char Rasta	Khambhaliya City

## Annexure: 20

### Port Signal

PORT STORM WARNING SIGNAL NO.	DAY SIGNAL	NIGHT SIGNAL	MEANING
1			DISTANT CAUTIONARY (There is a region of squally weather in which a storm may be forming.)
2			DISTANT WARNING ( A storm has formed.)
3			LOCAL CAUTIONARY (The port is threatened by squally weather.)
4			LOCAL WARNING ( The port is threatened by a storm but it does not appear that the danger is as yet sufficiently great to justify extreme measures of precaution.)
5			DANGER (The port will experience severe weather from a cyclone expected to move keeping the port to the left of its track. )
6			DANGER ( The port will experience severe weather from a cyclone expected to move keeping the port to the right of its track. )
7			DANGER ( The port will experience severe weather from a cyclone expected to move over or close to the port. )
8			GREAT DANGER ( The port will experience severe weather from a severe cyclone expected to move keeping the port to the left of its track. )
9			GREAT DANGER ( The port will experience severe weather from a severe cyclone expected to move keeping the port to the right of its track. )
10			GREAT DANGER ( The port will experience severe weather from a severe cyclone expected to move over or close to the port. )
11			FAILURE OF COMMUNICATIONS ( Communications with the Meteorological Warning center have broken down and the local officer considers that there is danger of bad weather. )

## List of Abbreviations

APMC	Agricultural Produce Market Committee
AE	Assistant Engineer
AH	Animal Husbandry
ATI	Administrative Training Institute
ATS	Anti Terrorist Squad
ATVT	Apno Taluko Vibrant Taluko
BPL	Below Poverty Line
BRC	Block Resource Centre
CBO	Community Based Organization
CDHO	Chief District Health Officer
CDPO	Child Development Project Officer
CHC	Community Health Center
CRC	Community Resource Centre
CRF	Calamity Relief Fund
CSO	Civil Society Organization
DCMG	District Crisis Management Group
DDMA	District Disaster Management Authority
DDMP	District Disaster Management Plan
DDO	District Development Officer
DEOC	District Emergency Operation Centre
DGVCL	Dakshin Gujarat Vij Company Limited
DISH	Directorate of Industrial Safety and Health
DM	Disaster Management
DPO	District Project Officer
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSO	District Sports Officer
DSP	Deputy Superintendent of Police
Dy. Eng.	Deputy Engineer
Dy SP	Deputy Superintendent of Police
EMRI	Emergency Management & Research Institute
ESR	Elevated Surface Reservoir
EWS	Early Warning System
Ex. Eng.	Executive Engineers
FCI	Food Corporation of India
FPS	Fair Price Shop
FWP	Food for Work Program
GDCR	General Development Control Regulation
GEB	Gujarat Electricity Board
GIDM	Gujarat Institute of Disaster Management
GLR	Ground Level Reservoir
GMB	Gujarat Maritime Board
GoI	Government of India
GPs	Gram Pranchayats
GSDMA	Gujarat State Disaster Management Authority
GWSSB	Gujarat Water Supply and Sewerage Board
HFA	Hyogo Framework for Action
HHs	Households
HPC	High Powered Committee

HQ	Head Quarter
HRVC	Hazard, Risk, Vulnerability and Capacity
IAY	Indira Aawas Yojana
IMA	Indian Medical Association
ICS	Incident Commander
ICS	Incident Command System
IDNDR	International Decade for Natural Disaster Reduction
IEC	Information Education Communication
IMD	Indian Meteorological Department
ISDR	International Strategy for Disaster Reduction
ISR	Institute for Seismic Research
ITI	Industrial Training Institute
IWMP	Integrated Watershed Management Program
LCMG	Local Crisis Management Group
LO	Liaison Officer
MAH	Major Accident Hazard
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MHA	Ministry of Home Affairs
MLA	Member of Legislative Assembly
Mm	Mili Meter
MP	Member of Parliament
NAPCC	National Action Plan on Climate Change
NCC	National Cadets Corps
NCCF	National Calamity Contingency Fund
NDM	National Disaster Management
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NDRF	National Disaster Response Force
NEC	National Executive Committee
NFSM	National Food Security Mission
NGO	Non Government Organization
NIDM	National Institute of Disaster Management
NRDWP	National Rural Drinking Water Program
NRHM	National Rural Health Mission
NSS	National Service Scheme
NYK	National Yuva Kendra
PCPIR	Petroleum Chemical and Petrochemical Special Investment Region
PDS	Public Distribution System
PHC	Primary Health Center
PI	Police Inspector
PMGY	Pradhan Mantri Gramodyan Yojna
PRIs	Panchayati Raj Institutions
R & R	Recovery & Reconstruction
R&B	Roads & Buildings
RTO	Regional Transport Office
SC	Scheduled Caste
SDM	Sub District Magistrate
SDMA	State Disaster Management Authority
SDRF	State Disaster Response Fund

SDRN	State Disaster Response Network
SE	Superintending Engineer
SEOC	State Emergency Operation Centre
SFO	Sub Focal Officer
SEZ	Special Economic Zone
SHGs	Self Help Groups
SMC	School Management Committee
SMS	Short Message Service
SOP	Standard Operating Procedure
SRPF	State Reserve Police Force
SRT	Special Response Team
SSA	Sarva Shiksha Abhiyan
ST	Scheduled Tribe
S& R	Search and Rescue
Supt. Eng.	Superintendent Engineer
SWO	Social Welfare Officer
TDMA	Taluka Disaster Management Authority
TDMC	Taluka Disaster Management Committee
TDMP	Taluka Disaster Management Plan
TDO	Taluka Development Officer
TEOC	Taluka Emergency Operation Centre
THO	Taluka Health Officer
TNA	Training Needs Assessment
TSC	Total Sanitation Campaign
TSO	Taluka Supply Officer
ULB	Urban Local Body
UNDP	United Nations Development Programme
UNFCC	United Nations Framework Convention on Climate Change
VDMP	Village Disaster Management Plan
VIPs	Very Important Persons
VVIPs	Very Very Important Persons
WASMO	Water and Sanitation Management Organization