



# **Disaster Management Plan (Part-1)**

## **2017-18**



Smt. P. Bharathi, I.A.S.  
Collector & District Magistrate

## **District Emergency Operation Centre**

Collector Office - Vadodara



**GSDMA**

Phone.: 0265 - 2427592, Toll Free: 0265 - 1077, Fax: 0265 - 2431500 / 2431093

E-mail ID: [disast-vad@gujarat.gov.in](mailto:disast-vad@gujarat.gov.in)  
<ftp://10.215.3.168/>

# FOREWORD

Vadodara District is prone to multiple hazards such as Floods, Cyclone, Heavy Rain, Lightening, Earthquake and Fires and have experienced & witnessed too on several occasions in the past. Vadodara district have experienced the effects of cyclone in the year 1998, effects of devastating earthquake of year 2001 & faced the impact of major floods once in every three year period. In the past, the district was severely affected by the floods of 1978, 1994, 2005, 2006, 2013 and 2014. Moreover, the district comes under the golden corridor and has several chemical industries / industrial areas in the district hence there is a need to have such disaster management plan which may be useful to comply with multi hazard approach to dealt with different disasters. Past experiences has shown that the pre-planned and practiced procedures, for handling an emergency can considerably reduce the loss of life and minimize the damage too.

The Disaster Management Plan Part-1 for Vadodara District has been prepared in May, 2017. The Role of different agencies / departments and Individuals in the event of emergency is specified in this part. Needless to say that the success of disaster management depends upon the **strong co-ordination, swift response and effective performance** of the duties assigned to each and every agency / department / individual.

I admire the efforts of Ms. Shlesha Mistry (DPO - DM), Mr. J N Shah (I/c Mamlatdar-DM), Mr. Pradeepsinh Gohil (Dy. Mamlatdar DM), Mr. Chirag Vaishnav (Asst. / Clerk - DM) and other departments and agencies who have given their valuable inputs in developing and updating the Part-1 of Disaster Management Plan - 2017-18. I hope this document would really be helpful in swift response and healthy coordination thus protecting life and properties as well as sustainable development in future.

**SMT. P. BHARATHI (IAS)**  
**COLLECTOR & DISTRICT MAGISTRATE**  
**VADODARA**

## **PREFACE**

As we all are aware that Vadodara district is prone to multiple disasters like Earthquake, Flood, Cyclone, Road Accidents, Chemical hazards and other disasters occurring in the area.

It is very much necessary to be prepared and respond in a timely manner to a certain kind of disaster that occurs; it may be our basic duty to save human life and other living things as well as to protect environment and assets.

Keeping the above view of preparedness and response to the community in mind, the Disaster Management Plan - 2017-18 is prepared for the district and Part-1 of the DM Plan for ready reference is produced before the Authority for approval; and to all the district heads to implement the same.

The Disaster Management Plan Part-1 is prepared with due care and have tried to incorporate the required details of Incident Response System in it. In spite of these details, if there are any suggestions or additions, then it may be conveyed to the under signed.

It may be noted hereby that the due care efforts have been made to prepare this Disaster Management Plan part-1 by Ms. Shlesha Mistry (DPO - DM), Mr. J N Shah (I/c Mamlatdar-DM), Mr. Pradeepsinh Gohil (Dy. Mamlatdar DM) and Mr. Chirag Vaishnav (Asst. / Clerk - DM).

**M. J. DAVE (GAS)**  
**RESIDENT ADDITIONAL COLLECTOR**  
**VADODARA**

# INDEX

Chapter	Description	Page No.
1	Introduction	2
2	Incident Response System	3
3	Disaster Specific Action Plan	13
	➤ Flood	13
	➤ Industrial / Chemical Disaster	16
	➤ Earthquake	18
	➤ Cyclone	20
	➤ Biological Disaster	20
	➤ Oil Spills and Mine Disasters	22
	➤ Tsunami	22
	➤ Heat Wave Action Plan	22

# **CHAPTER - 1 - INTRODUCTION**

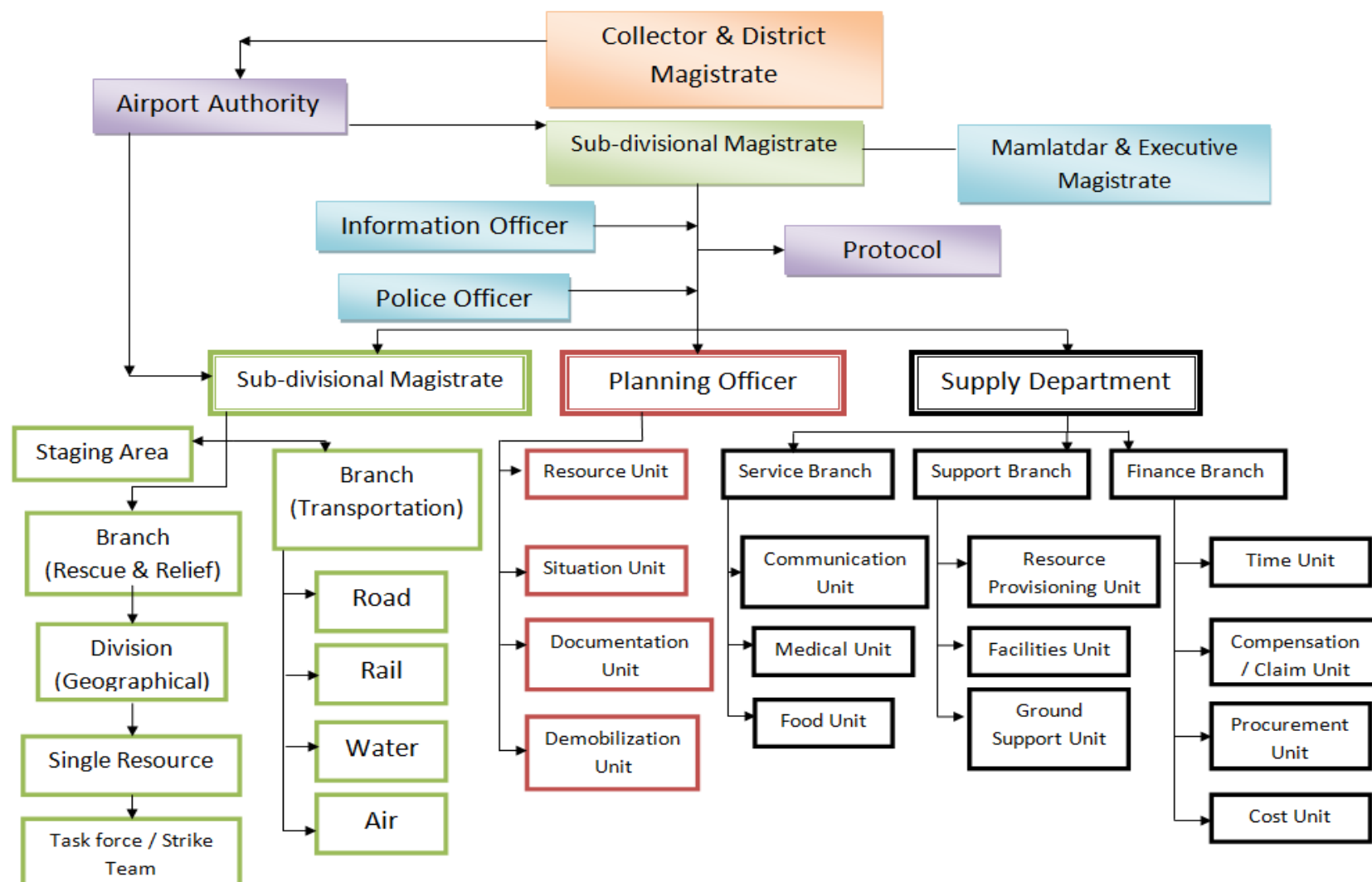
Vadodara District is prone to multiple hazards such as Floods, Cyclone, Heavy Rain, Lightening, Earthquake and Fires and have experienced & witnessed too on several occasions in the past. Vadodara district have experienced the effects of cyclone in the year 1998, effects of devastating earthquake of year 2001 & faced the impact of major floods once in every three year period. In the past, the district was severely affected by the floods of 1978, 1994, 2005, 2006, 2013 and 2014. Moreover, the district comes under the golden corridor and has several chemical industries / industrial areas in the district hence there is a need to have such disaster management plan which may be useful to comply with multi hazard approach to deal with different disasters.

Recognizing the fact that most tasks and actions before and following a disaster are common at the district level, the Vadodara district administration has used a multi-disaster approach (all disasters covered by one plan) while developing disaster management plan Part-1 for the district. This is simply a Plan consisting details regarding Incident Response System and Disaster Specific Action Plans along with the response structure to deal with such disasters and reduce its impact on society.

## **Potential Hazards with respect to Vadodara District:**

- Cyclone, Flood, Earthquake, Accidents (Road, Rail, Air, Fire), Industrial / Chemical Disasters, Drought, Epidemics.

### District level Response Structure (IRS)



# **CHAPTER - 2 - INCIDENT RESPONSE SYSTEM**

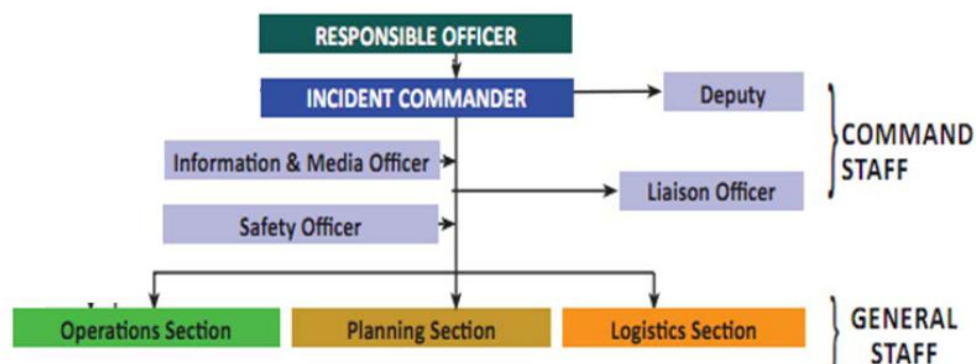
## **INCIDENT RESPONSE SYSTEM**

### **1. IRS Organizational Structure: IRT Framework**

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

#### **A. IRT Framework - District Level**

In general, the selection of Section Chiefs is made according to the suitability and capability of the officer. The selection of the Operations Section Chief, however, depends on the nature of the disaster. In case of flood and earthquakes reaching the affected area, rescuing the affected people and providing relief to them is the main task of the responders. People have to leave their home in a hurry and they are not able to take away their valuables. These abandoned houses become vulnerable. The relief materials while being transported also become prone to loot. In such cases, Police and the Armed Forces are the best suited to handle and lead the operations. In case of fire, it will be the District Fire Officer who will be appropriate officer to handle the situation. In case of health related disaster, it would be the District Chief Medical Officer and so on.



## **B. Major Responsibilities and Duties**

### **INCIDENT COMMAND**

The Incident Command's responsibility is the overall management of the incident. It is comprised of following positions:

#### **Incident Commander**

The Incident Commander has a wide variety of responsibilities.

- Assess the situation and/or obtain a briefing from the prior Incident Commander.
- Determine incident objectives and strategy.
- Establish the immediate priorities.
- Establish an Incident Command Post.
- Establish an appropriate organization.
- Ensure planning meetings are scheduled as required.
- Approve and authorize the implementation of an Incident Action Plan.
- Ensure that adequate safety measures are in place.
- Coordinate activity for all Command and General Staff
- Coordinate with key people and officials.
- Approve requests for additional resources or for the release of resources.
- Keep agency administrator informed of incident status.
- Approve the use of students, volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Order the demobilization of the incident when appropriate.

#### **Information and Media Officer**

The Information and Media Officer is responsible for developing and releasing information about the incident to the news media, to incident personnel, and to other



appropriate agencies and organizations. Reasons for the Incident Commander to designate an Information and Media Officer:

- An obvious high visibility or sensitive incident.
- Reduces the risk of multiple sources releasing information.
- Need to alert, warn or instruct the public.
- Media demands for information may obstruct IC effectiveness.
- Media capabilities to acquire their own information are increasing.

### **Liaison Officer**

The Liaison Officer is the point of contact to assist the first responders, cooperating agencies and line departments. It may be designated depending on the number of agencies involved and the spread of affected area. Reasons to establish the Liaison Officer position at an incident:

- When several agencies send, or plan to send, Agency Representatives to an incident in support of their resources.
- When the IC can no longer provide the time for individual coordination with each Agency Representative.
- When it appears that two or more jurisdictions may become involved in the incident and the incident will require on-site liaison.

### **Safety Officer**

The Safety Officer's function is to develop and recommend measures for ensuring safety of responders and to assess or anticipate hazardous and unsafe situations and review it regularly. The Safety Officer will correct unsafe situations by working through the chain of command, however, the Safety Officer may exercise emergency authority to directly stop unsafe acts if personnel are in imminent life-threatening danger.

## **GENERAL STAFF**

Each one has a vital role for efficient response; however, depending upon the nature and requirements of the incident, they may be or not be activated. Each of these functional areas can also be expanded as needed into additional organizational units with further delegation of authority.

### **Operations Section**

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

### **Planning Section**

The Planning Section deals with all matters relating to the planning of the incident response. Headed by the Planning Section Chief, this section helps the Incident Commander in determining the objectives and strategies for the response. It works out the requirements for resources, maintains up-to-date information about the ongoing response and prepares IAP. For the closing phase of the operations, the Planning Section also prepares the Incident Demobilization Plan.

### **Logistics Section**

The Logistics Section deals with matters relating to procurement of resources and establishment of facilities for the incident response. This section is headed by the Logistics Section Chief and is an important component of the IRS organization for providing back end services and other important logistic support like communications, food, medical supplies, shelter and other facilities to the affected communities and responders as well. There is a Finance Branch attached to this Section in order to ensure that the procurements, if any, may be done quickly and in accordance with the financial rules.

## **2. Triggering Mechanism for Deployment of IRS**

Some of the natural hazards have a well established early warning system. On receipt of information regarding the impending disaster, the Emergency Operations Center (EOC) will inform the Responsible Officer (RO), who in turn will activate the required IRT and mobilize resources. At times the information about an incident may be received only on its occurrence without any warning – in such cases the local IRT will respond and inform the higher authority and if required seek reinforcement and guidance.

## **3. Activation of IRS in the District**

Before taking up response activities, the DM (RO/IC as per IRS) will hold a briefing meeting and take stock of the situation, availability and mobilization of resources for listing out the various tasks and to provide proper briefing to the responders. The IAP will be drawn and put into action based on the situation assessment. The DM/RO will nominate Operations Section Chief (OSC) based on “incident type” and rest will follow as per IRS/IRT and other procedural guidelines.

On activation of IRS, all line departments/organizations/individuals shall follow the directions of the Incident Commander as condition demands. He can divert all mechanisms and resources in the district to fight against a scenario leading to disaster/calamity in the district. All Section Chiefs (Operations, Planning and Logistics) are vested with commanding authority and logistic assistance to deliver the concerned responsibility.

## **4. Incident Action Plan**

It is important that activities indicated in the IAP are connected with the functional responsibility defined in IRT and also according to other descriptions as per DDMP. For instance, proper links shall be established between IRT and Emergency Support Functions (ESF) for IAP effectiveness. Three basic elements of IAP are: Task /Function /Activity, Department/Officer Responsible, and Time. Besides that, common forms used for performing IRS and IAP as given in IRS National Guidelines may be utilized.

## 5. Standard Operating Procedures

Standard Operating Procedures (SOPs) are a common method of implementing instructions. SOPs provide response protocols for carrying out specific responsibilities. They describe the “who, what, when and how” during a disaster, helping responders to perform complex tasks with high level of coordination. SOPs should be prepare and annexed to the DDMP for all relevant hazards of the district, such as earthquake, flood, cyclone, landslide, tsunami, man-made disasters, etc. It should be based on pre-defined IRTs and ESFs and communicated to every stakeholder in advance.

# FUNCTIONAL RESPONSIBILITIES

RESPONSIBLE OFFICER =	PRIMARILY RESPONSIBLE FOR EFFECTIVE RESPONSE
COMMAND =	OVERALL INCHARGE OF THE INCIDENT RESPONSE TEAM AND ITS EFFECTIVE FUNCTIONING
OPERATIONS =	DIRECT AND SUPERVISE ALL TACTICAL ACTIONS
PLANNING =	COLLECT/ANALYZE DATA, WORKOUT NEED OF REQUIRED RESOURCES AND PREPARE ACTION PLAN
LOGISTICS & FINANCE =	PROVIDE LOGISTICS SUPPORT, ROCUREMENT AND COST ACCOUNTING

### **LIST OF IRS POSITIONS AND SUITABLE OFFICERS IN THE DISTRICT**

IRS Position	Suitable officers
<b>INCIDENT COMMANDER</b>	ADM / ADC or any other equivalent officer or as deemed by RO
Deputy IC	SDM or any other equivalent officer or as deemed by IC
Information & Media Officer	Control Room Officer / Emergency Officer or any other suitable position at District level as deemed by IC
Liaison Officer	Dy. Collector (Protocol) / District Public Relations Officer or any other suitable position at District level as deemed by IC
Safety officer	Fire Officer / Dy. SP (Police) / Medical Officer / Factory Inspector or any other suitable position at District level as deemed by IC
<b>OPERATIONS SECTION CHIEF</b>	Dy. Superintendent of Police / ADM / Dy. Collector or any other suitable position at District level as deemed by IC / RO
<b>PLANNING SECTION CHIEF</b>	ADM (Sadar) / Add. SP / Dy. SP / Sr. Deputy Collector / Joint Collector / District Planning Officer / Fire Officer / Medical Officer / NDRF representative (If available) or any other suitable position at District level as deemed by IC / RO
<b>LOGISTICS SECTION CHIEF</b>	Senior Dy. Collector or any other suitable position at District level deemed by IC / RO

**Task Force, Leader and Supporting department details in response**  
**(INCIDENT RESPONSE SYSTEM)**

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

<b>No.</b>	<b>Task Force</b>	<b>Taskforce Leader</b>	<b>Supporting members / Organizations/Departments</b>	<b>Section / Unit</b>
1.	Planning and Coordination	Collector	Commissioner VMSS, DDO, DSP, RAC, and Mamlatdar - DM	Planning
2.	Administration & Protocol	Resident Additional Collector	DDO, DSP, Commissioner VMSS, SDM - City and Mamlatdar - City	Finance & Admin.
3	Damage Assessment/Survey	SDM - City	DIC, Dy. DDO, Ex. Engr., R&B, DAO, Fisheries	Planning
4	Warning	Supt. Engr. -VIC- For Floods & Cyclones Jt./Dy. Dir.-ISH - For Chemical Disaster CP / DSP - For Terrorist Attack	RAC, Factory Inspector ,Mamlatdar - DM , Various Departmental Control Room, Member Secretary -OCR control room ,District Information Officer (DIO),Police Dept., Irrigation Dept.	Operation
5	Communications	Resident Additional Collector	Factory Inspector, Mamlatdar - DM , Various Departmental Control Room, OCR control room ,Dy. Mamlatdars, Mobile Operators, TV, Radio, Police, Forests	Logistics
6	Media	District Information Officer	Information Department, Print, Media, TV, Journalists, NGOs	Public Information
7	Logistics	DDO	RTO, DSO, FPS, Private & Public sector, Municipal water supply board, Mamlatdar, Dist. Supply Mamlatdar	Logistics
8	Law & Order	CP - City	DCP ,Dy. SP, SRP ,Home Guards	Law &

		DSP - District	Commandant, NGOs, Para-military and Armed Forces	Order
9	Search & Rescue	Add. Collector & Dy. Controller- Civil Defence -	DCP , Dy. SP ,CFO - VMSS , MAG members from OCR , Mamlatdar, TDO, Police, Executive Engr., , RTO, State Transport, Health Dept., SRP , SDRF , NDRF , Army , Air Force.	Operation
10	Public Works	Supt. Engr. R&B (State / City) SE R&B (Panchayat) SE Irrigation	Ex. Engr - R&B (S/C/P) , Ex. Engr Irrigation (Circle/Panchayat), DFO ,NGOs, Water Supply Board, Municipalities, Home Guards, Police	Operation
11	Shelter	Dist. Pri. Edu. Officer Dist. Edu. Officer	Administrative officer- Edu. - VMSS ,Education Department , School Principal, Teachers, Health, PHC, State Transport, Water Supply, RTO, Mamlatdar, TDO , NGO , CBO.	Operation
12	Water Supply	Ex. Engr. GWSSB Ex. Engr. Water Works VMSS	Dy. Ex. Engr., Mamlatdar, TDO, Health Dept, Dy. Engr. VMSS , Talati	Operation
13	Food & Relief Supplies	Dist. Supply Officer	RTO, GSRTC, Municipality, DRDA, Police, Home guard, FPS, PDS, Mamlatdar, NGO,CBO	Logistics
14	Power	Supt. Engr. GEB	Ex. Engr., Dy. Engr. Technical, GEB, Transport	Operation
15	Public Health & sanitation	RDD / CDHO	CDMO -JHH , Medical Supt. SSG Hospital, Medical Officer -VMSS PHCs, CHCS, Municipality, Red Cross, Fire Brigade VMSS, Civil Defense, R&B, NGOs, Doctors, TDO, Mamlatdar	Operation
16	Animal Health & Welfare	Dy. Director Animal Husbandry	Veterinary Inspector, NGOs	Operations

# **CHAPTER - 5 - DISASTER SPECIFIC ACTION PLAN**

## **(1)Floods Action Plan**

As per the risk and vulnerability analysis of the Vadodara district the district has major risk of floods. The District has two major rivers viz. the river Mahi that flows on Northwestern boundary of the district and the river Narmada on the Southeastern boundary of the district; there are other rivers like Vishwamitry, Dhadhar, Suriya and many other seasonal streams that flows through the district; more over to these, major *water bodies* like Ajwa Reservoir and Dev dam are also the possible sites from where the risk of floods is possible.

### **Early Warning & Communication:**

#### **GENERAL TERMINOLOGY USED IN WEATHER BULLETINS**

##### **(A) Intensity of Rainfall Terminology Used**

1. 0.1.mm to 2.4 mm (24 hrs) ----- Very light rain
2. 2.5 mm to 7.5 mm ----- Light rain.
3. 7.6 mm to 34.9 mm ----- Light to Moderate rain
4. 35.0 mm to 64.9 mm ----- Moderate rain
5. 65.0 mm to 124.9mm ----- Heavy rain
6. Exceeding 125 mm. ----- Very Heavy rain.

##### **(B) Emergency Situation**

1. When water level is rising above the danger of H.F.L
2. When intensity of rainfall is above 65 mm/hr
3. When breaches are anticipated and which may cause disaster
4. When water levels are rising abruptly and which may cause disaster

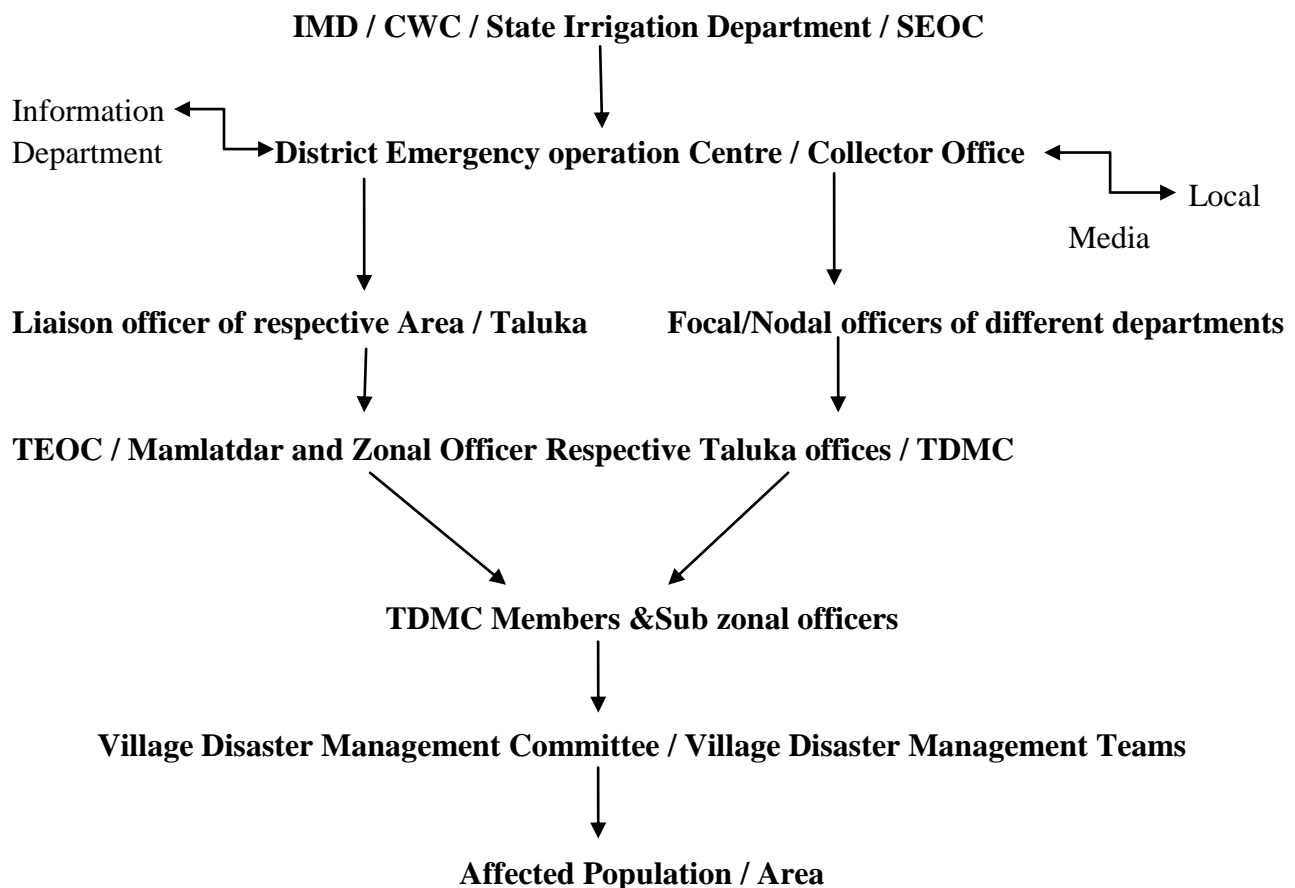
##### **(C) Evacuation**

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



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

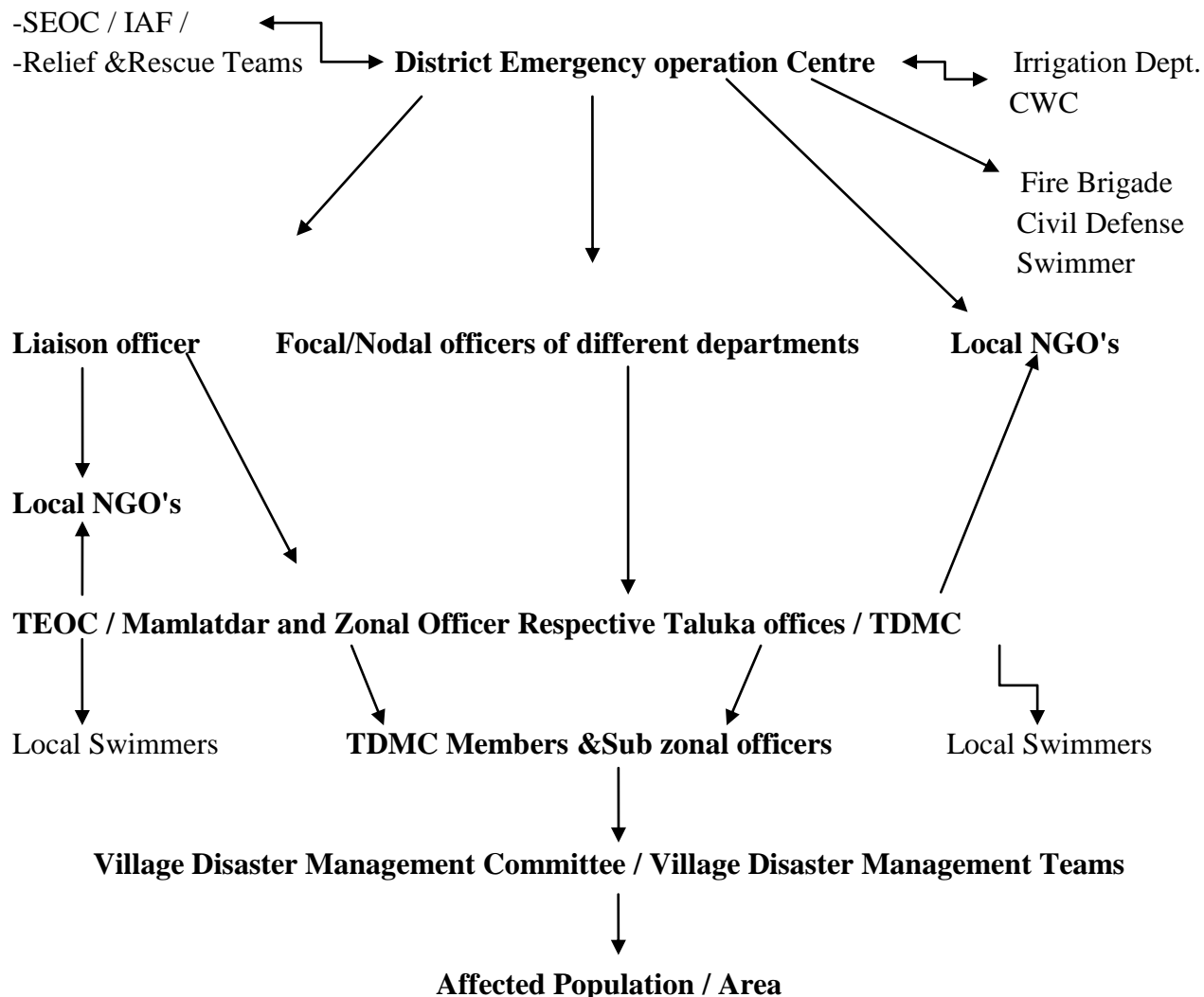
**Early Warning & Communication Chart:**



**Response:**

- ❖ As disaster declares the response managed and monitored through DEOC,
- ❖ All the concerned DDMC members along with the Liaison officers and response group members are intimated to respond to the situation as described in the below chart.
- ❖ As per the impact of disaster it will manage through DEOC / TEOC and if needed support of State or Central departments will be requested to deal with the situation.
- ❖ DM Plan of Irrigation Department, Flood memorandum, TDMP, CDMP and other DM Plan will be referred as an when it is required to respond in case of floods.
- ❖ The list of trained swimmers is incorporated with Annexures.
- ❖ Equipments for flood rescue like boats Life rings, Life buoys, Dewatering pumps etc. details are incorporated in Annexures.
- ❖ Database of SDRN and IDRN (Manually and Electronic) will be referred for flood response.

### **Response Chart:**



### **Temporary Shelter:**

- ❖ Temporary shelters are used during the effect of floods.
- ❖ In city area, ward wise primary schools, Secondary/Higher secondary schools, Community hall, Colleges etc. as temporary shelter for flood affected persons. Sasnadhikari is the focal person for temporary shelter for corporation area. Primary/Secondary/Higher secondary schools, Colleges, Community hall etc. of taluka and villages are used as temporary shelter and the focal officer for the same is DEO and DPEO.

## **(2) Industrial / Chemical Disaster Action Plan**

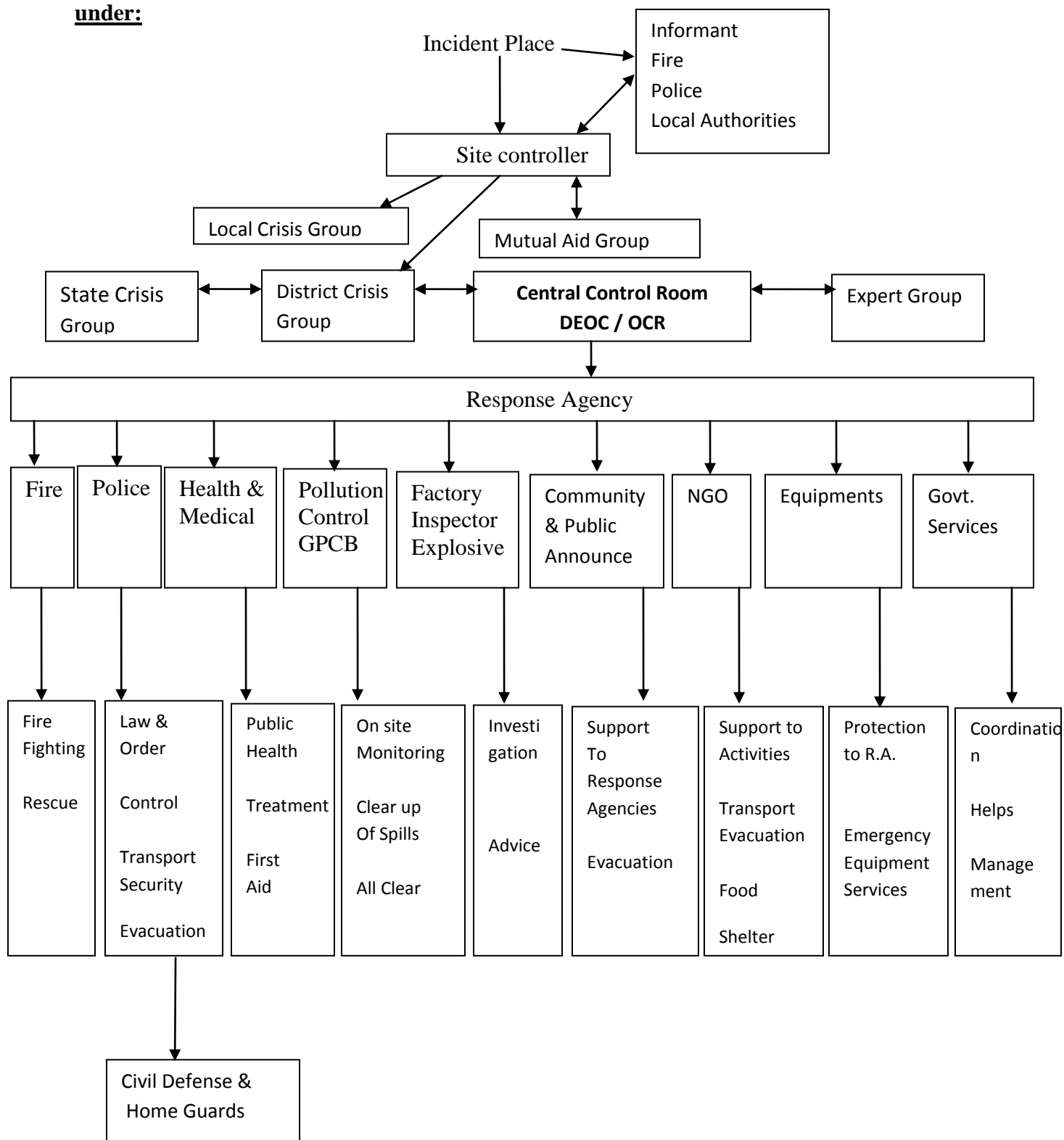
Off-site Control Room (OCR) is functioning to take care of Industrial accidents particularly of MAH units of **PCC (Petro Chemical Complex) and Nandesari GIDC Area** (Note : Total 39 MAH units out of which 30 are active MAH units in these area), **Padra Industrial Pocket** (Note : Total 16 MAH units out of which 15 are active MAH units in these area), **Savli Industrial Pocket** (Note : Total 12 MAH units out of which 10 are active MAH units in these area), **Waghodia Industrial Pocket** (Note : Total 4 MAH units and all 4 are active MAH units in these area), **Karjan Industrial Pocket** (Note : Total 5 MAH units and all 5 are active MAH units in these area). **Out of total 76 MAH units in the district 64 are active ones and 12 units are closed.** OCR located at Material Bhavan, Reliance Industries Ltd., Petrochemicals, and Vadodara. One of its wireless set is based at DEOC, and both DEOC and OCR closely work together at the time of Emergencies.

Under the chairmanship of DM & Collector the response will be managed and monitored from DEOC and Off site control room, department wise response mechanism and response structure lied with Offsite emergency plan prepared by Director Industrial Health and Safety and will be referred the same at the time of chemical disasters which includes industrial fire, oil spill etc..

### **Response Activities:**

- ❖ As Chemical disaster declares the response will be managed and monitored through DEOC / OCR
- ❖ All concerned DCG members with Liaison officers and response group members are intimated to respond to the situation as described in the below chart.
- ❖ As per the impact of disaster it will manage through DEOC / OCR / TEOC and if needed support of State or Central departments will be requested to deal with the situation.
- ❖ Offsite Emergency Plan, TDMP, CDMP and other Industries DM Plan will be referred as and when required to respond in case of chemical disaster.
- ❖ The list of Expert persons, indicative list of medicines and equipments, trained first responders for Search; Rescue & Medicare etc. are available with offsite emergency plan.
- ❖ Database of SDRN and IDRN (Manually and Electronic) will be referred if needed in response.

**Action Chart in case of Chemical / Industrial Fire / Oil Spill types of Emergencies is as under:**



### **(3) Earth quake Action Plan**

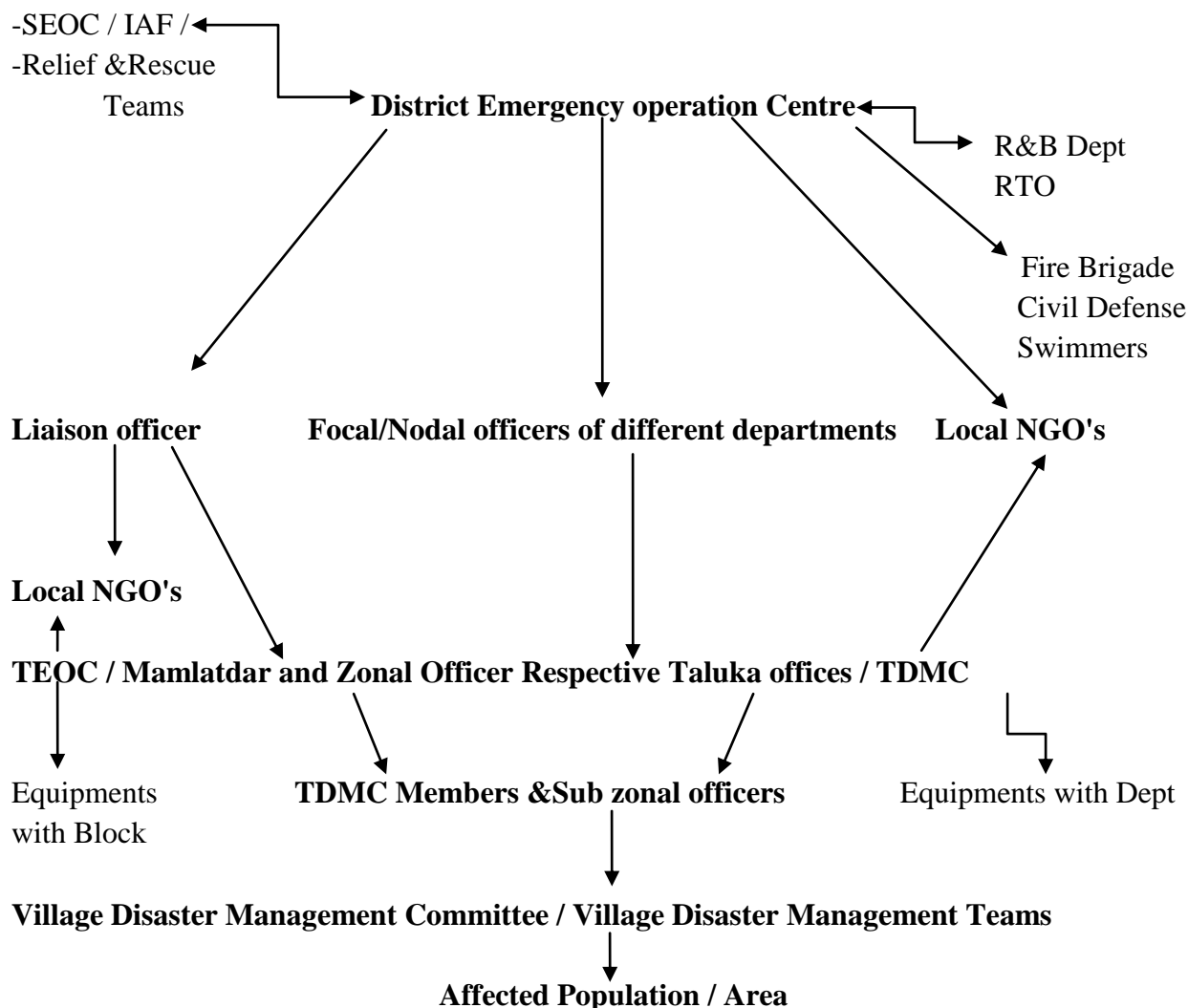
Vadodara falls under zone-III according to the zoning map, that's why it can be possible that an earthquake between magnitudes of 4-5 can strike Vadodara. But as there is fault line going through the District, earthquake of magnitude up to 7 can also strike. And very high possibility of failure of various infrastructures and very high chances of risk of loss of live properties too in certain highly populated areas of the district.

The response mechanism would be the same as describes with the general response mechanism chapter, here the focus will be on well-populated areas in particular city areas and the District disaster response group.

- ❖ As disaster declares the response managed and monitored through DEOC.
- ❖ All concerned DDMC members with Liaison officers and response group members are intimated to respond the situation as described in the below chart.
- ❖ As per the impact of disaster it will manage through DEOC / TEOC and if needed support of State or Central departments will be requested to deal with the situation.
- ❖ Departmental DM Plan of all concerned departments, TDMP, CDMP and other DM Plan will be referred as an when it is required to respond in case of Earth quake.
- ❖ Database of SDRN and IDRN (Manually and Electronic) will be referred for flood response.

<b>ZONES</b>	<b>MAGNITUDE</b>
<b>Zone - V</b>	<b>Greater than 7</b>
<b>Zone - IV</b>	<b>Greater than 5, Less than or equal to 7</b>
<b>Zone - III</b>	<b>Greater than 4, Less than or equal to 5</b>
<b>Zone - II</b>	<b>Greater than 3, Less than or equal to 4</b>
<b>Zone - I</b>	<b>Less than 3</b>

### **Response Chart:**



### **Temporary Shelter:**

- ❖ For temporary shifting of affected persons, temporary shelter is used during the effect of earth quake.
- ❖ In city area, in case of devastating earth quake the temporary shelters available with DEOC (Tarpaulin sheet with iron blades) can be used, tents with forest and other department and caterers can also be used as temporary shelter
- ❖ None damaged / safe government establishments can also be used as per the directions of chairperson.

## **(4) Cyclone Action Plan**

Vadodara District has no ocean but the district is nearby the Bay of Cambay and it is surrounded with two major rivers the river Mahi flows on Northwestern boundary of the district and river Narmada on the Southeastern boundary of the district; there are other rivers like Vishwamitry, Dhadhar and many other seasonal streams flows through the district, the villages and areas near these rivers can be affected at the time of cyclone.

All the talukas of the district with major wards of the city are the possible site which can be affected during the heavy wind flow. Majorly the flood action plan will be referred at the time of cyclone.

## **(5) Biological Disaster**

Majorly the people of urban area residing in Vadodara district is affected by various types of Vector born decease and Water born decease in particular during the monsoon season. Frequent epidemics, especially during monsoon are a common aspect for Vadodara district.

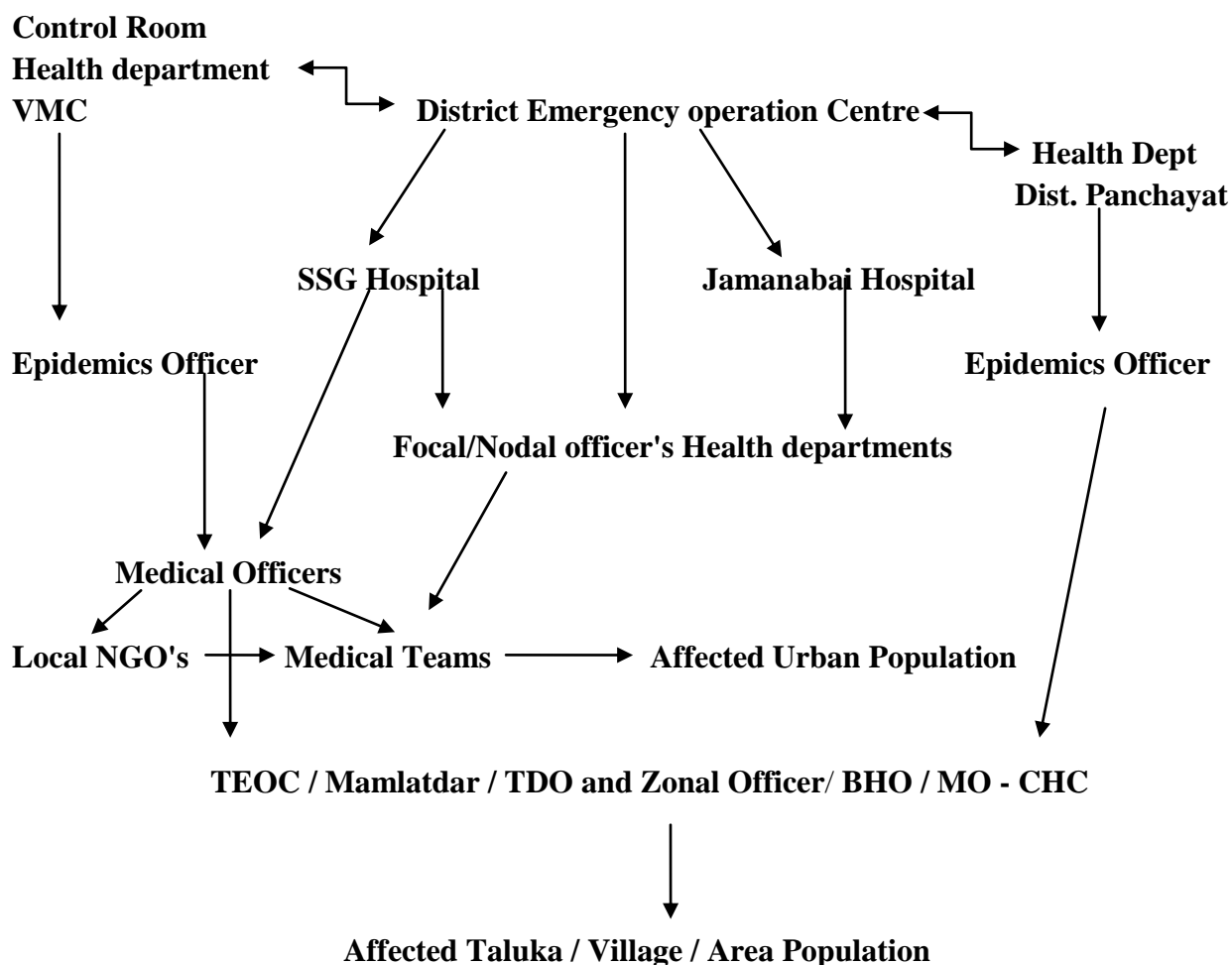
Vadodara district is endemic to various water-borne diseases such as Cholera, Leptospirosis and Malaria. Several relatively minor ailments such as Diarrhoea are more common during the monsoon. Most importantly, there is always a danger of epidemics breaking out after floods arising due to different factors – inundation of wells under contaminated sewage water, wading through such flooded water. There is contamination of groundwater as well as well-water in such circumstances. Well water can be contaminated directly when sewage water enters the well during inundation.

Variety of groundwater pollution problems have emerged in the past two decades in Vadodara district. Fluoride, Nitrate and pollution from industrial effluents have caused contamination of aquifers in different parts of the district. Fluoride is present in several minerals such as Apatite and Hornblende are found in rocks of Igneous origin which leads high amounts of fluoride content in groundwater , Increasing use of Nitrate-based fertilizers that are not fully consumed by plants result in leaching of excess Nitrates into aquifers. Further, human and animal faeces also contribute to rise of Nitrate content in groundwater.

## **Response:**

Health department in particular Health department - District panchayat, who will look after and respond such kind of disaster arising in panchayat areas, such as taluka level and village level, for urban pocket health division of Vadodara Municipal Corporation (VMC) will respond in such kind of disaster. Health department - District panchayat and VMC has their own set of epidemics team and task force to respond in such kind of disaster, for sampling of the water, grains, food sample etc done by Laboratory of Food & Drug, Near M.S.Uni., Vishvamitry Bridge, Vadodara.

## **Response Chart:**





## **(6)Oil Spills and Mine Disasters Action Plan :**

State level action plan / department specific action plan / Industries specific action plan will be referred at the time of the above stated Disasters. The response mechanism would be the same as describes with the general response mechanism chapter.

- ❖ As disaster declares the response managed and monitored through DEOC.
- ❖ All concerned DDMC members with Liaison officers and response group members are intimated to respond the situation.
- ❖ As per the impact of disaster it will manage through DEOC / TEOC and if needed support of State or Central departments will be requested to deal with the situation.
- ❖ Database of SDRN and IDRN (Manually and Electronic) will be referred for response.

## **(7)Tsunami Action Plan :**

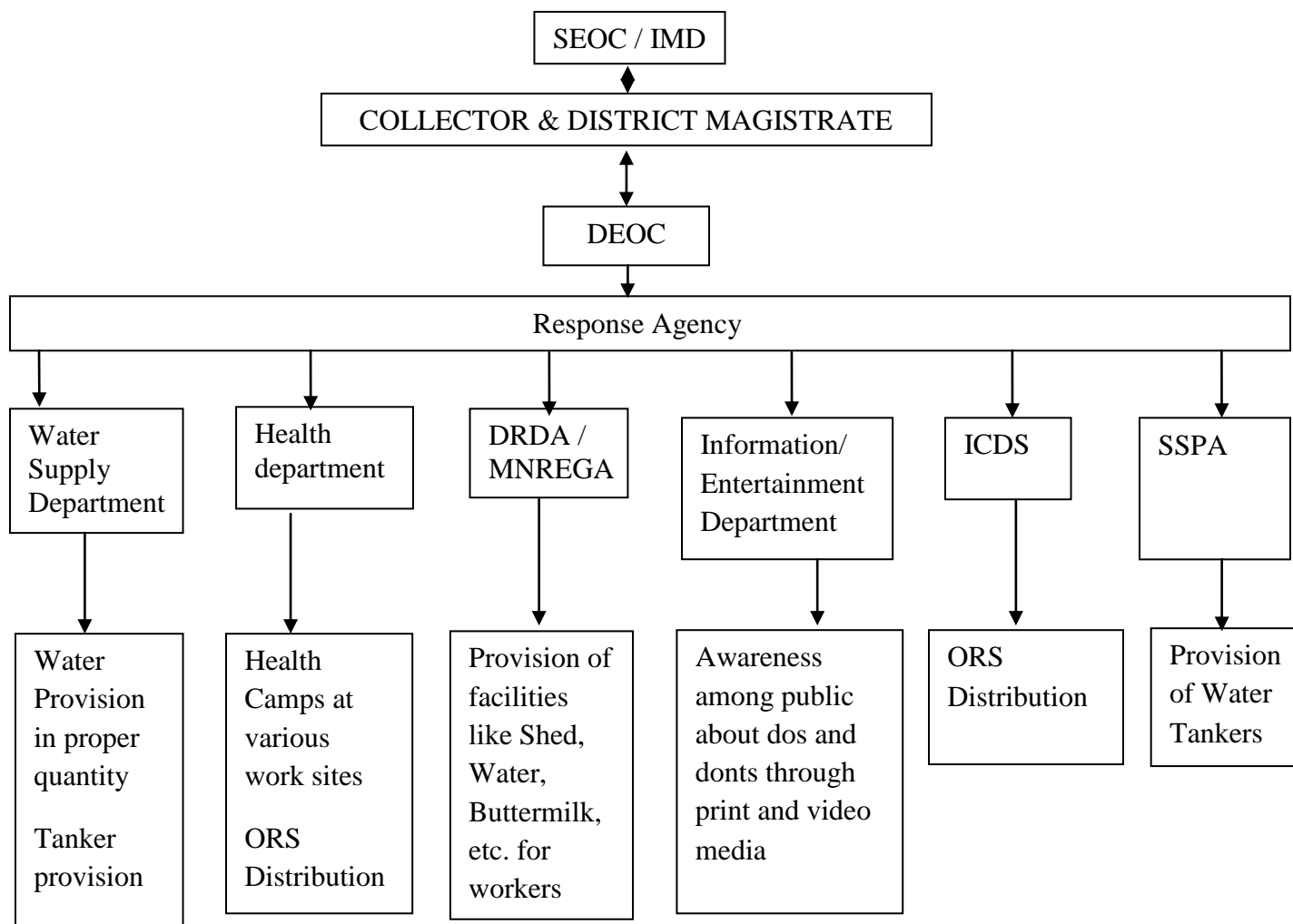
The possibility of the above stated disaster is very less with respect to Vadodara District, but if the effect of it is felt by the nearby district / state, will accordingly respond as per the State directions.

## **(8) Heat Wave Action Plan :**

Since two years due to global warming effect, Heat Waves have become hazard for the human life. Though it cannot be called Disaster because according to Disaster's definition it does not fit into the condition of harming infrastructure and precautionary measures and timely response are required to cope up with it. India Meteorological department has started issuing different alerts for high temperature which are as follows:

- Yellow Alert : 41.1 to 43.0 Degree Celsius
- Orange Alert : 43.1 to 44.9 Degree Celsius
- Red Alert : Greater or Equal to 45 Degree Celsius

Thus, according to these alerts Vadodara has already been issued orange alert in the year 2016. And keeping in mind the impact of heat wave on human life following roles and responsibilities has been given to various departments in order to reduce the impact of heat wave:



The above table represents the responsibilities of different Departments for various provisions that will help public reduce the impact on their health. In addition to that, DO's and DONT's for reducing the impact of Heat Wave, has been issued by Gujarat State Disaster Management Authority, Govt. of Gujarat which are as follows:

# ગરમીમાં લૂ લાગવા (હીટ વેવ) થી બચો

## આરોગ્યલક્ષી સુચનો

- \* હીટ વેવ દરમિયાન સુધી બહાર નીકળવાનું ટાળવું, આખું શરીર અને માથું ઢંકાઈ તે રીતે સફેદ સુતરાઉ ખુલતા કપડાં પહેરવા, ટોપી, ચશ્માં, છત્રીનો ઉપયોગ કરવો.
- \* નાના બાળકો, સગર્ભા માતાઓ, વૃદ્ધો તથા અશક્ત અને બિમાર વ્યક્તિઓએ તડકામાં વિશેષ કાળજી લેવી
- \* સીધા સૂર્ય પ્રકાશથી બચો
- \* ભીનાં કપડાંથી માથું ઢાંકી રાખો અવાર-નવાર ભીનાં કપડાંથી શરીર લૂછો વારંવાર ઠંડું પાણી પીવું
- \* લીંબુ શરબત, મોળી છાશ, તાડફળી અને નારીયેળનું પાણી, ખાંડમીઠાનું દ્રાવણ, ઓ.આર.એસ. વગેરે પુષ્કળ પ્રમાણમાં પીવા
- \* બાળકો માટે કેસુડાનાં ફુલ તથા લીમડાના પાનનો નાદવાના પાણીમાં ઉપયોગ કરવો
- \* ગરમીમાં બહારથી ઘરે આવ્યા બાદ શરીરનું તાપમાન નીચું આવે ત્યારબાદ જ નહાવું, શક્ય હોય તો ઘરના બારી અને બારણા સાથે ખસતી ટટ્ટી પાણી છાંટી બાંધી રાખવી
- \* દિવસ દરમિયાન ઝાડ નીચે, ઠંડક અને છાંયામાં રહેવું
- \* બજારમાં મળતો ખુલ્લો, વાસી ખોરાક ખાવો નહીં, બજારમાં મળતા બરફનો ઉપયોગ ટાળવો, લગ્ન પ્રસંગે દૂધ, માવાની આઈટમ ખાવી નહીં
- \* ઉપવાસ કરવાનું ટાળવું, સવારનું ભોજન ૧૨:૦૦ વાગ્યા સુધીમાં લઈ લેવું
- \* ચા-કોફી અને દારૂના સેવનથી લૂ લાગવાની શક્યતા વધે છે, તેથી તેનું સેવન ટાળવું
- \* હીટ વેવની ચેતવણીના દિવસોમાં બપોરે બે વગ્યાથી ચાર વગ્યા સુધી બહાર નીકળવાનું ટાળવું

## લૂ લાગવા (હીટ વેવ) ના લક્ષણો

- \* માથું દુઃખવું, પગની પીડીઓમાં દુઃખાવો થવો
- \* શરીરનું તાપમાન વધી જવું
- \* ખૂબ તરસ લાગવી
- \* શરીરમાંથી પાણી ઓછું થઈ જવું
- \* ઉલ્ટી થવી, ઉબકા આવવા, ચક્રર આવવા, આંખે અંધારા આવવા
- \* બેભાન થઈ જવું
- \* સુધ-બુધ ગુમાવી દેવી (Confusion)
- \* અતિગંભીર કિસ્સામાં ખેંચ આવવી

- \* વરીયાળી, કાચી કેરી, ગુલાબ, ખસ(વાળા), અને કાળી દ્રાક્ષનું શરબત લઈ શકાય, રાત્રે ૧૦ નંગ કાળી દ્રાક્ષ પાણીમાં પલાળી સવારે આ પાણી પીવું અને દ્રાક્ષ ખાવી, તરબુચનો ઉપયોગ સવારે અને બપોરે કરવો.

લૂ લાગવાની અસર જણાય તો તાત્કાલીક નજીકના પ્રાથમિક આરોગ્ય કેન્દ્ર કે સરકારી દવાખાનાનો સંપર્ક કરવો.



ગુજરાત સરકાર દ્વારા જનહિતાર્થે