

***District Disaster Management Plan***  
***Nagpur District***



***2017-18***

***District Disaster Management Authority Nagpur***

## Message from Guardian Minister



*Vidarbha is vulnerable to both Natural and Manmade disasters so as Nagpur. In the past Nagpur has experience natural disaster like floods, hailstorm and drought and man made disaster like fire and chemical outburst such at Nikita Pharmaceuticals and others of various magnitudes and intensity. Nagpur has become proactive and efficient to address the issues of disaster Management. District Disaster Management Authority has made District Disaster Management Plan for the addressing the multi hazard nature of district. It aims to address the vulnerabilities of the district based on that prepare for the emergencies, response and recovery measures , it covers the capacity building activities , training , early warning system , institutional mechanism and public education and awareness program.*

*Disaster management is a coordinated responsibility of the all line departments. In the lines of DDMP all the line departments should prepare their department specific disaster Management Plan for the district. I appreciate the efforts of the DDMA for developing this comprehensive disaster management plan and hope it will serve to increase the resilience of the District to disasters*

**Shri Chandrasekhar Bawankule**  
**Guardian Minister, Nagpur**

### **Message from District Collector**



*In the view of increasing natural disaster and manmade disaster in the state and as per the DM act 2005, every district of India should have mandatory District Disaster Management Plan. No disaster comes with the pre-defined information, when it will strike. Hence it is needed to have preparedness, regular monitoring and efficient human resource to cope up from the disaster. District Disaster Management Plan is the inevitable part of the disaster preparedness and comprehensive guidelines in terms of disaster management for the entire stakeholder. It precisely outlines the hazard, vulnerabilities present in the district and human resources available and roles of the various government line departments and the disaster management activities to be done.*

*In accordance with DM Act 2005, District Disaster Management Authority, Nagpur had made the District Disaster Management Plan which look into disaster risk reduction measures , training and development of officials , awareness activities to be done .More important it will help in Human resource management and co-ordination among the different line Departments as Incident Response system and relief plan. District aims to make people of Nagpur Safer and resilient by maximizing its support system during any emergency.*

**Shri Sachin Kurve**  
**District Collector, Nagpur**

## Abbreviations

AC	<i>Sheets Asbestos Cement Sheets</i>
ACS	<i>Additional Chief Secretary</i>
AERB	<i>Atomic Energy Research Board</i>
AIR	<i>All India Radio</i>
BARC	<i>Bhabha Atomic Research Centre</i>
BDO	<i>Block Development Officer</i>
BMC	<i>Brihanmumbai Municipal Corporation</i>
CADA	<i>Command Area Development Authority</i>
CBM	<i>Confidence Building Measures</i>
CBO	<i>Community Based Organization</i>
CERT	<i>Community Emergency Response Teams</i>
CE	<i>Chief Engineer</i>
CETP	<i>Common Effluent Treatment Plant</i>
CISF	<i>Central Industrial Security Force</i>
CM	<i>Chief Minister</i>
CPWD	<i>Central Public Works Department</i>
CSR	<i>Corporate Social Responsibility</i>
CWC	<i>Central Water Commision</i>
CRPF	<i>Central Reserve Police Force</i>
CS	<i>Chief Secretary</i>
CBO	<i>Community Based Organisation</i>
DC	<i>District Collector</i>
DIO	<i>District Information Officer</i>
DM	<i>Disaster Management</i>
DDMA	<i>District Disaster Management Authority</i>
DDMC	<i>District Disaster Management Commmittee</i>
DDMO	<i>District Disaster Management Officer</i>
DCRI	<i>District Control Room In charge</i>
DD	<i>Doordarshan</i>
DDMAP	<i>District Disaster Management Action Plan</i>
DGIPR	<i>Director General of Information and Public Relations</i>
DGP	<i>Director General of Police</i>
DHO	<i>District Health Officer</i>
DHS	<i>Directorate of Health Services</i>
DISH	<i>Directorate of Industrial Safety</i>
DMU	<i>Disaster Management Unit</i>
DMC	<i>Disaster Management Cell</i>
DRR	<i>Disaster Risk Reduction</i>
DRM	<i>Disaster Risk Management</i>
DOT	<i>Department of Telecommunication</i>

<i>EDP</i>	<i>Electronic Data Processing</i>
<i>ESF</i>	<i>Emergency Support Functions</i>
<i>DEOC</i>	<i>District Emergency Operations Centre</i>
<i>ERP</i>	<i>Emergency Response Plan</i>
<i>FCI</i>	<i>Federal Emergency Management Unit</i>
<i>FCB</i>	<i>Flood Control Board</i>
<i>GI</i>	<i>Sheets Galvanized Iron Sheets</i>
<i>GIS</i>	<i>Geographical Information System</i>
<i>GSI</i>	<i>Geographical Survey of India</i>
<i>GSDA</i>	<i>Ground Water Survey Department</i>
<i>GOI</i>	<i>Government of India</i>
<i>GOM</i>	<i>Government of Maharashtra</i>
<i>GR</i>	<i>Government Resolution</i>
<i>GSI</i>	<i>Geological Society of India</i>
<i>HPC</i>	<i>High Powered Committee</i>
<i>GIP</i>	<i>Great Indian Peninsula</i>
<i>IAP</i>	<i>Integrated Action Plan</i>
<i>ICP</i>	<i>Intergrated Command Protocol</i>
<i>ICS</i>	<i>Incident Command System</i>
<i>IDRN</i>	<i>India Disaster Response Network</i>
<i>IFRC</i>	<i>International Federation of Red Cross</i>
<i>IIT</i>	<i>Indian Institute of Technology</i>
<i>IMD</i>	<i>Indian Meteorological Department</i>
<i>LAN</i>	<i>Local Area Network</i>
<i>MARG</i>	<i>Mutual Aid and Response Group</i>
<i>MERI</i>	<i>Maharashtra Engineering Research Institute</i>
<i>MFR</i>	<i>Medical First Responder</i>
<i>MLA</i>	<i>Member of Legislative Assembly</i>
<i>MP</i>	<i>Member of Parliament</i>
<i>MPCB</i>	<i>Maharashtra Pollution Control Board</i>
<i>MSEB</i>	<i>Maharashtra State Electricity Board</i>
<i>MSRTC</i>	<i>Maharashtra State Road Transport Corporation</i>
<i>MTNI</i>	<i>Mahanagar Telephone Nigam Ltd</i>
<i>MID</i>	<i>Minor Irrigation Department</i>
<i>MIHAN</i>	<i>Multi-Modal International Cargo Hub and Airport at Nagpur</i>
<i>MIDC</i>	<i>Maharashtra Industrial Development Corporation</i>
<i>MWSSB</i>	<i>Maharashtra Water Supply and Sewerage Board</i>
<i>NBC</i>	<i>National Building Code</i>
<i>NCDC</i>	<i>National Civil Defense College</i>
<i>NEERI</i>	<i>National Environmental Engineering Research Institute</i>
<i>NGO</i>	<i>Non-Governmental Organization</i>
<i>NIC</i>	<i>National Informatics Centre</i>

<i>NIT</i>	<i>Nagpur Inprovement Trust</i>
<i>NDMA</i>	<i>National Disaster Management Authority</i>
<i>NOAA</i>	<i>National Oceanic and Atmospheric Administration</i>
<i>NMC</i>	<i>Nagpur Municipal Corporation</i>
<i>NDRF</i>	<i>National Disaster Response Force</i>
<i>OPD</i>	<i>Out Patient Department</i>
<i>PCO</i>	<i>Public Call Office</i>
<i>PHC</i>	<i>Primary Health Centre</i>
<i>PRI</i>	<i>Panchayati Raj Institutions</i>
<i>PMO</i>	<i>Prime Minister's Office</i>
<i>PPP</i>	<i>Public Private Patnership</i>
<i>PWD</i>	<i>Public Works Department</i>
<i>RTO</i>	<i>Regional Transport Office</i>
<i>SAR</i>	<i>Search And Rescue</i>
<i>SE</i>	<i>Supritendent Engineer</i>
<i>SDM</i>	<i>Sub Divisional Magistrate</i>
<i>SDMA</i>	<i>State Disaster Management Authority</i>
<i>SDRF</i>	<i>State Disaster Response Force</i>
<i>SOC</i>	<i>Site Operations Centre</i>
<i>SOP</i>	<i>Standard Operating Procedure</i>
<i>SRP</i>	<i>State Reserve Police</i>
<i>STD</i>	<i>Subscriber Trunk Dial</i>
<i>TCL</i>	<i>Tropical Chlorinated Lime</i>
<i>TV</i>	<i>Television</i>
<i>TDMA</i>	<i>Taluka Disaster Managemement Authority</i>
<i>UNDP</i>	<i>United Nations Development Programme</i>
<i>UNICEF</i>	<i>United Nations Childrens Emergency Fund</i>
<i>VHF</i>	<i>Very High Frequency</i>
<i>VNIT</i>	<i>Vishveshraya National Insititute of Technology</i>
<i>VIP</i>	<i>Very Important Person</i>
<i>VSAT</i>	<i>Very Small Aperture Terminal</i>
<i>WCL</i>	<i>Western Coal Fields</i>
<i>WRD</i>	<i>Water Resource Department</i>
<i>YASHADA</i>	<i>Yeshwantrao Chavan Academy of Development Administration</i>
<i>ZP</i>	<i>Zilla Parishad</i>

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# Chapter 1: Introduction

## 1.1 Background

Maharashtra is prone to large no of natural and manmade disaster. The Western Ghats in Maharashtra is prone to multi hazard such as floods, earthquake, drought and landslide so as Vidharbha and Nagpur .District is vulnerable to various hazards such as floods and drought, while the hazards are increasing day by day due to increase industrial development and its exposure toward the community aslo has also risen up. Vidharbha region and mainly Nagpur industrial cluster is prone to various hazards such as frequent floods which Nagpur had felt in 1981, 1986, 1991, 2005 and 2013 due to which various lives were on threat and several lost their life, property and their beloved kins and at the same time the region is also getting frequent drought in the recent decades due to which there seems a increase in the farmer suicide. Vulnerabilities to disaster / emergencies of chemical and biological , radiological and nuclear origin are also increasing due to expansion of industrial zone at the outskirts of the city at the same time rapid urbanization is moving towards the industrial clusters and these cluster are becoming the part of city thus leading the people vulnerable due to various hazards.

Disaster disrupts the on going progress in the developmental activities and leading to halt in developmental activities which take a district almost a decade in the progress. Considering the consequence in past disaster like latur earthquake in 1993, Mumbai floods in 2005. Droughts of Vidharbha, Marathwada and Nagpur previous disaster history mandates us to take preventive, mitigation and preparedness measures.

## 1.2 Need for Disaster Management

Disaster is described as the serious disruption of the functioning of a community or a society. It involves widespread human material, economic and environmental impacts which exceeds the ability of the affected community or the society to cope using is own resources. Disaster Management assists the administration at District to frame policies and guidelines for disaster prevention, preparedness, relief and recovery. It starts with creation of data information system for assessing the hazards in the district and vulnerabilities associated with various hazards, then creation of human resources and expertise in order to reduce the impact of the various hazards by proper monitoring and assessment of the various hazards

It aims to ensure that the different line departments to be prepared for the various hazards and disasters. Disaster Management division acts as the coordinating agency for all kinds of disaster and emergency. It aims to provide services to the affected people and communities, save lives, reduce the risk from the various disasters.

### **1.3 What is disaster??**

**Disaster :** *“A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. It is often caused by nature or sometimes has a human made origin”.*

**Disaster preparedness** *“Disaster preparedness refers to measures taken to prepare for and reduce the effects of disasters. That is, to predict its chances of occurrence and, where possible can occur, prevent disasters, mitigate their impact on vulnerable populations, and respond to and effectively cope with their consequences.*

**--- IFRC**

**Mitigation:***“Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. In order for mitigation to be effective we need to take action now—before the next disaster—to reduce human and financial consequences later (analyzing risk, reducing risk, and insuring against risk)*

**---FEMA**

**Disaster Response:***“ Disaster response is the second phase of the disaster management cycle. It consists of a number of elements, for example; warning/evacuation, search and rescue, providing immediate assistance, assessing damage, continuing assistance and the immediate restoration of infrastructure. The aim of emergency response is to provide immediate assistance to maintain life, improve health and support the morale of the affected population “*

**---Wikipedia**

**Flood:***“A flood is an overflow of water that submerges land which is usually dry. Flood is a covering by water of land not normally covered by water*

**---European Union**

**Drought:***“ Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people*

**----NOAA, USA**

**Epidemic:** *“An epidemic is then unusual increase in the number of cases of an infectious disease which already exists in a certain region or population. It can also refer to the appearance of a significant number of cases of an infectious disease in a region or population that is usually free from that disease.*

**Hailstorm:** “ Storm during which hail falls storm, violent storm - a violent weather condition with winds 64-72 knots (11 on the Beaufort scale) and precipitation and thunder and lightning.

**Terror Attack:**“the unlawful use or threat of violence especially against the state or the public as a politically motivated means of attack or coercion

----**Merriam Webster**

**Communal Violence:**“ Communal Violence is act of violent conflict between non-state groups that are organized along a shared communal identity.” Violent conflict refers to the fact that the parties use lethal violence to gain control over some disputed and perceived indivisible resource, such as a piece of land or local political power.

---- **Halima BI Sheikh**

#### **1.4 Legal Mandate of DM Plan**

On 23rd December, 2005, the Government of India took a defining step by enacting the Disaster Management Act, 2005, which envisaged creation of the National Disaster Management Authority(NDMA) headed by the Prime Minister,State Disaster Management Authorities(SDMA) headed by the Chief Ministers ,and District Disaster Management Authorities(DDMA) headed by District Magistrates/ Collector to spear head and adopt a holistic and integrated approach to disaster management(DM).There will be a paradigm shift,from the erstwhile relief-centric response to aproactive prevention, mitigation and preparedness-driven approach for conserving development gains and to minimize lossof life, livelihood and property.

**1.5 Vision:** The vision of this plan is to make the Nagpur District Disaster Resilient and to achieve the goals of disaster risk reduction thus, reducing the loss of life , property and assets within the district and also to enable the district authority for continual functioning of the essential services with proper coordination by maximizing the ability of the departments and communities.

#### **1.6. Mission**

1. To create a robust structure for proper coordination of different line departments within the district.
2. To strengthen the response mechanism at the district level through channelization of human resources.
3. To promote community participation proactively by generating awareness towards various disaster

## **Objective of the Plan**

*The objective behind the preparation of the District Disaster Management Plan of Nagpur is that Nagpur is vulnerable to various kind of hazard like flood, fire hazard, drought, road & railway accidents, chemical hazard, communal violence, epidemic, hailstorm, heat wave and stampede etc. Keeping in mind of these very possible disasters in the district that may cause major setbacks to lives, livelihoods and property (both movable and immovable), the District Administration, Nagpur felt the urgency of the need of preparing an emergency response planning. The devastation caused by various kinds of natural and man-made hazards has posed a challenge before the Nagpur district administration to analyze each and every decision making process to gear up the rescue and restoration during such situations as well as building up the capacity and preparedness to face further calamities in future. The District Administration has realized the necessity to compile a plan to facilitate faster recovery during an emergency of this kind. The plan will act as a guiding model for proper coordination at the time of Disaster and will enable to achieve the following objectives:*

- 1. To mitigate impact of natural and human induced disasters through preparedness at District level.*
- 2. To provide effective support and resources to all the concerned individuals, groups and departments during disaster time.*
- 3. To assist the line departments, district administration, communities developing compatible skills for disaster preparedness and management.*
- 4. To disseminate factual information in a timely, accurate and tactful manner while maintaining necessary confidentiality.*
- 5. To develop immediate and long-term support plans for vulnerable people in / during disasters.*
- 6. To create awareness among the people about hazard occurrence and increase their participation in preparedness, prevention, development, relief, rehabilitation and reconstruction process*
- 7. To have response system in place to face any eventuality.*
- 8. To affect or elicit the least possible disruption to the normal life process when dealing with individuals' indisaster.*
- 9. To ensure active participation by the Government Administration, Communities, NGOs, CBOs and Volunteers Task Forces at all levels making optimum utilization of human and material resources at the time of disaster.*

**Section 2 (e) of the Act defines disaster management as follows:**

According to "Section 2(e)" disaster management" means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for-

- (i) Prevention of danger or threat of any disaster;
- (ii) Mitigation or reduction of risk of any disaster or its severity or consequences;
- (iii) Capacity-building;
- (iv) Preparedness to deal with any disaster;
- (v) Prompt response to any threatening disaster situation or disaster;
- (vi) Assessing the severity or magnitude of effects of any disaster;
- (vii) Evacuation, rescue and relief;
- (viii) Rehabilitation and reconstruction;"

The definition encompasses the cycle of disaster management, which has the elements of pre-disaster phase such as prevention, mitigation, preparedness and capacity building. The SDMA and DDMA in the State were created on 1<sup>st</sup> June 2007 and these authorities would bring out a qualitative change in dealing with disaster in the State.

**Under Section 31 of DM Act -2005, the District Disaster Management Plan**

According to the section 31 of DM Act -2005, there shall be a plan for disaster management for every district of the State. The District Plan shall be prepared by the District Disaster Management Authority under the Supervision of District Collector, after consultation with the local authorities and having regard to the National Plan and State Plan, to be approved by the State Disaster Management Authority. The District plan should include:

1. The areas in the district vulnerable to different forms of disasters.
2. The measures to be taken, for prevention and mitigation of different disaster, by the department within the district administration and other departments which fall under the purview of District authorities.
3. The capacity building and preparedness measures required to be taken by the district authority in order to respond to any threatening disaster situation.

4. *Creation of response plan and action plan for the different disaster*
  - i. *Allocation of responsibilities various departments at the district level.*
  - ii. *Prompt response to disaster relief.*
  - iii. *Procurement of essential resources.*
  - iv. *Establishment of Communication link.*
  - v. *The dissemination of information to the public*

#### **Updation/Review of DDMP**

*According to the sub section (7) of Section 31 of DM act 2005, the plan should be reviewed periodically at the end of the every year; it should update the changing hazards and vulnerabilities within the district and its associated risk. DDMA is solely responsible for updation of the plan taking into consideration of risk reduction, capacity enhancement attained, resource requirement and update on human resources and involvements of NGOs and technological enhancement and coordination issues*

*The reviewal should be done on the based guidelines of the State Disaster Management Authority and should be passed on the annual advisory committee meeting every year of DDMA and finally sanctioning would be done by SDMA, which would check whether the plan abides by the guidelines or not.*

*The following guidelines should be adhered to while updating the DDMP*

1. *A procedure should be in place to update the plan on regular basis, it should ensure that item which requires regular updation should be considered and current.*
2. *Whenever an amendment is made in the plan, the plan should clearly mention the year of updation on the updated plan.*
3. *The DM plan should be available with the all the line departments and the departmental disaster management plan should be on the lines of DM plan of the district.*

#### **Scope of the plan**

*The emergency planning process has evolved significantly and taken more importance in the last decade as a result of emergencies and disasters having a greater impact on government industry and agriculture. Today, organizations have an abundance of emergency planning resources and training options available to them. Cooperation between government and industry in the planning process is also high. Consequently, there presently exists an excellent*

*Opportunity for organizations to increase their level of preparedness & mitigation. Most experts today advocate a comprehensive "all hazards" approach to emergency preparedness. A comprehensive emergency response plan that takes into account potential natural, technological, and manmade threats and involves key personnel in the planning process can assist an organization to systematically manage emergencies in an effective and efficient manner. The planning process is a key element that forces District Magistrates and staff to explore viable options that can be employed in the event of an emergency or disaster. These*



contingencies can ultimately help to save lives, reduce property loss, as well as lessen an organization's potential liability.

### **Need of Plan**

Disaster management plan of a district defines the critical incidents happened in the past, based on which the formulation of plans, policies will be done and it also helps in making the strategies to for effective response and mitigation plan for specific disaster and emergency situation. DM Plan involves four important components: planning, reviewing, training, and testing, which are the cornerstone of effective disaster and emergency planning.

### **Plan Testing**

The District Disaster Management Authority shall prepare, review and update the DM plan as provided for in the DM Act. It should also ensure that disaster management drills and rehearsals are carried out periodically. The plan must be thoroughly tested and evaluated on the regular basis once in a year. After the plan testing and incorporation of lesson learnt, the DDMA should send a copy of the revised and updated plan to the concerned authorities and line departments.

The main objective of the plan testing is to

1. Make the concerned department acquainted to their roles and responsibilities.
2. Identify the core areas in the plan where due modification to be made.
3. Undertake all scheduled pre Disaster activities properly
4. Identify and involve the new agencies /Organization working in DM
5. Understand how the emergency communication and system works and where it gets problems
6. Known the response mechanism in terms of time management and resource available.
7. Organize the capacity Building, awareness programme and mock drills as per the demands of vulnerability and hazards included in the plan

### **Level of Disaster**

The National Disaster Management authority has worked out on guidelines for the categorizing the different levels of disasters and its response levels. It categorizes the level of disaster into L<sub>0</sub>, L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub> Based on the ability of the various authorities to deal with them. In short, in order to facilitate the responses and assistance to states and district, the level of have been defined as follows.

1. L<sub>0</sub>, Level denotes normal times which will be utilized for close monitoring, documentation, prevention and preparatory and preparatory activities. Training, on search and rescue, rehearsal, evaluation and inventory updation for response activities will be carried out during this time.

2. *L<sub>1</sub> Level specifies disaster that can be managed at district level, however the state and the centre will remain in readiness to provide assistance if needed.*
3. *L<sub>2</sub>, Level disaster situation are those which requires assistance and participation of the state, mobilization of its resources for the management of resources.*
4. *L<sub>3</sub> 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 the rescue , relief and other response and recovery measures. In most of the cases, the scale and intensity of the disaster as determined by the concerned department technical agencies like IMD/INCOIS are sufficient for the declaration of L<sub>3</sub> Disaster.*

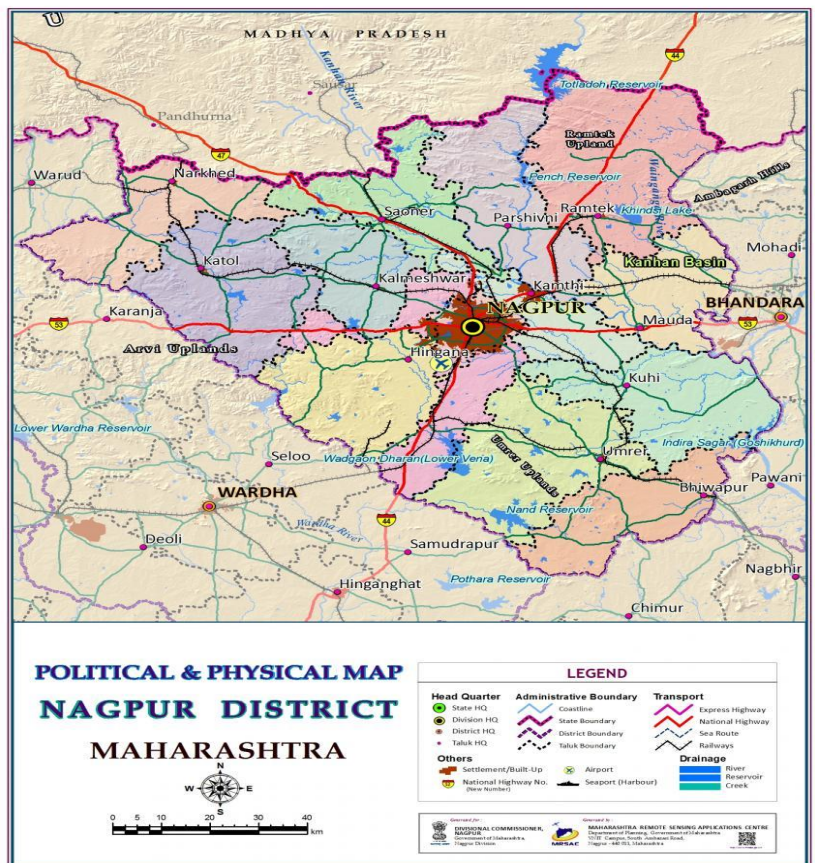
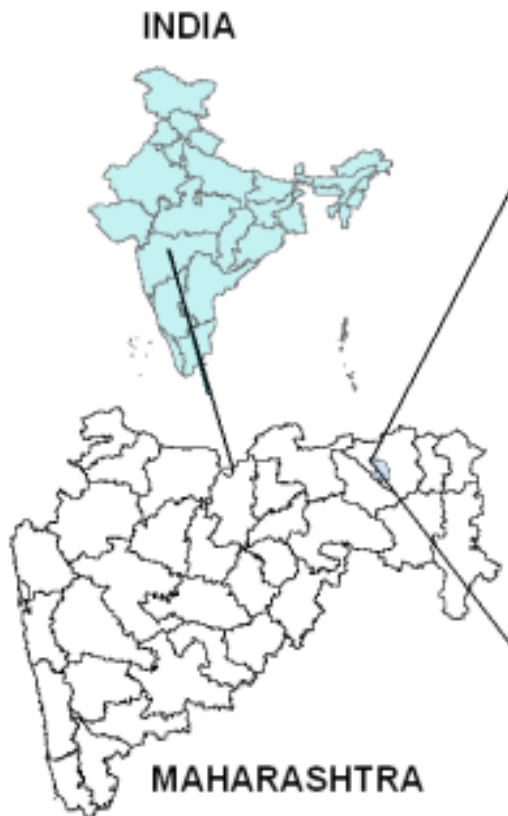
### **Historical Background of District**

*Nagpur was founded in the early 18<sup>th</sup> Century by Bhakt Buland, a Gond prince of the kingdom of Deogad in the Chhindwara District. A proponent of civilized life in Delhi, the prince began the construction of the Nagpur as his new Capital. The prince did not live to see the project , however and so his successor , Chand sultan oversaw the project until his death in 1739. At the time due to succession , a Maratha governor of Berar, Raghujji Bhonsale , Intervened to restore the rightful heir to their throne.*

*Dissentions continued in 1743, forcing the Raghujji Bhonsale to act yet again, in time transferring the control of Nagpur from the Gonds to the Marathas. These new Rulers made Nagpur Capital of the Bhonsale .With the Bhonsale dynasty came with a vast class of cultivators in the Vidharbha. Raghujji successors lost some of the territories to the Peshwa of the pune and the Nizam of Hyderabad. Bhonsale again lost to the British in 1817 and the Nagpur came under British influence. In 1853 Raghujji died without an heir to his Kingdom. As a result, the city fell to British control under Lord Dalhousie's Doctrine of lapse.*

*In 1861, Nagpur become the capital of the central province and with the advent of Great Indian Peninsula Railway (GIP) in 1867 spurred its development as the trade centre. After India Independence, Nagpur become the capital of Madhya Bharat state (Which includes Central Province and Berar). In 1960, the Marathi majority Vidharbha region was merged with a new state and Nagpur was Designated as the second capital of Maharashtra .With Bombay as the first capital of the Maharashtra. From then the winter session of the Maharashtra assembly held every year in the Vidhan Bhavan, Nagpur*

*Nagpur is a city and winter capital of the state of Maharashtra, the largest city in central India and third largest city in Maharashtra after Mumbai and Pune. It has also recently been ranked as the second greenest city of India after Bangalore. It is a major commercial and political centre of the Vidharbha region. It is also called as the "**Orange City**" as oranges are grown in large numbers in the nearby area of the city. Nagpur lies precisely at the center of the country with the Zero Mile Marker indicating the geographical center of India. Nagpur is also declared, "**Tiger Capital of India**" as it connects many Tiger Reserves in India to the world.*



### Geographical Profile

Nagpur district lies in the Vidarbha region of Maharashtra state in central India. The city of Nagpur is the district headquarters. The district is part of Nagpur Division. The district encompasses 9892 Square Kms of land areas. Geographically, Maharashtra is located 16.40 N to 22.10 N and 72.60 E to 80.9 E. Nagpur district is located between 20.30 N to 21.45 N and 78.15 E to 79.45 E, which essentially indicates that Nagpur district is located in the Deccan Plateau. It is bounded by Bhandara district on the east, Chandrapur district on the southeast, Wardha district on the southwest, Amravati district on the northwest and Chhindwara district of Madhya Pradesh state on the north.

The district is located at the exact centre of the Indian peninsula. The city has a Zero Mile stone locating the geographical centre of India, which was used by the British to measure all distances within the Indian subcontinent.

The District lies on the Deccan plateau of the Indian Peninsula and has a mean altitude of 310.5 meters above sea level. The underlying rock strata are covered with alluvial deposits resulting from the flood plain of the Kanhan River. In some places these give rise to granular sandy soil. In low-lying areas, which are poorly drained, the soil is alluvial clay with poor permeability characteristics. In the eastern part of the city, crystalline metamorphic rocks such as gneiss, schist and granites are found, while in the northern part yellowish sand stones and clays of the lower Gondwana formations are found. Nagpur city is dotted with natural and artificial lakes. The largest lake is Ambazari Lake. Other natural lakes include Gorewada Lake and Telangkhedi lake. Sonegaon and Gandhisagar Lakes are artificial, created by the city's historical rulers. Nag

River, Pilli Nadi, and Nallas form the natural drainage pattern for the city. Nagpur is known for its greenery and was adjudged the cleanest and second greenest in India after Chandigarh in 2010.

### **District Profile**

<b>Sr No.</b>	<b>Items</b>	<b>2014-15</b>
1.	<b>Geographical Area</b>	<b>9892 Sq Km</b>
2.	<b>Administrative Set Up</b>	
	District	<b>Nagpur District</b>
	Sub-Division	<b>7</b>
	Taluka	<b>14</b>
3.	<b>Local Self Government Institution</b>	
	Zilla Parishad	<b>1</b>
	Gram Panchayats	<b>778</b>
	Municipal Corporation	<b>1</b>
	Nagar Parishad	<b>12</b>
	Nagar Panchayat	<b>5</b>
	Cantonment Board	<b>1</b>
4.	<b>Population as per the census 2011</b>	<b>4, 653, 171</b>
	Male	<b>2,384,975</b>
	Female	<b>2,268,595</b>
	Urban	<b>3,178,759</b>
	Rural	<b>1,474,811</b>
	Scheduled Caste	<b>867,713</b>
	Scheduled Tribe	<b>437,571</b>
	Density of population per sq km	<b>470</b>
	Literacy rate percentage	<b>88.39</b>

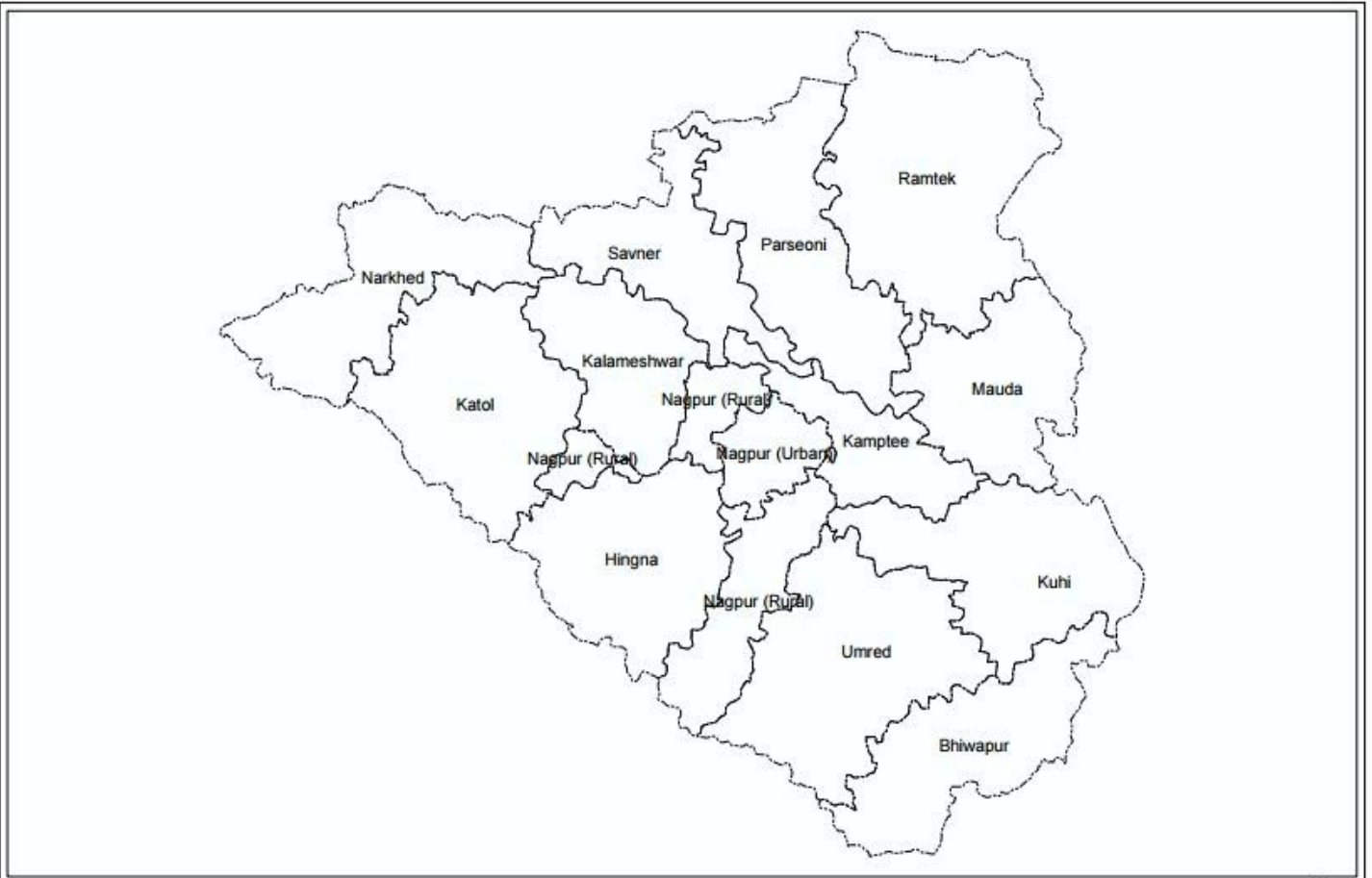
	<i>Sex Ratio(Females per thousand males )</i>	<b>951</b>
	<i>Literacy Rate</i>	<b>88.39</b>
5.	<b>Education</b>	
	<i>Primary School</i>	<b>1116</b>
	<i>Secondary School</i>	<b>916</b>
	<i>Public Health Centre</i>	<b>49</b>
	<i>Hospital</i>	<b>718</b>
	<i>Dispensaries</i>	<b>1238</b>
6	<b>Forest</b>	
	<i>Total Forest area in sq km</i>	<b>2554.06 sq km</b>

*All major national highways NH-7 (Varanasi - Kanyakumari) & NH-6 (Mumbai - Sambalpur - Calcutta) and major railways trunk route (Mumbai, Chennai, Howrah, and Delhi) pass through the district. According to the census of 2011, the district has 778 gram Panchayat for the purpose of rural development and it is the largest economic centre in Vidharbha Region and 3rd largest economic centre in Maharashtra. It is the winter capital of the state of Maharashtra.*

### **Administrative Division**

*Nagpur Division is one of six administrative divisions of Maharashtra State in India. Nagpur is the eastern most division in the state, with an administrative headquarters in the city of Nagpur. it covers 19,821 sq mi [51,336 km].Amravati and Nagpur divisions make up the region of Vidarbha.*

*Administratively the district is divided into 7 sub division, 14 tehsils and thirteen panchayat samiti. The sub division are namely Nagpur city Sub division which includes Nagpur City and Kamptee, Nagpur Gramin includes Nagpur Gramin and Hingana, Katol sub-division includes Katol and Narkhed tahsils, Savner sub-division includes Savner and Kalameshwar tahsils, Ramtek subdivision includes Ramtek, Parseoni tahsils, Umred sub-division includes Umred, Bhiwapur and Mouda Subdivision include Mouda and Kuhi tahsils.*



**Legend**

--- Taluka

**Nagpur District**



<b>Sr No</b>	<b>Sub Division</b>	<b>Taluka In Sub Division</b>
1.	<i>Nagpur City Sub Division</i>	<i>Nagpur City, Kamptee</i>
2.	<i>Ngapur Gramin Sub Division</i>	<i>Nagpur Gramin , Hinagana</i>
3.	<i>Katol Sub Division</i>	<i>Katol, Narkhed</i>
4.	<i>Saoner Sub Division</i>	<i>Savner, Kamleshwar</i>
5.	<i>Ramtek Sub Division</i>	<i>Ramtek, Parseoni,</i>
6.	<i>Umred Sub Division</i>	<i>Umred, Bhiwapur,</i>
7.	<i>Mouda Sub Division</i>	<i>Mouda , Kuhi</i>

*The District has two Parliamentary Constituency Nagpur Lok Sabha Constituency and Ramtek Lok Sabha Constituency and 12 Vidhan sabha Constituency in the district namely Nagpur<sup>see</sup> West, Nagpur South, Nagpur South West, Nagpur East, Nagpur North Nagpur Central, Kamptee, Katol, Saoner , Umred , Hingana, Ramtek*

Nagpur district now has 41 towns, 778 Gram Panchayats and 1859 villages spread over Narkhed (154), Katol (186), Kalmeshwar (105), Savner (129), Parseoni (114), Ramtek (156), Mouda (123), Kamptee (74), Nagpur (Rural) (153), Hingna (150), Umred (192), Kuhi (186) and Bhiwapur (137). Among the 41 towns in the district Nagpur (M.Corp.) is the most populous having 2,405,665 persons, while Nagalwadi (C.T.) is the least populous with 2,562 persons only in this district

### Demographics

As per the census of 2011, Nagpur district has the population of 4,653,171, which makes it the 13<sup>th</sup> largest city in India. The two-third of the population lives in the urban conglomeration. It has urban conglomeration of 68.31 % in the district as compared to that of 45.22 within the state. The composition of the population in district is given below .

Gender Wise	Urban Population	Rural Population	Total Population
Male	1,626,618	758,357	2,384,975
Female	1,552,141	716,454	2,268,595
<b>Total</b>	<b>3,178,759</b>	<b>1,474,811</b>	<b>4,653,570</b>

The district has density of 470, which means per square kilometer 470 people are living in the district. Nagpur District has seen a population growth of 14.39 % from the over the last census. The district has the sex ratio of 951 females per 1000 males and has the literacy of 88.39 %. Almost Four-fifth of the population is literate in the district. 3,673,808 out of 4,653,171 people in the district are literate. 92.09 percentages of men are literate while 84.51 percent of female are literate in the district. Of total population 18.65 and 9.40 percent are scheduled caste and scheduled tribe.

### Social stratification

Gender Wise	Literates		Scheduled Caste		Schedule Tribes	
	Population of Literates	Percentage of Literates	Population of Scheduled Caste	Percentage of Scheduled Caste	Population of Scheduled Tribes	Percentage of Scheduled Tribes
Male	1,959,220	92.09	439,205	18.42	223,566	9.37
Female	1,714,588	84.51	428,508	18.89	214,005	9.43
<b>Total</b>	<b>3,673,808</b>	<b>88.39</b>	<b>867,713</b>	<b>18.65</b>	<b>437,571</b>	<b>9.40</b>

The total work force is mainly involved in agriculture and industrial work within the industrial zone in the district. Of total population, 40.15 percent of the people living in the district is involved into the work force while 59.15 percent population is consist of non- workers, primarily female non-work force is higher non work force category . Only 23.55 percent of the population of female is involved in the work force to that of 65.94 percent of the total male population. Of total worker category 35.56 means 1,654,778 `people are involved in main work force primarily in industrial hubs and agricultural production within the district and 4.59 percent of the people are involved in the marginal workers category where the people usually work less than 180 days, these type of people are normal involved as bonded laborers in agriculture and in small scale industries where there work force depend on seasonality of the agriculture and the type of Industry.

#### **Work Force Division**

<b>Gender Wise</b>	<b>Main Workers</b>		<b>Marginal Worker</b>		<b>Non workers</b>	
	<b>Population of Main Workers</b>	<b>Percentage of Main Worker</b>	<b>Population of Marginal Worker</b>	<b>Percentage of Marginal Worker</b>	<b>Population of Non Workers</b>	<b>Percentage of Non worker</b>
<b>Male</b>	1,224,048	51.32	110,163	4.62	1,050,764	44.06
<b>Female</b>	430,730	18.99	103,619	4.57	1,734,246	76.45
<b>Total</b>	<b>1,654,778</b>	<b>35.56</b>	<b>213,782</b>	<b>4.59</b>	<b>2,785,010</b>	<b>59.85</b>

Of total work force category, 63.47 percent of the people are involved in the other type of work force which includes services, doing business, government employees and other small time vendors who work on the daily basis. 11.06 percent of the total work force is cultivators, 22.67 % of the people are involved in agriculture laborer; In total agriculture laborers, female comprised of 39.24 percent are involved as the agricultural laborers while only 16.03 percent of males are involved in the agricultural laborers. The major gap in the participation of agriculture laborer is seen just because women can work in the fields in the areas nearby to their home and villages and can add up in the income generation of the family while at the same time, men go out for other job opportunities within the district mainly in industrial sector to have high income as compared to the daily wages in working as agricultural. The table given below gives the detailed description of work and its dynamics.

As per socio economic survey of Nagpur District, Per Capita Income of Nagpur District as per Current Prices in 2010-11 is Rs. 96,458/- which was Rs. 82,636/- in 2009-10. Its population growth rate over the decade 2001-2011 was 14.39 %. The national average of the per capita income is Rs.53,331/-



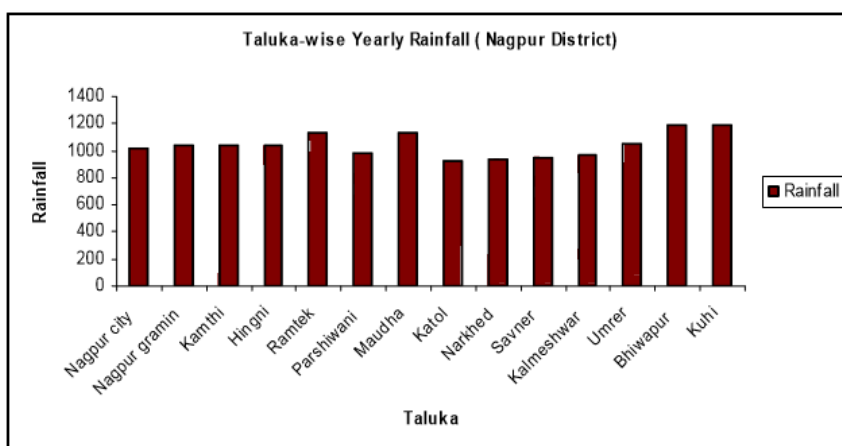
Gender Wise	Cultivators		Agricultural Laborers		Workers in Household Industry		Other Workers	
	Population of Cultivators	Percentage of Cultivator	Population of Agricultural Laborers	Percentage of Agricultural Laborers	Population of workers in Household Industry	Percentage of workers in Household Industry	Population of other type of workers	Percentage of other type of workers
Male	138,236	12.80	213,900	16.03	34,416	2.58	947,659	71.03
Female	68,370	10.39	209,687	39.24	18,003	3.37	238,289	44.59
<b>Total</b>	<b>206,606</b>	<b>11.06</b>	<b>423,587</b>	<b>22.67</b>	<b>52,419</b>	<b>2.81</b>	<b>1,185,948</b>	<b>63.47</b>

### **Climate**

*The climate of this district is characterized by a hot summer, well distributed rainfall and dryness except in the rainy season. The cold season is from December to February and is followed by the hot season from March to May. The south-west monsoon season is from June to September while the period October-November constitutes the post-monsoon season.*

*As it is located at the centre of the Indian peninsula far from Bay of Bengal and Arabian Sea, Nagpur has a tropical wet and dry climate with dry conditions prevailing for most of the year. Nagpur district receives an annual rainfall of 1,205 mm (47.44 in) from monsoon rains during June to September. The highest recorded rainfall was 304 mm on July 14, 1994. Summers are extremely hot lasting from March to June, with maximum temperatures occurring in May. Winter lasts from November to January, during which temperatures can drop below 10°C (50°F). The highest recorded temperature in the city was 48.6 °C (119.5 °F) on 26 May 1954, while the lowest was 3 °C*

Annexure-II Mean Annual Rainfall



District Nagpur		
Taluka	Rainfall	Rainy Day
Nagpur city	1020.9	62.8
Nagpur grammin	1045.0	54.2
Kamthi	1045.0	52.1
Hingni	1045.0	52.1
Ramtek	1133.0	52.1
Parshiwani	986.0	52.1
Maudha	1133.0	52.1
Katol	921.0	52.1
Narkhed	940.0	52.1
Savner	945.8	57.8
Kalmeshwar	976.0	52.1
Umrer	1055.3	59.6
Bhiwapur	1196.0	52.1
Kuhi	1196.0	52.1
Overall	1045.6	54.0

**Education Profile**

Nagpur is a major education hub in Central India. Nagpur city has the best literacy rate, 93.13%, among cities in India with a population of more than 2,500,000. There are NMC run schools and private schools run by trust or individuals, some of which receive financial aid from the Government in Nagpur. These are governed by either of the following boards; Maharashtra State Board of Secondary and Higher Secondary Education, The Central Board for Secondary Education (CBSE), The district has a good amalgamation of some of the national level institute with the district, some of the pioneers in educational and research institute are National institute of Environment engineering (NEERI), Central Institute of Cotton Research, Indian Institute of Management, VNIT, Nagpur Savner and National Civil Defense College.

Nagpur has 3 state universities. Rashtrasant Tukadoji Maharaj Nagpur University, founded in 1923 as Nagpur University, is one of the oldest in the country and has more than 600 affiliated colleges. The other two state universities are Maharashtra Animal and Fishery Sciences University and Kavikulaguru Kalidas Sanskrit University. Nagpur has three medical colleges viz. Government Medical College, Indira Gandhi Medical College and N. K. P. Salve Institute of Medical Sciences and Research Center. It also has three 'autonomous' engineering colleges affiliated with Rashtrasant Tukadoji Maharaj Nagpur University— Shri Ramdeobaba College of Engineering and Management, Yeshwantrao Chavan College of Engineering and G.H. Rasoni College of Engineering. Laxminarayan Institute of Technology, one of the oldest (established 1942) chemical engineering & technology institute located in Nagpur is also a major engineering college managed by Rashtrasant Tukadoji Maharaj Nagpur University. Visvesvaraya National Institute of Technology situated in Nagpur is the only NIT in Maharashtra. College of Agriculture, Nagpur is the oldest college in the country, founded in 1906 by the then British Government. It is

one of the first five Agriculture Colleges in the country. Nagpur has a National Fire Service College affiliated to RTM Nagpur University. Nagpur also has an IGNOU and YCMOU regional centres. Nagpur has two major management institutes— Indian Institute of Management, Nagpur and Institute of Management Technology, Nagpur. Other prominent institutes in Nagpur are Vasantrya Naik Government Institute of Arts and Social Sciences and Government Chitrakala Mahavidyalaya. The list below describe the various type of institutions Present in the district

Sr No	Type of Institution	Total number of Institution
1.	Government Primary school	469
2.	Non Granted Primary School	647
3.	Secondary School	614
4.	Higher Secondary School	302
5.	Physical Education College	20
6.	Government University and College	6
7.	Government Granted Colleges	57
8.	Non Granted Private colleges	316
9.	ITI and Polytechnic	10

### **Health and Nutrition Profile**

Nagpur district has good health administration system, the health system in the city is monitored by the Nagpur Municipal Corporation while the rural area is being administered by the health department of Zila Parishad. The Health schemes comes b in collaboration with Central Government, State Government, UNICEF, World Health Organization and Non-governmental organisation conducts and maintains various health schemes in the city. City health line is an initiative started by NMC dedicated to the health of citizens of Nagpur. This includes providing computerized comparative information and action in the field to Local citizens. NMC runs three indoor patient hospitals including Indira Gandhi Rugnalaya at LAD square, Panchpaoli Maternity Hospital in Panchpaoli and Isolation Hospital in Immamwada. Besides, the civic body runs three big diagnostic centres at Mahal, Sadar and also at Indira Gandhi Rugnalaya. Apart from these, NMC has 57 out patient dispensaries (OPDs), including 23 health posts sanctioned under Union Government's schemes, 15 allopathy hospitals, 12 ayurvedic hospitals, three homoeopathy hospitals, three naturopathy hospitals and one unani hospital. In declared Nagpur the country's best city for health care services. The city is home to numerous hospitals, some run by the government and some private. The list below gives the detail of health facilities Taluka Wise.

Sr No	Taluka	Hospital	Special Hospital	Medical Centre	Maternity Hospital	Total no Beds
1.	Narkhed	2	0	22	7	35
2.	Katol	4	0	45	21	158
3.	Kamleshwar	2	0	14	6	57

4.	Saoner	1	0	32	4	10
5.	Parseoni	4	0	21	4	12
6.	Ramtek	3	0	20	5	118
7.	Mouda	0	0	5	0	0
8.	Kamptee	2	0	14	4	126
9.	Nagpur Gramin	0	0	3	0	12
10.	Nagpur city	692	5	1002	300	9370
11.	Hinagna	1	0	7	5	122
12.	Umred	3	0	17	3	53
13.	Kuhi	2	0	29	0	5
14.	Bhiwapur	2	0	7	2	5

According to National Family Health Survey, Nagpur has a fertility rate of 1.9 which is below the replacement level. The infant mortality rate was 41 per 1,000 live births, and the mortality rate for children under five was 50 per 1,000 live births. About 57% slum and 72% non-slum children have received all the mandatory vaccines which include BCG, measles and full courses of polio and DPT. In Nagpur, 78 percent of poor children are anaemic, including 49 percent who have moderate to severe anaemia. About 45% of children under 5 years of age and 31% of women are underweight. The poor people from the city mostly cite the reason of lack of a nearby facility, poor quality of care and excessive waiting time for not visiting any government hospitals for treatment

### **Economic Base**

Nagpur district is the main center of commerce for Vidarbha region. Nagpur has been centre of commerce in the Vidarbha region since its early days and remain an important trading location .The Nagpur regional offices of reserve bank of India opened its doors on the September 10, 1956. Nagpur's Economy is now recovering from the slowdown and in 2004 the city attracted 5000 crores of rupees in investment. Offsetting the slowdown, state and central government offices provided a major source of employability for the city.

Since the advent of the railway Nagpur has become the leading industrial and commercial hub of the central India. In terms of area, its Butiboori industrial park leads all of Asia. Likewise Hingana industrial estate is the home of to some 900 small to medium sized industrial units. The city has various broad range spectrums from tractor manufacturing unit of Mahindra and Mahindra to NECO ltd and Bajaj auto group presence within the district. The district has been the hub of confectionary and sweet with the presence of Candico (India's Second largest confectionary), Dinshaw Ice –cream and milk producer, Haldiram one of India's biggest brand and Vicco cosmetics provide wide range of economic and employability possibility within the District Sitabuldi market in central Nagpur, known as the Heart of the city, is the major commercial market area of district and one of trade Centre for the nearby towns and district.

*Nagpur is also emerging as an important industrial town. Butibori Industrial area, which is one of the largest industrial areas, is located in Nagpur. This area mainly includes synthetic polyester manufacturing units, Koradi Thermal Power Plant and Khaparkheda Thermal Power Plant. Nagpur is witnessing an economic boom as the "Multi-Modal International Cargo Hub and Airport at Nagpur (MIHAN)" is being developed. MIHAN will be used for handling heavy cargo coming from South-East Asia and the Middle East.*

**Agriculture Profile**

*Nagpur district has basically an agrarian economy and the rural economy is inextricably woven with the district economy. The district has total geographical area of 9892 Sqkm. Out of these 644 thousand ha. (6440 Sqkm) i.e. 65 % of total area is cultivable area. The main crop of the district is Paddy, Jowar, Cotton, Tur and Soyabean. In the district there are two yarn mills – the Nagpur Zilla Shetkari Sut Girni, Wanadongri (Nagpur District Farmers Yarn Mill) at Wanadongri in Hingna taluka and the Nagpur Vinkar Sahakari Sut Girni (Nagpur Weavers Cooperative Yarn Mill) in Nagpur taluka. The cotton market was established in 1901. Two more yarn mills are upcoming one in Khapa in Saoner taluka and the other at Warora.*

*Nagpur orange is very popular throughout the country on account of its special flavour. Nagpur district claims for 17,104 acres of area under orange cultivation which constitutes 57 % of total area under orange cultivation in Vidarbha region. Cultivation of oranges is concentrated in Katol tahsil. Agriculture in Nagpur also contributes significantly to the economy of the city. The principle crops that are abundantly grown in the city of Nagpur include sugarcane, wheat, soya bean, pulses, Mung, wheat, gram, Jowar, bajra, linseed, cotton, groundnut, sunflower, tur and others. Agriculture in Nagpur received a much-needed lift when there was an increase in the cropped area. This was the result of a decrease in the number of fallow land. Another reason was the increase in the portion of the cultivable land. The crops of Nagpur can be broadly categorized into two groups known as Kharif and Rabi. The Kharif crops include the following:-*

- *Sugarcane: This is chiefly grown abundantly the month of November and is generally marketed in Nagpur.*
- *Mung: This variety of pulse is cultivated from the month of June to the month of October.*
- *Soya Bean: Cultivated from the months of June to the month of October along with the other varieties of the Kharif crops which include Cotton, Groundnut, Sesame, Sunflower, and Soya Bean.*
- *The other variety of crops grown in Nagpur is Rabi, which include:-*
  - *Gram: Principally cultivated from the month of September to the month of February. Linseed: Cultivation of this particular crop commences from the month of September to*
  - *Some of the major plantations of Nagpur include the extremely tasty and luscious citrus fruit, orange. Soya bean is considered to be the chief cash crop of Nagpur.*

Type of Land	Area In Hactres
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Total Land area Under Cultivation	547,100
Rain Fed Land	434,300(79 percent of total Land
Irrigation Fed Land	112,800(29 Percent of total Land )

Oranges and cotton are the two main cash crops of Nagpur district. In terms of area under wheat cultivation, Nagpur ranks among the top 5 districts of the State. It ranks second in the production of oil seeds.

#### **Seasonal Cropping Pattern**

Season	Main crop
Kharif Crop	Cotton, Groundnut, Rice, Green Gram Sorghum, Soyabean
Rabbi Crop	Sorghum Sugarcane, Pulses

#### **Oranges Industry**

Orange production is concentrated in Nagpur and Amravati district in Vidarbha region and hence, its area is known as California of Maharashtra state. Nagpur district have a largest area, production and productivity, that's why this city is known as orange city. Nagpur district comprises of 15,205 ha. Area under orange crop and with the production of 1,35,613 tonnes of oranges (Agricultural statistical information Maharashtra state, 2001-08 Part-11). Orange has, not only important place in internal market, but has its place in international market too. It has assumed a discernible significance with wider precepts and better potential. Hence, effort must be made for boosting the production of oranges in the country which has high potential for export. With this efforts the district and National Research Centre for Citrus, Nagpur has doing research for increasing the productivity of citrus and mandarin oranges within and has established various warehouses and various types of hybrid plantative measures.

Nagpur oranges are famous throughout the country for their excellent quality. Fruit preservation and canning is a resource-oriented industry localized in Nagpur. It avails itself of the orange crop in the Nagpur district. The industry comprised one large-scale factory, one mechanized small-scale factory and 19 cottage units. The large-scale factory was engaged in canning of fruits and vegetables. It also manufactured orange concentrates and orange segments, orange oil, juice, squashes and syrups. The other factories manufactured squashes, syrups, and ice and also undertook canning and bottling of vegetables, fruits, and their juices, and preservation of perishable commodities like table and seed potato in artificially cooled chambers.

With the introduction of genetically improved quality of Mandarin oranges and introduction of GI tag to the oranges growing farmers would lead in increase of export of Oranges in the International market, with this approach would motivate the farmers to grow more oranges

which would stipulate the production from 10 tones per ha to 15 per ha by 2020 which will 1.36 lakh ha area with dependency of 70000 farmers.

### **Industry Profile**

*Industrialization is conditioned by factors which may be natural as well as man-made. The natural factors comprise minerals, raw materials, means of power, labour, water-supply, etc, while man-made factors comprise capital, machinery and tools, chemicals, capital goods, cheap power and transport facilities.*

*For several years, agriculture has been the mainstay of the economy of the Nagpur region. However, in the past few years, Nagpur has emerged as one of the major business centres in Maharashtra. Today, the city serves as a base for various small and medium scale units operating in sectors such as textile, engineering, food processing, paper products, pharmaceuticals, electronics and chemicals.*

*The foundation of Nagpur's textile industry was laid by TATA, one of the prominent industrial houses in India. It started the country's first textile mill popularly known as 'Empress Mills' on January 1, 1877 at Nagpur. The abundant supply of cotton from Nagpur and neighbouring districts of Vidarbha as well as availability of suitable infrastructure have aided the development of the industry in the region. Moreover, the creation of the first textile park of the Vidarbha region in Butibori MIDC (Maharashtra Industrial Development Corporation) is expected to accelerate the growth of the textile industry in Nagpur. Currently, major textile units such as Indorama Synthetic (I) Ltd., Woolworths Ltd., Fabworth (India) Ltd., Texprint and Morarji Mills Ltd. have a prominent presence in Butibori industrial area.*

*Nagpur district occupies an advantageous position as regards both these factors. There are reserves of minerals in large quantities which could be profitably exploited. Valuable minerals like manganese, iron, bauxite, silica, ochres, coal, etc. which can contribute to the industrial advancement of the Country are found in abundance in the Nagpur region.*

*Coal is by far the most important mineral found in Nagpur district. The coal reserves in this district are estimated to be of the order of 2269.84 (million tons) which is estimated in the region of Kamptee and Umred Coal field and is being explored by Western Coal Fields (WCL) . However, a very small proportion of the total reserves is exploited, and there are excellent opportunities in this direction. Coal from, the Kamptee and Umred coalfields are non-coking but there is a possibility of striking across metallurgical coking coal deposits. A number of seams in these fields are of first and second grade quality and could be successfully blended to the extent of 15 to 20 per cent with coking coal from Jharia field to produce good coke. First grade coal can be utilized for the manufacture of pig iron in low shaft furnaces. Coal from these fields can be used for general industrial purposes such as locomotives and boilers, for burning cement, porcelain and other ceramic materials. Nagpur is rated to be a good location for setting up a gas plant by using coal as fuel. Allied industries depending on coal can be very profitable.*

Thus, it is evident that the coal-mining industry has a bright future, its potentialities being of immense magnitude. Kasy transport facilities are also encouraging in this respect.

The district also ranks in production of manganese ores; with Manganese ore India Limited headquarters in Nagpur and has 6 within the Nagpur and Bhandara region produces a large amount of 231000 ton every year and comprises of the 24% of total India manganese ore production. The manganese ores are predominantly found in Ramtek and Saoner taluka of the district.

Large low-grade manganese deposits existing between the Kanhan and the Pench with extensive reserves can be upgraded. Research on beneficiation of the ores is necessary, and if the ore is found amenable to various processes of beneficiation a prosperous future for these deposits is visualized.

Nagpur manganese is a very valuable mineral in so far as it secures foreign exchange and forms a basic component for the heavy industries of the country. It also has bright prospects and potentialities of further development. To achieve the maximum yield, the methods of mining have to be modernized and the ore has to be mined most economically. It is in the larger national interest that the mineral should be exported to foreign countries not in its raw state but

only after smelting it. The ferro-manganese plant at Kanhan will improve production and profitable utilization of ferro-manganese. The provision of cheap power, cheap and convenient rail transport and a contented labor force will lead to beneficial exploitation of this mineral.

Sr No	Name of Mineral	Production In metric Tonnes 2011-2012	No of Mines	Value of Production
<i>Minerals found in Major Minerals</i>				
1	Maganese	194127	34	-----
2	Coal	2256705	27	-----
3	Dolomite	19418	15	60.66
4	White Clay	200	2	0.12
5	Quartz	80	1	0.05
6	Sand	664571	4	835.96

The district has been growing rapidly with the coming up MIDC at Butibori and Mihan IT Park within the District. There are about 84 large scale project come up in Hingana and various tahsil such as Nagpur Hingana, Nagpur IT, Nagpur Butibori, Kalmeshwar, Katol, Saoner, Umred, Bhiwapur, Kuhi, Narkhed, Parseoni.

Sr No	Name of Industrial	Land Acquired (Hectares )	Land Developed	No of Plot	No of allotted plot	Total no of Units
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	Area		(Hectares )			
1	Hinagna	745.83	745.83	1253	1253	1266
2	Butibori	2420.62	2420.62	1264	1151	722
3	Kamleshwar	110.50	110.50	165	164	112
4	IT Parsodi	11.66	11.66	46	46	26
5	Umred	326.08	326.08	217	133	9
6	Katol	138.44	138.44	83	82	16
7	Saoner	73.95	73.95	72	71	27
8	Narkhed	20.59	20.59	16	16	2
9	Bhiwapur	12.68	12.68	46	8	1
10	Kuhi	15.55	15.55	37	37	2
11	Parseoni	12.00	12.00	40	38	12

The district has been currently developing a cargo hub at MIHAN (Multi Modal International Cargo Hub and Airport Nagpur) due to its strategic importance, location and good connectivity to increase the cargo movement.

### **Geomorphology and Soil Types**

The district forms part of Deccan Plateau having flat topped and terraced features. Eastward and northeastwards the landscape changes due to the change in the underlying rocks. The rocks of Gondwana series present a low rolling topography with a poor soil cover and vegetation. On the north the upland ranges are the extension of Satpuras which gradually narrows down towards west. South of these upland range stretches the Ambegad hills, the western extremity of which is the Nagpur district. The Ramtek temple is on the spur of this range. The Girad hill range extends along the southeast and separates the valley of the Kar from that of Jamb upto Kondhali. Another main hill range runs northwards through Katol taluka from Kondhali to Kelod separating the Wardha and Wainganga valleys. The northeastern and east central parts of the district are drained by the Wainganga and its tributaries. The central and western portion is drained by the Wena which is a tributary of Wardha River.

There are six types of soils found in Nagpur district. The details are as follows:

1) **Kali soils:** These are black cotton soils which are fine grained clayey in texture and varies in depth from 1 m to 6 m or more and retain moisture. They are found around Kalmeshwar, Saoner and Nagpur.

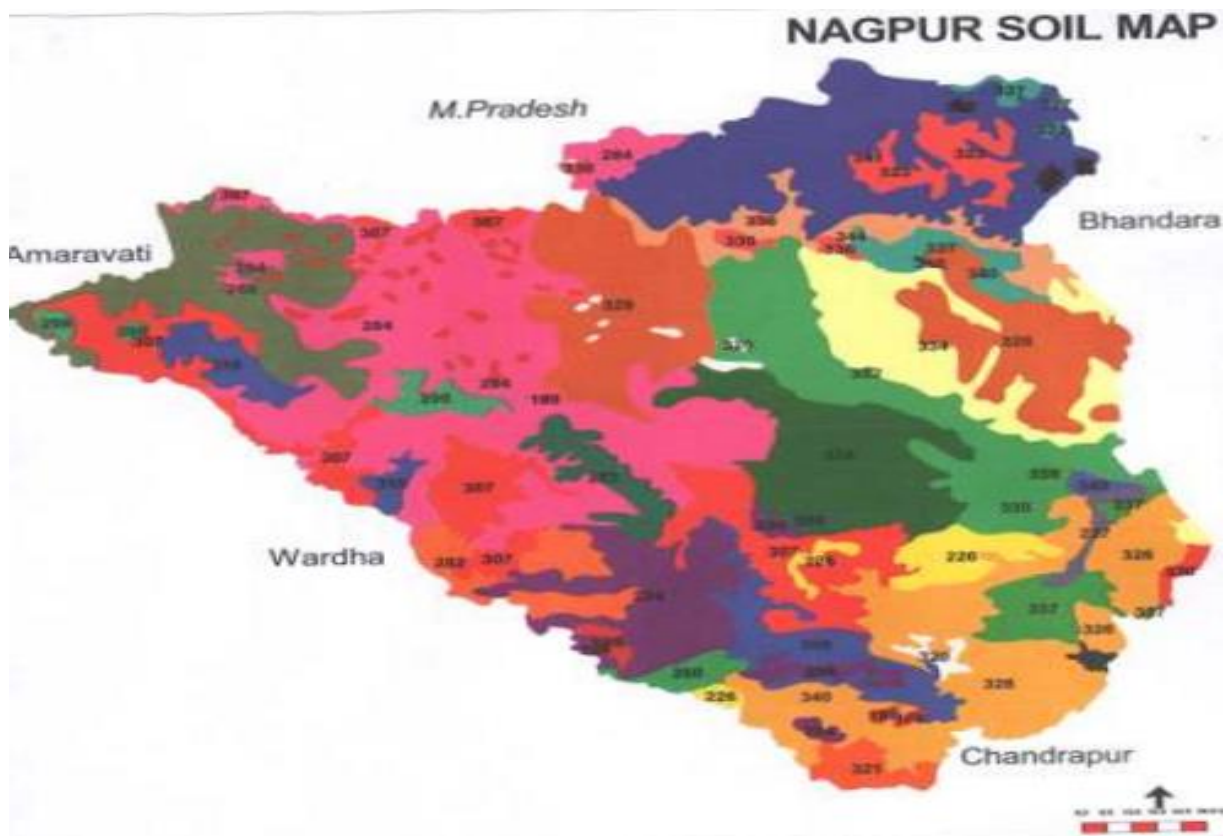
2) **Morand soils:** These are predominant in the district. They are black cotton soils with higher percentage of lime than the Kali soils. They are black, grey or light to dark brown in colour, clayey in texture and have a depth of about 1 to 3 m.

3) **Khardi soils:** They are shallow soils mixed with sand and found mainly in hills. These are grey in colour, clay loam in texture.

4) **Bardi soils:** They are red gravel covered with boulders found on summits and slopes of trap hills and are less fertile in nature.

5) **Kachchar soils:** They are mainly found in the banks of Kanhan River and are alluvial soils, loamy in nature and vary in depth from 1 to 3 m.

6) **Wardi soils:** They are red soils with a large amount of sand. They are shallower and clayey loam in nature. They are mainly found in the paddy tracts in the eastern part of the district. Ground Water Scenario



## Chapter 2- Hazard Risk Vulnerability Assessment

*A Hazard Risk and Vulnerability Assessment is the process to examine the hazards that may impact a community and the risk that each hazard event poses to the community as a whole and to vulnerable elements of the community*

*This HRVA is designed to provide an assessment of the hazards that may present risks to the Nagpur District*

*The objective of the HRVA is to:*

- Investigate prominent natural and human-caused events, and*
- Identify any threats that may require a timely and coordinated response to protect lives, property, and to reduce economic losses.*

### **Definitions**

**Hazard:** *"A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation". Hazards can have natural, anthropogenic or socionatural in origin.*

**Risk** : *"A probability or threat of damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action.*

**Vulnerability:** *"The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.*

### **Relationship between Hazard ,Vulnerability and Risk**

$$\text{Risk} = \text{Hazard} * \text{Vulnerabilibility/Exposure}$$

## **Classification of Hazards**

The high power committee of government of India has classified the hazards as follows

I. <i>Water and climate Change</i>	<ul style="list-style-type: none"><li>• <i>Floods and Drainage Management</i></li><li>• <i>Cyclones</i></li><li>• <i>Tornadoes and Hurricanes</i></li><li>• <i>Cloud Burst</i></li><li>• <i>Snow avalanches</i></li><li>• <i>Heat and cold Waves</i></li><li>• <i>Thunder and Lightning</i></li><li>• <i>Sea Erosion</i></li><li>• <i>Drought</i></li></ul>
II. <i>Geologically Related</i>	<ul style="list-style-type: none"><li>• <i>Earthquakes</i></li><li>• <i>Landslides &amp; Mudflows</i></li><li>• <i>Dam Burrst &amp; Dam Failure</i></li><li>• <i>Mine fires</i></li></ul>
III. <i>Chemical , Industrial and nuclear Related</i>	<ul style="list-style-type: none"><li>• <i>Chemical and Industrial Disaster</i></li><li>• <i>Nuclear disaster</i></li></ul>
IV. <i>Accident related</i>	<ul style="list-style-type: none"><li>• <i>Road Rail and trasporatation Accidents</i></li><li>• <i>Mine Flooding</i></li><li>• <i>Major Building Collapse</i></li><li>• <i>Serial bomb blast</i></li><li>• <i>Festival related disaster</i></li><li>• <i>Urban fires</i></li><li>• <i>Oil Spill</i></li><li>• <i>Village Fires</i></li><li>• <i>Boat Capsizing</i></li><li>• <i>Forest Fires</i></li><li>• <i>Electrical fires</i></li></ul>
V. <i>Biologically Related</i>	<ul style="list-style-type: none"><li>• <i>Biological Disaster &amp; Epidemic</i></li><li>• <i>Food Poisoning</i></li><li>• <i>Cattle Epidemics</i></li><li>• <i>Pest Attack</i></li></ul>

The Nagpur district is mainly prone to Floods drought, and Fire Hazards and other hazards. Almost all the Talukas are affected by different kind of Disaster. There is great need to strengthen the capacity of District, Block and Panchayat level of departments, institutions and functionaries to respond to the Disaster at their own level in participation of community.

**Floods** “Nagpur is mainly vulnerable to floods in monsoons, the district has several perennial river flowing through the district. The district mainly suffers the urban flooding due to lack of sewerage and proper flow management system in the Nagpur city. In the rural areas, the villages which are in the low lying areas of the of rivers which gets flood-prone during monsoons. Seven major floods in the last 30 years. 13 % of the population lives in flood-prone areas.( Table 1.1 )

### 1.1 History of Flood, Cyclone, Fire, Building Collapse in Nagpur District

Name of the disaster	Date/year of Occurrence	Period from which disaster impacted	Return Frequency	Area Affected (Location) (Ex. Village names/Taluka names)
<b>Flood</b>				
Major Flood ( Mahapur )	31.07.1991	05 days .		Mowad Narkhed Taluka
Flood	31.07.2013	1 day		Jahnsi rani Chowk , Vaishali nagar , Smata, Nagar , Kalmana ,Hudkeshwar Chowk Nag Nadi and piwali river
Major Flood ( Mahapur)	07-07.2013	1 day		Butibori Vena River
Major Flood	12.08.2013	1 day		Hingana Ghat , Vena River
Major flood	24.08.2013	1 day		Ghoghara Village , Chindwara
Major Flood	24.08.2013	2 days		Kuhi , Mauda , Umred , Parseoni, Kanhan river
<b>Building Collapse</b>				
Buiding Collapse	1971	1 day		Slab of the Mandir near Yasshwant Stadium 4 people were injured
Building collapse	1979	3 day	Tinnanal Chowk	5 storey building collapsed due to which 8 people were trapped and safely evacuated
Building	1982	2 days	Itwaari	Building collapsed in the Panjwani

<i>Collapse</i>				<i>Market and 6 people died</i>
<i>Building Collapse</i>	<i>1982</i>	<i>2 days</i>	<i>Sadar</i>	<i>100 year old building collapsed in due to which 5 people died</i>
<i>Building Collapse</i>	<i>28.06.2005</i>	<i>2 days</i>	<i>Badyanath Chowk , Nagpur</i>	
<i>Building Collapse</i>	<i>22.04.2006</i>	<i>2 day</i>	<i>Utkarsh Building , Sadar</i>	
<i>Building Collapse</i>	<i>07.07.2007</i>	<i>4 day</i>	<i>Sadar Gandhi Chowk 100 year old building collapse</i>	
<i>Building Collapse</i>	<i>12.08.2008</i>	<i>2 day</i>	<i>Alankar Talkies NIT multiplex collapse</i>	
<i>Building Collapse</i>	<i>21.03.2009</i>	<i>1 day</i>	<i>Wall Collapse Krishna Nagar Seminary Hills</i>	
<i>Building Collapse</i>	<i>03.09.2009</i>	<i>1 day</i>	<i>Building Collapse Pandrabudi, Sudam Nagar</i>	
<i>Building Collapse</i>	<i>30.01.2012</i>	<i>4 days</i>	<i>Pravesh Cold Storage , Kalmana Nagpur</i>	
<i>Cyclone</i>				
<i>Cyclone</i>	<i>10 February, 2014</i>	<i>1 day</i>		<i>Kuhi taluka: Chapegati , Aamti Awaramara , Rajola</i>  <i>Mouda taluka :</i>

<i>Fire</i>				
<i>Fire</i>	<i>May,1964</i>	<i>2 day</i>	<i>Lakadganj</i>	<i>Due to cyclone , near the the Lakadganj Petrol pump fire erupted in the Bas Mandi</i>
<i>Fire</i>	<i>November, 1965</i>	<i>1 day</i>	<i>Lakadganj</i>	<i>Fire Erupted in the Ajani Railway yard due to which 3 boggies were burnt.</i>
<i>Fire</i>	<i>November , 1965</i>	<i>1 day</i>	<i>Lakadganj</i>	<i>Near the lakadganj police station aramachine got fire due to which there was loss of lakhs</i>
<i>Fire</i>	<i>1966,</i>	<i>1 day</i>	<i>Sitabuldi</i>	<i>Fire erupted in the 3 storey building due to which 1 boy died</i>
<i>Fire</i>	<i>1967</i>	<i>2 day</i>	<i>Motibagh</i>	<i>Railway engine services centre (locoshed ) , fire erupted while filling the Fuel.</i>
<i>Fire</i>	<i>1970</i>	<i>1 day</i>	<i>Tekanaka</i>	<i>8 shops were burnt in the Timber market Tekanaka</i>
<i>Fire</i>	<i>1972</i>	<i>1 Day</i>	<i>Mahal</i>	<i>19 shops were burnt near the chaudhari bhawan</i>
<i>Fire</i>	<i>1973</i>	<i>1 Day</i>	<i>Lakadganj</i>	<i>3 people were injured in the small fact area fire shri Gulabrao Kawale Station Officer and shri Vinayak Ambhone were shifted to Mayo Hospital</i>
<i>Fire</i>	<i>1974</i>	<i>1 Day</i>	<i>Itwari, Lakaganj</i>	<i>8 Aramachine shops were burnt in the Timber market</i>
<i>Fire</i>	<i>1974</i>	<i>2 Day</i>	<i>Prem Nagar</i>	<i>Wade factory was burnt due to fire</i>
<i>Fire</i>	<i>1974</i>	<i>1 Day</i>	<i>Aarvi</i>	<i>Fire broke out in the Jining Factory</i>
<i>Fire</i>	<i>1975</i>	<i>2 Day</i>	<i>C A Road</i>	<i>Fire broke out in a building near the Pritam Hotel, 1 person died due to</i>

				burn.
Fire	1978	1 Day	Namakganj	Fire Broke out in the Chidhi Market
Fire	1980	1 Day	Mohan Nagar	Fire Broke Out in the Babulal Wine Shop due which loss of lakhs was incurred
Fire	1981	1 Day	Narkhed	Fire Brokeout in the Orange Market
Fire	1981	1 Day	Jatatrodhi	Fire brokeout in the Jatatrodhi Slums , One of the fire officer died in the incident
Fire	1981	2 day	Ambajhari	Fire brokeout in the Ordnance Factory due to which loss of lakhs was incurred
Fire	1981	1 Day	Mahatama Phule Market	Fire broke out in the Mahatma Phule Market, due to which loss of lakhs were incurred
Fire	29.02.1983	1 day	Tadapet	2 people died and 3 people were injured when the fire broke out in a house in Tadapeth
Fire	May,1983	1 Day	Laksharibagh	Fire brokeout in a resthouse in Laksharibagh due to which loss of lakhs was incurred
Fire	05.06.1983	2 days	Wadi	Fire brokeout in the Maharashtra marketing federation godwoon loss of 3 crore was incurred
Fire	Oct , 1984	2 days	Koradi	Fire broke out in the Koradi Thermal Power Plant for which fire tenders from various district came for response
Fire	April 1986	2 Days	Laksharibagh 10 no Pulia	Fire brokeout in the market for which the Commissioner was also present



				<i>to see the response by the</i>
<i>Fire</i>	<i>1986</i>	<i>2 Days</i>	<i>Phule Market</i>	<i>Fire Brokeout in the phule Market due to which loss of lakhs was incurred</i>
<i>Fire</i>	<i>1986</i>	<i>2 Days</i>	<i>Near Baidyanath Chowk</i>	<i>Fire broke out in the cotton market godown due to which loss of lakhs was incurred</i>
<i>Fire</i>	<i>03.09.1987</i>	<i>1 day</i>	<i>Empress Mill</i>	<i>Due to Chlorine fusion 4 fire men were injured.</i>
<i>Fire</i>	<i>24.01. 1989</i>	<i>1 Day</i>	<i>Wadi</i>	<i>1 person died and 4 injured due to fire broke out in oil tanker</i>
<i>Fire</i>	<i>1990</i>	<i>2 Day</i>	<i>Piwali, Bhudwari</i>	<i>Fire broke out in a house in Piwali Marbat due to which 4 people were injured</i>
<i>Dam Burst</i>	<i>31st July , 1991</i>	<i>1 Day</i>	<i>Mowad</i>	<i>Dam burst lead to death of 48 people</i>
<i>Fire</i>	<i>12<sup>th</sup> July 1994</i>	<i>1 Day</i>	<i>Manakapur</i>	<i>Boat drown due to flood in Manakapur , due to which 8 people were rescued and 2 people died</i>
<i>Fire</i>	<i>05.06.1994</i>	<i>1 Day</i>	<i>Sitalbuldi</i>	<i>Fire broke out in Verity Talkies shop due to which 1 person died</i>
<i>Fire</i>	<i>25.01.1998</i>	<i>1 Day</i>	<i>Parwarpura</i>	<i>Fire broke out in the Basement of an building in itwaari 3 people were inured due to fire</i>
<i>Fire</i>	<i>13.01.2000</i>	<i>1 Day</i>	<i>Chowks Colony</i>	<i>Fire broke out in in house due to LPG leakage due to 3 firemen were injured and 1 died in the event</i>

Fire	07.02.2009	1 Day	Kamathi Road Vidharbha Distillery	Fire broke out in a tanker in Vidharbh Distillery due to which 2 fireman were injured during response process
Fire	May,2009	1 Day	Wardhman Nagar	Fidre Broke Out in a cloth shop which loss of lakhs was incurred

### 1.2 Damage and Losses occurred in district in due tor Various Hazards

Date/year of Occurrence	Human Life Loss		Cattle Loss		Land Affected	
	Dead	Injured	Dead	Injured	Land Specification <sup>1</sup>	Area (No./Acers/Hectares)
31.07.1991  Mowad , narkhed Taluka	48	200	10	100 Cow , Goat , dogs etc	-----	-----
28.06.2005  Baithyanath Chowk , Nagpur	12 civilians and 1 fire man was killed	50	---	-----	-----	-----
24.08-2013  Kuhi Mauda ,Umred , Parseoni ,	200	03	50		-----	-----

<sup>1</sup> Land Specification – Land specification Table in chapter 1

<i>Kanhan River</i>						
<i>24.08.2013</i> <i>Ghoghra Village , Chindwara</i>	<i>21</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>
<i>13-11-2014</i> <i>Gondiya District</i> <i>Vena Ganga</i>	<i>13</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>	<i>-----</i>

### **1.3 Damage and losses Occurred because of Epidemic to animals last 5 years**

<i>Date and year of Occurrence</i>	<i>Place</i>		<i>Cattle or Goat Loss</i>	<i>If animals were dead state the reasons or diseases from they died</i>
	<i>Village</i>	<i>Taluka</i>	<i>Death /Mortality</i>	
<i>2011-12</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>
<i>2012-13</i>	<i>Rewral and Kharda</i>	<i>Mouda</i>	<i>14 Goat</i>	<i>Due to Peste des petits ruminants (PPR) disease</i>
	<i>Todali</i>	<i>Mouda</i>	<i>5 cattles</i>	<i>Due to Black Quarter ( B Q )</i>
	<i>Rewaral</i>	<i>Mouda</i>	<i>15 Buff.</i>	<i>Due to Haemorrhagic septicaemia ( H S )</i>
<i>2013-14</i>	<i>Tekadi</i>	<i>Parshiwani</i>	<i>25 Goats</i>	<i>Due to Peste des petits ruminants (PPR) disease</i>

	<i>Ramthi</i>	<i>Narkhed</i>	<i>24 Goats</i>	<i>Due to Peste des petits ruminants (PPR) disease</i>
<i>2014-15</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>
<i>12/08/2015</i>	<i>12</i>	<i>0</i>	<i>12</i>	<i>Died in flood</i>
<i>2015-16</i>	<i>Bamnhi</i>	<i>Nagpur</i>	<i>12 Goats</i>	<i>Due to Peste des Petits Ruminants (PPR) disease</i>

#### 1.4 History of Drought and Hailstorm from 2004 onwards

Drought is another major disaster which affected the Nagpur district most. It is an insidious hazard of nature. It is often referred to as a "creeping phenomenon" and its impacts vary from region to region. Drought can therefore be difficult for people to understand. It is equally difficult to define, because what may be considered a drought in Nagpur. The most general sense, drought originates from a deficiency of precipitation over an extended period of time--usually a season or more--resulting in a water shortage for some activity, group, or environmental sector. Its impacts result from the interplay between the natural event (less precipitation than expected) and the demand people place on water supply, and human activities can exacerbate the impacts of drought. Nagpur region has history of drought and unseasonal rain which which basically known dry spells, which is one of the factors of the drought in Nagpur. The table below shows the history of drought and Hailstorm associated losses in Nagpur district.

Sr.no.	Name of the disaster	Date/year of occurrence	Period for which disaster impacted	Area affected (location) ex. village names/taluka names	No. of villages affected	Land affected	
						Land specification	Area (Hactares)
1	Drought	1 June-31 July 2004	1 June-31 July 2004	7 Talukas	Mouda-124, Katol-189, Narkhed-155, Bhivapur-121, Kuhi-186, Ramtek-152, Hingna-144. <b>Total 1071</b>	Agricultural land	71850.14
2	Drought	Jul-04	Jul-04			Agricultural land	9977.73

3	Unseasonal rain & hailstorm	22-31Jan 2005	22-31Jan 2005	2Talukas	Bhivapur-38, Mouda-40. <b>Total - 78 villages</b>	Agriculturalland	1643
4	Unseasonal rain & hailstorm	Feb.2005	Feb.2005	3Talukas	Kampthi-2, Umred-19, Mouda-40. <b>Total-61</b>	Agriculturalland	3495.39
5	Unseasonal rain & hailstorm	2-15 March2016	2-15 March2016	6Talukas	Nagpur-1, Kampthi-19, Saoner-131, Kalmeshwar-21, Katol-	Agriculturalland	25748.76
6	Unseasonal rain & hailstorm	15-16April	15-16April	KatolTaluka	<b>22villages</b>	Agriculturalland	426.59
7	Drought	2005-06	2005-06	4Talukas	Ramtek-35, Mouda-124, Umred-		9947.73
8	Unseasonal rain & hailstorm	14.09.2006 to 19.09.2006	14.09.2006to 19.09.2006	3Talukas	-----	Agriculturalland	30.3
9	Hailstorm	20.10.2006	20.10.2006	KatolTaluka	16villages	Agriculturalland	865.47

10	Unseasonal rain & hailstorm unseasonal rain & hailstorm	15-16 April 2007	15-16 April 2007	2 Talukas	Katol-2, Kalmeshwar-2. <b>Total 4 villages</b>	Agricultural land	407.82
11.	Unseasonal rain & hailstorm	March-April 2008	March-April 2008		-----	Agricultural land	72.25
12	Drought	Kharip 2008- 2009	Kharip 2008- 2009	9 talukas	Nagpur-7, Kamphthi-62, Saoner- 6, Ramtek-152, Parshioni- 94, Mouda-	Agricultural land	51569.14
13	Unseasonal rain & hailstorm	7-9 oct. 2008	7-9 oct. 2008	2 Talukas	Saoner-2, Hingna-1.	Agricultural land	113.88
14	Unseasonal rain & hailstorm	10.02.2009	10.02.2009	Katol Taluka	<b>17 villages</b>	Agricultural land	2273.09
15	Unseasonal rain & hailstorm	3.2.2010	3.2.2010	4 Talukas	Mouda-11, Parshioni-15, Saoner- 21, Kalmeshwar-3. <b>Total- 50 Villages</b>	Agricultural land	2262.61

16	Unseasonal rain&	15.2.2010to	15.2.2010to		-----		
17	Unseasonal rain& hailstorm	27.6.2010	27.6.2010	-----	-----	Agriculturalland	143.47
18	Unseasonal rain& hailstorm	14-22April	14-22April	4Talukas	Katol-96,Narkhed-11,Saoner- 25,Kalmeshwar-195. <b>Total-</b>	Agriculturalland	7085.07
19	Unseasonal rain& hailstorm	31-Jan-12	31-Jan-12	-----	-----	Agriculturalland	109.5
20	Flood& Hailstorm	Jan-dec.2012	Jan-dec.2012	8Taluka	Kampthi-27Saoner-46,Katol- 52,Kalmeshwar-57,Mouda-30, Umred-40,Bhivapur-116,Kuhi-	Agriculturalland	12862.6
21	Unseasonal rain&	15-17,23 Feb.2013	15-17,23 Feb.2013	-----	-----	Agriculturalland	9262.3
22	Unseasonal rain& hailstorm	Jan-Feb2013	Jan-Feb2013	6Taluka	Kampthi-22,Hingna-35,Katol- 41,Narkhed-21,Mouda-30,Kuhi- <b>14.Total-163villages</b>	Agriculturalland	9262.3
23	Unseasonal rain& hailstorm	Apr-13	Apr-13	3Taluka	Nagpur-13,Katol-4Kalmeshwar-21	Agriculturalland	998



24	Unseasonal rain & hailstorm	Feb, march 2014	Feb, march 2014	11 Talukas	Nagpur-84, hingna Kampthi 75, Kuhi ramtek-40, Mouda- 30, Parshioni- 116, Saoner-8, Kalmeshwar-84 Katol-63 Narkhed-18	Agricultural land	106543.95
25	Unseasonal rain & hailstorm	28 Feb- 16 March 2015	28 Feb- 16 March 2015	7 Taluka	Nagpur-6, Kampthi-8, Katol- 65, Kalmeshwar-35, Hingna- Parshioni-6, Saoner	Agricultural land	11936.71
26	Unseasonal rain & hailstorm	9-15 April	9-15 April	Kuhitaluka	Mouja Tarana, 1 village	Agricultural land	2.69
27	Unseasonal rain & hailstorm	29 Oct. 2015		3 Taluka	Kalmeshwar-31, Kampthi- 1, Nagpur-1	Agricultural land	4047.61
		Kharip 2015-	Kharip 2015-		Katol-189, Narkhed-155, Saoner- 135, Kalmeshwar-107, Ramtek-		

29	Unseasonal rain & hailstorm	26.02.2016 to 5.3.2016	26.02.2016 to 5.3.2016	9 Taluka	Nagpur-97, Hingna-60, Katol-24, Kalmeshwar-107, Ramtek-76, Saoner-49, Umred-41, Bhivapur-24, Narkhed-14	Agricultural land	21716.37
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**1.5 History of Various Epidemic /Diseases Occurred in Past 3-5 Years**

<b>LIST THE HISTORY OF VARIOUS EPIDEMIC /DISEASES OCCURRED IN PAST 3-5 YEARS</b>											
SR.N O.	DISEASE/SYNDROME	AFFECTED AREA				RURAL/ URBAN	TOTAL POPULATION	DATE OF OUTBREAKS	DATE OF REPORTING	TOTAL NO OF CASES	TOTAL NO OF DEATHS
		BLOCK	PHC	RH	VILLAGE						
					<b>YEAR 2014</b>						
1	GASTROENTERITIS	KAMPTEE	-	SDH KAMPTEE	KAMPTEE	NAGAR PARISHAD	132316	13-01-2014	13-01-2014	105	0
2	CHOLERA	UMRED	SIRSI	SDH KAMPTEE	CHANODA	RURAL	1325	25-07-2014	25-07-2014	35	1

3	FEVER	KUHI	MANDHAL	R.H.KUHI	MANDHAL	RURAL	1348	24-05-2014	02-06-2014	35	1
4	FEVER	NARKHE D	MOWAD	R.H.NARK HED	BHAYWADI	RURAL	216	27-05-2014	05-06-2014	9	1
5	DENGUE	MOUDA	TARSA	-	BARSHI	RURAL	537	10-07-2014	11-07-2014	29	0
6	DENGUE	KATOL	KACHARISAWA NGA	R.H.KATO L	DHAWLAPUR	RURAL	1543	19-07-2014	22-07-2014	10	0
7	DENGUE	KALMES HWAR	GONDKHAIRI	R.H. KALMESH WAR	GHORAD	RURAL	2454	13-07-2014	23-07-2014	16	1
8	DENGUE	PARSEO NI	KANHAN	R.H. PARSEONI	KANHAN	RURAL	10575	30-07-2014	01-08-2014	29	1
9	DENGUE	RAMTEK	NAGARDHAN	S.D.H.RA MTEK	CHOKHALA	RURAL	1238	09-08-2014	10-08-2014	22	0
10	FEVER	BHIVAP UR	JAWLI	R.H. BHIVAPUR	JAWLI	RURAL	1388	13-08-2014	16-08-2014	13	1
11	MALERIA	RAMTEK	NAGARDHAN	S.D.H.RA MTEK	KAWDAK	RURAL	583	18-08-2014	21-08-2014	39	0
12	DENGUE	MAUDA	MOUDA	-	DHANLA	RURAL	4393	18-08-2014	22-08-2014	33	0
13	FEVER	UMRED	PACHGAON	R.H.UMRE D	THOMBRA	RURAL	802	30-08-2014	31-08-2014	8	0

14	FEVER	UMRED	PACHGAON	R.H.UMRE D	SALAI	RURAL	630	30-08-2014	01-09-2014	22	1
15	DENGUE	KATOL	YENWA	R.H.KATO L	PARADSINGA	RURAL	4657	01-09-2014	01-09-2014	10	1
16	FEVER	BHIVAP UR	SOMNALA	R.H. BHIVAPUR	PENDHRI	RURAL	29	05-09-2014	06-09-2014	2	1
17	FEVER	BHIVAP UR	JAWLI	R.H. BHIVAPUR	SELOTI	RURAL	4232	08-09-2014	10-09-2014	5	1
18	FEVER	MAUDA	MOUDA	_	KUMBHARI	RURAL	638	13-09-2014	18-09-2014	8	1
19	DENGUE	PARSEO NI	DORLI	R.H. PARSEONI	SONEGAON	RURAL	480	21-09-2014	22-09-2014	16	1
20	DENGUE	RAMTEK	BHANDARBODI	S.D.H.RA MTEK	BHANDARBO DI	RURAL	1488	19-09-2014	24-09-2014	30	1
21	DENGUE	BHIVAP UR	SOMNALA	R.H. BHIVAPUR	SOMNALA	RURAL	750	21-09-2014	24-09-2014	4	1
22	DENGUE	NARKHE D	MENDHLA	R.H. NARKHED	LOHARISAW ANGA	RURAL	2916	19-09-2014	24-09-2014	41	1
23	DENGUE	NARKHE D	R.H. NARKHED	R.H. NARKHED	NARKHED	RURAL	23091	23-09-2014	26-09-2014	10	1
24	DENGUE	NARKHE D	SAWARGAON	R.H. NARKHED	SAWARGAO N	RURAL	8326	02-10-2014	07-10-2014	6	1

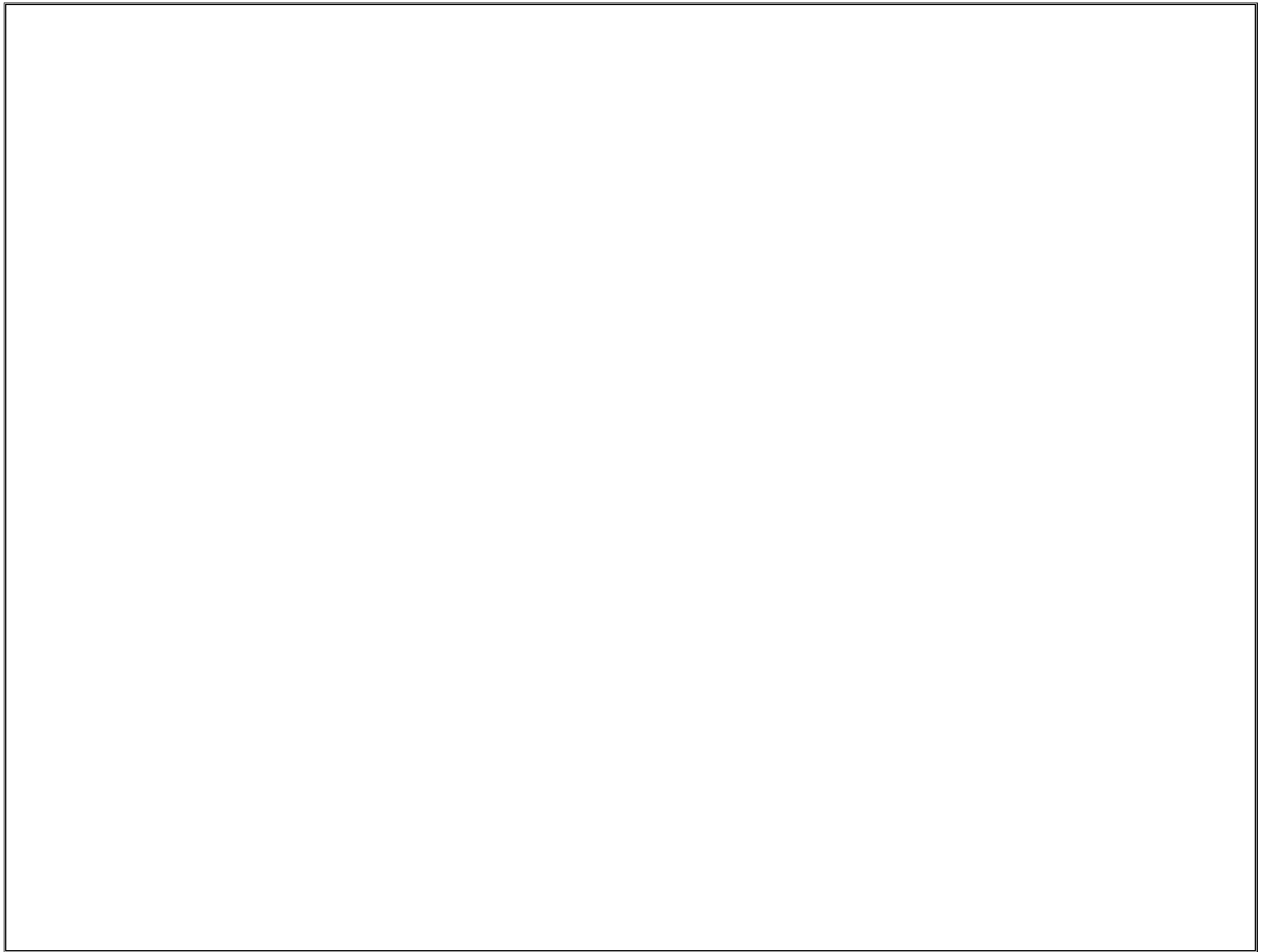
25	DENGUE	KUHI	VELTUR	R.H. KUHI	HARDOLI	RURAL	1144	02-10-2014	07-10-2014	4	1
26	DENGUE	HINGNA	TAKALGHAT	R.H. HINGNA	GUMGAON	RURAL	5980	02-10-2014	07-10-2014	12	1
27	DENGUE	NARKHE D	JALALKHEDA	R.H. NARKHED	NARSINGI	RURAL	1141	03-10-2014	11-10-2014	37	1
28	FEVER	NARKHE D	JALALKHEDA	R.H. NARKHED	JALALKHEDA	RURAL	27862	10-10-2014	11-10-2014	5	1
29	MALERIA	PARSEO NI	NAVEGAON KHAIRI	R.H. PARSEONI	SHILADEVI	RURAL	129	10-10-2014	13-10-2014	5	0
30	FEVER	KUHI	MANDHAL	R.H. KUHI	PACHKHEDI	RURAL	2424	15-10-2014	20-10-2014	5	2
31	FEVER	KUHI	MANDHAL	R.H. KUHI	MANJRI	RURAL	822	10-10-2014	20-10-2014	7	1
32	FEVER	HINGNA	RAIPUR	R.H. HINGNA	WANADONG RI	RURAL	4625	23-10-2014	01-11-2014	8	1
33	FEVER	KUHI	SALWA	R.H. KUHI	AAWARMAR A	RURAL	986	08-11-2014	11-11-2014	22	1
					<b>YEAR 2015</b>						
1	HEPATITIS	NARKHE D	MENDHLA	NARKHED	LOHARISAW ANGA	RURAL	2993	06-02-2015	13-02-2015	39	0
2	HEPATITIS	KAMPTE E	GUMTHI	SDH KAMPTEE	MAHADULA	RURAL	7276	27-03-2015	09-04-2015	16	0

3	DIARRHOEA	KATOL	KACHARISAWA NGA	KATOL	MENDHEPAT HAR	RURAL	837	06-05-2015	07-05-2015	54	0
4	DIARRHOEA	KAMPTE E	GUMTHI	SDH KAMPTEE	KAWTHA	RURAL	640	23-05-2015	26-05-2015	23	0
5	GASTROEN TERITIS	HINGNA	KANHOLIBARA	HINGNA	AANJANGAO N	RURAL	777	31-05-2015	02-06-2015	47	0
6	DIARRHOEA	HINGNA	ADEGAON	HINGNA	SUKLI KALAR	RURAL	550	04-06-2015	04-06-2015	13	0
7	DYSENTRY	KAMPTE E	GUMTHALA	SDH KAMPTEE	SHIRPUR	RURAL	493	04-06-2015	06-06-2015	47	0
8	DYSENTRY	BHIVAP UR	SOMNALA	BHIVAPUR	DIGHORA	RURAL	1180	16-06-2015	16-06-2015	20	0
9	CHOLERA	KAMPTE E	GUMTHALA	SDH KAMPTEE	HALDIRAM CONSTRUCTI ON SITE ,SAWLI	RURAL	239	18-06-2015	18-06-2015	65	0
10	DIARRHOEA	KAMPTE E	GUMTHALA	SDH KAMPTEE	SHIVNI	RURAL	809	21-08-2015	21-08-2015	18	0
11	J.E.	RAMTEK	MANSAR	SDH RAMTEK	PATGOVRI	RURAL	1558	24-04-2015	27.4.15	14	0
12	FEVER	SAONER	BADEGAON	R.H. SAONER	KOCCHI	RURAL	803	27-07-2015	29-04-2015	26	0
13	FEVER	HINGNA	RAIPUR	R.H.HING	DIGDOH	RURAL	5132	23-09-2015	23-09-2015	1	1

				NA							
14	FEVER	KALMES HVAR	TISTI	R.H.KALM ESHWAR	TELKAMPTEE	RURAL	3353	03-11-2015	03-11-2015	1	1
						TOTAL	26640			384	3
<b>Year 2016</b>											
1	DIARRHOEA	KUHI	SALWA	KUHI	AGARGAON	RURAL	181	16-03-2016	16-03-2016	15	0
2	GASTROEN TERITIS	UMRED	PACHGAON	UMRED	KHAIRI NAGOBA	RURAL	262	10-05-2016	11-05-2016	18	1
3	DIARRHOEA	PARSEO NI	NAVEGAON KHAIRI	PARSEONI	GUNDHRI	RURAL	262	12-05-2016	12-05-2016	99	0
4	DIARRHOEA	KATOL	KONDHALI	KATOL	MASOD	RURAL	1604	24-05-2016	24-05-2016	117	0
5	DIARRHOEA	KATOL	KONDHALI	KATOL	KONDHALI	RURAL	13189	31-05-2016	31-05-2016	208	0
6	DIARRHOEA	KUHI	TITUR	KUHI	CHANODA	RURAL	237	22-06-2015	23-06-2015	16	0
7	CHOLERA	NARKHE D	SAWARGAON	NARKHED	SAWARGAO N	RURAL	8755	11-07-2016	12-07-2016	858	2
8	GASTROEN TERITIS	KUHI	WELTUR	KUHI	RUYAD	RURAL	346	23-07-2016	23-07-2016	12	0
9	CHOLERA	RAMTEK	MANSAR	SDH RAMTEK	EKLAVYA ASHRAM SCHOOL,PAR	RURAL	325	01-08-2016	01-08-2016	22	0

					SODA						
10	OTHER FEVER	KUHI	MANDHAL	R.H. KUHI	VIRKHANDI	RURAL	786	07-07-2016	01-07-2016	8	1
11	DENGUE	NAGPUR	VYAHAD	_	SAWANGA	RURAL	799	07-09-2016	08-09-2016	40	0
	J.E.	MAUDA	TARSA	_	TARSA	RURAL	4683	25-10-2016	25-10-2016	8	0
	DENGUE	KALMES HWAR	GONDKHAIRI	R.H. KALMESH WAR	SAHULI	RURAL	751	23-11-2016	23-11-2016	5	0
						<b>TOTAL</b>	<b>25161</b>			<b>1365</b>	





### 1.6 List of various Mass Congregation ( Crowd ) for Festival

SR No.	Name of Event / Yatra/ Mela	Taluka	Timing/Duration of Event	Location	Expected Pilgrims population
1.	Tekdi Ganesh Mandir	Nagpur City	Sankast Chaturdasi	Ngapur	2,00,000
2.	Taj bag Durga			Nagpur	-----
3.	Parmeshwar Ram Mandir		April	Nagpur	-----
4.	Aagya Ram devi Mandir		October	Nagpur	-----
5.	Dikshabhoomi		October	Dekshabhoomi, Nagpur	5,00,000 to 15,00,000
6.	Shri Chetra Huda Maroti Devstha	Nagpur Gramin		Varoda	1,50,000
7.	Shri Chetra Huda Hanuman Devsthan			Jhari	50,000
8.	Shri Chetra Kala Mai Devsthan			Salai Godhani	20,000
9.	Shani Dev Mandir			Beri te Umed	15,000
10.	Mahakali Devsthan			Dhamana Shirpur	60,000
11.	Shri Chetra Huda Hanuman Devsthan			Bahadura	35,000
12.	Shri Chetra dutt Devsthan			Mouja Pipla	40,000
13.	Shantivan			Chichola Fetari	24,000

14.	<i>Shri Chetra Swami Samarth Sansthan</i>			<i>Surrabardi</i>	<i>2,000</i>
15.	<i>Shri Chetra Vithhhhal Rukmani Hunuman Sansthan</i>			<i>Jhamtha</i>	<i>6,000</i>
16.	<i>Shri Nityanad Math Devsthan</i>			<i>Umargaon , Kalamana</i>	<i>1,50,000</i>
17.	<i>Shri Chetra Ram Laxman Hanuman</i>			<i>Hudkeshwar</i>	<i>7,000</i>
18.	<i>Shri Chetra Mungsaji Mauli Sansthan</i>			<i>Kharabi</i>	<i>3,0000</i>
19.	<i>Ghodhani Railway Nagmandir</i>			<i>Godhani</i>	<i>3,500</i>
20.	<i>Dutt Mandir Devsthan</i>			<i>Yerla(Fetri)</i>	<i>12,000</i>
21.	<i>Hanuman Mandir</i>			<i>Ganhi(Fetri)</i>	<i>40,000</i>
22.	<i>Dutt Mandir Devsthan</i>			<i>Navnitinnagar</i>	<i>24,000</i>
23.	<i>Shri Chetra Gajanan Maharaj Sansthan</i>			<i>Vinoba Nagar</i>	<i>5,000</i>
24.	<i>Shri Chetra Dutt Mandir</i>			<i>Mouja Wadi</i>	<i>50,000</i>
25.	<i>Mahapgya budhha Vihar</i>			<i>Dham Kirti Nagar Wadi</i>	<i>70,000</i>
26.	<i>Mahapgya budhha Vihar</i>			<i>Ambedkar Nagar Wadi</i>	<i>30,000</i>
27.	<i>Hanuman Mandir Devsthan</i>			<i>Maruti Wadi</i>	<i>30,000</i>
28.	<i>Mahshivratri Nagpanchami</i>	<i>Umred</i>	<i>February</i>	<i>Khairi</i>	<i>10,000</i>
29.	<i>Dutt jayanti</i>		<i>December</i>	<i>Bela</i>	<i>15,000</i>
30.	<i>Vithubaba Devsthan</i>		<i>April</i>	<i>Tirkhura</i>	<i>5,000</i>
31.	<i>Ambhora Devsthan</i>	<i>Kuhi</i>	<i>Mahashivratri</i>	<i>Ambhora</i>	<i>2,00,000</i>
32.	<i>Bhimadevi</i>	<i>Bhiwapur</i>	<i>Navratra</i>	<i>Bhiwapur</i>	<i>30,000</i>

33.	Hanuman Mandir		Machepar	December	24,000
34.	Pamatma ek Sewak	Mouda	Pawad Dhouda	27 January	9-10 lakhs
35.	Mahalaxmi Mandir Koradi	Kamptee	Koradi	Navratra	
36.	Dragon palace		Kamptee	Oct -Nov	
37.	Ram Mandir	Ramtek	Ramtek	April –May	1,00,000
38.	Jain Manir		Ramtek	March	-----
39.	Chakradhar Swami Mandir		Ramtek	April	-----
40.	Kuawara Bhivsen	Parseoni	Chargaon	April	15,000
41.	Chota Mahadev		Ghogra	March	22,000
42.	Kapileshwar	Saoner	Kelvad		5,000
43.	Nadagomukh		Nanadagomukh	Shivratri	5,000
44.	Sant Tajjudin Baba		Waki	March	15,000
45.	Shiv Dham		Khapa	March	25,000
46.	Lascar Shahbaba Urs		Khapa	Marchhaitra Purnima	22,000
47.	Mahashivratri	Kalmeshwar	Ladai jangal	Febraury	5,000
48.	Ganesh Chaturthi		Aadasa	October	10,000
49.	Shri Pandhari yatra		Ghapewada	Febauary	15,000
50.	Chandika mata Mandir	Katol	Katol	Navratri	20,000
51.	Sarswati Mata mandir		Katol	Navratri	25,000
52.	Sati Anusya mata mandir		Parasinga	September	30,000
53.	Durga Mandir	Narkhed	Narkhed	December	40,000
54.	Hanuman Mandir		Belona	March	1,50,000
55.	Mahadev Mandir		Khapari	March	15,000
56.	Someshwar Mandir		Jalalkhera	March	1,50,000

				September	50,000 1,50,000
57.					

### 1.7 List of Black Spots( Accident Sites) Points in Nagpur District

Sr No.	Locations
	<b>Traffic East</b>
1.	Mahalagi Nagar Chowk
2.	Vathoda Ring Road
3.	Manewada Ring Road
	<b>Traffic West</b>
4.	New katol Naka Chowk
5.	Japani Garden Chowk
6.	Nagpur Saoner Highway
	<b>Traffic North</b>
7.	Telephone exchange Chowk
8.	Gangabai Ghat Chowk
	<b>Traffic South</b>
9.	Khapari Naka
10.	Chinch Bhavan Chowk
11.	Mihan Flyover Over Mahesh Dhaba
12	Chinch Bhavan Flyover, Wardh Road
	<b>Traffic Indora</b>

13	Junapardi Naka
14.	Mehta Vajan Kata, Deputy Signal
15.	Hanuman Mandir Pardi
16.	Prakash High School Chowk Pardi
17	Jaripatka Ring road Chowk
18	Maruti Showroom Chowk
19	Uppalwadi Puliya
20	Bitta Bhatti Chowk
21	Prakash Highschool Kapasi Puliya Jawal
	<b>Traffic MIDC</b>
22	I.C Chowk
23	Vaishali Nagar Chowk
24	Ordnance factory Gate Eight

### 1.7 History and Scale of Various Accident which Occurred between 2015 to 2016

Type	2015			2016		
	Accident	Deaths	Injured	Accident	Deaths	Injured
Very High Accident	254	260	56	291	310	116
Serious Accident	497	0	613	553	0	774
Normal Accident	53	0	564	529	0	620

<b>Total</b>	<b>1254</b>	<b>260</b>	<b>1233</b>	<b>1373</b>	<b>310</b>	<b>1510</b>
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**1.8 Taluka-wise Villages which are vulnerable to flood and Drought with affected population as per the Record from 2013 to 2015 given by various Taluka**

<b>Flood Affected Villages of Umred Taluka and Affected Population circle wise-Umred</b>							
<b>Name of Taluka</b>	<b>Name of Circle</b>	<b>Name of Gram Panchayat</b>	<b>Name of Village Affected Gram Panchayat</b>	<b>No of affected families</b>	<b>Total affected Population</b>		
<b>Umred</b>	<i>Bela</i>	<i>Kalamana</i>	<i>Kalamana</i>	-----		<i>All these village comes under the Red zone of flooding in the taluka</i>	
		<i>Kalamana</i>	<i>Pawani</i>	5	20		
		<i>Kalamana</i>	<i>Salai (Khurda)</i>	26	120		
		<b>Total</b>		31	240		
	<i>Sirsi</i>	<i>Sawangi(K)</i>	<i>Sawangi</i>	7			
		<i>Sawangi(K)</i>	<i>Borimajra</i>	-----			
		<i>Sawangi(B)</i>	<i>Sawangi</i>	40			
		<i>Singori</i>	<i>Singori</i>	-----			
		<i>Pipra</i>	<i>Pipra</i>	45			
		<i>Hiwara</i>	<i>Hiwara</i>	60			
		<i>Sirsi</i>	<i>Sirsi</i>	20	110		
		<b>Total</b>		212	845		
		<i>Mangali</i>	<i>Khapari</i>	20	100		
		<i>Matkazari</i>	<i>Mazatkajari</i>	80	400		
		<b>Total</b>		100	500		
		<i>Makardhokda</i>	<i>Shirpur</i>	<i>Kanva</i>	180		592
		<b>Total</b>		180	592		
	<b>Flood Affected villages of Hingana Taluka and Affected Population circle wise-Hingana</b>						
<b>Hingana</b>	<i>Hingana</i>	<i>Hingana</i>	<i>Hingana</i>	112	506		
		<i>Mondha</i>	<i>Mondha</i>	59	252		
		<i>Kinhidhanoli</i>	<i>Degma Khurd</i>	3	2		

			<i>Kinhi Dha</i>	98	540	
		<i>Metaumari</i>	<i>Mangli</i>	15	71	
			<i>Girola</i>	24	118	
			<i>Metaumari</i>	7	24	
		<i>Mohgaw Zilpi</i>	<i>Mohgaw Zilpi</i>	18	68	
		<i>Mandaw Ghorad</i>	<i>Mandaw Ghorad</i>	19	25	
			<i>Junewadi</i>			
			<i>Ukhali</i>	1	11	
				1	4	
		<i>Sawang Dewli</i>	<i>Sawang Dewli</i>	39	121	
			<i>Dewli Sawangi</i>	2	8	
		<b>Total</b>		<b>398</b>	<b>1750</b>	
	<b>Wanadongri</b>	<i>Khairi Pannase</i>	<i>Khairi Pannase</i>	4	19	
		<i>Wanadongri</i>	<i>Khadka</i>	5	17	
			<i>Raypur</i>	198	872	
			<i>Dhanoli</i>	104	467	
			<i>Takli</i>	2	13	
		<b>Total</b>		<b>313</b>	<b>1388</b>	
<b>\</b>	<b>Gumgaw</b>	<i>Gumgaw</i>	<i>Gumgaw</i>	21	88	
		<i>Kotewada</i>	<i>Ketewada</i>	10	44	
		<i>Aamgaw Dewli</i>	<i>Aamgaw Dewli</i>	1	4	
		<i>Wadgaw</i>	<i>Wagdhara</i>	3	14	
			<i>Wadgaw</i>	25	102	
			<i>Panjari</i>	10	43	
		<i>Salaidhabha</i>	<i>Salaidhabha</i>	7	32	
			<i>Pohi</i>	27	119	
		<i>Kirmiti Bharaks</i>	<i>Tembhiri</i>	473	1593	
			<i>Wateghat</i>	13	49	
			<i>Turakmari</i>	11	57	
		<i>Shirul</i>	<i>Shirul</i>	4	8	
		<b>Total</b>		<b>605</b>	<b>2153</b>	
	<b>Kanholibara</b>	<i>Pipaldhara</i>	<i>Pipaldhara</i>	1	4	
		<i>Khadki</i>	<i>Khadki</i>	74	332	
			<i>Mandwa</i>	5	23	
			<i>Marwadi</i>			
		<i>Pendhri Dewli</i>	<i>Dewli Pendhari</i>	13	46	



		<i>Kanholbara</i>	<i>Kanholbara</i>	172	656	
		<i>Sawli Bibi</i>	<i>Sawli</i>	46	180	
			<i>Chauki</i>	2	6	
			<i>Lakhmapur</i>	41	185	
			<i>Bhansoli</i>	4	34	
			<i>Mandwa</i>	4	19	
		<b>Total</b>		<b>362</b>	<b>1475</b>	
		<i>Haladgaw</i>	<i>Haladgaw</i>	5	26	
			<i>Bhansoli</i>	22	101	
		<i>Ghodeghat</i>	<i>Wadgaw Bakshi</i>	20	78	
			<i>Ghodeghat</i>	16	58	
		<i>Khapri Gandhi</i>	<i>Aanjangaw</i>	11	47	
			<i>Khapri Gandhi</i>	92	393	
			<i>Dewli Nistani</i>	16	71	
			<i>Pipri</i>	18	64	
		<i>Sawangi Aasola</i>	<i>Sawangi Aasola</i>	40	100	
		<i>Takal Ghat</i>	<i>Bidganeshpur</i>	491	1832	
			<i>Takalghat</i>	883	3633	
			<i>Sukli Beldar</i>	327	1165	
		<b>Total</b>		<b>1941</b>	<b>7660</b>	
	<i>Adegaw</i>	<i>Neri Mankar</i>	<i>Kinhi</i>	1	2	
			<i>Neri Mankar</i>	3	13	
			<i>Mangrul</i>	15	64	
		<i>Digdoh Pande</i>	<i>Digdoh Pande</i>	56	242	
			<i>Walni</i>	1	2	
		<i>Adegaw</i>	<i>Adegaw</i>	1	5	
		<b>Total</b>		<b>77</b>	<b>328</b>	
<b>Flood Affected Population circle wise- Nagpur Gramin</b>						
	<i>Hudkeshwar</i>	<i>Hudkeshwar</i>	<i>Hudkeshwar</i>	325	1125	
		<b>Total</b>		<b>325</b>	<b>1125</b>	
	<i>Bori</i>	<i>Butibori</i>	<i>Butibori</i>	970	3214	
		<b>Total</b>		<b>970</b>	<b>3214</b>	

### 1.9 Drought affected Villages and Population between 2013 to 2016

<b>Drought Affected Villages In Hingana Taluka</b>					
<b>Hingana</b>	<b>Hingana</b>	<i>Hingana</i>	<i>Hingana</i>	1761	7668
		<i>Mondha</i>	<i>Mondha</i>	365	1482
		<i>Kinhi Dhanoli</i>	<i>Kinhi DHanoli</i>	167	781
			<i>Degma Khurd</i>	173	732
		<i>Metaumari</i>	<i>Dhanoli Kinhi</i>	233	952
			<i>Mangli</i>	135	579
			<i>Girola</i>	122	595
			<i>Mahsala Rithi</i>	18	70
		<i>Mohgaw Zilpi</i>	<i>Metaumari</i>	359	1538
			<i>Mohgaw Zilpi</i>	375	1653
		<i>Mandaw Ghorad</i>	<i>Zilpi</i>	14	45
			<i>Mandaw Ghorad ,</i>	261	1143
			<i>Salaimendha</i>	83	346
	<i>Junewadi</i>	<i>Bhiwkund Rithi</i>	4	10	
		<i>Junewadi</i>	232	1017	
		<i>Nanada Khurd</i>	12	40	
		<i>Ukhali</i>	134	990	
	<i>Sawang Dewali</i>	<i>Khairi Khurd</i>	48	204	
		<i>Sawang Dewali</i>	468	2138	
		<b>Wanadongri</b>	<i>Khairi Panse</i>	<i>Khairi Panse</i>	411
	<i>Sawardhota R</i>		<i>Sawardhota R</i>	12	16
	<i>Nilsoh</i>		<i>Nilsoh</i>	5468	20888
	<i>Digdoh</i>		<i>Digdoh</i>	9721	38157
	<i>Wadhamna</i>		<i>Nagalwadi</i>	641	2562
			<i>Wadhamna</i>	1349	6148
	<i>Wanadonri</i>		<i>Wanadonri</i>	9175	37667
	<i>Wagdhara</i>		<i>Wagdhara</i>	2330	9437
			<i>Isasani</i>	1095	4366
		<i>Sangam</i>			
		<i>Raypur</i>			
		<i>Sukli Gupchup</i>			
		<i>Takli</i>			

				154	668
				1882	8653
				114	513
				54	230
	<b>Gotegaon</b>	<i>Kotewada</i>	<i>Khadka</i>	100	371
			<i>Kotewada</i>	289	1496
			<i>Sumthana</i>	43	201
		<i>Kirmiti</i>	<i>Kirmiti Bhakras</i>	31	145
		<i>Bhakras</i>	<i>Kinhi</i>	133	540
			<i>Tembhari</i>	432	1556
			<i>Wateghat</i>	206	695
			<i>Turakmari</i>	185	759
		<i>Gumgaw</i>	<i>Shimakwada</i>	33	154
			<i>Kirmiti</i>	434	1572
			<i>Ladgaw</i>	8	31
		<i>Salaidhabha</i>	<i>Salaidhabha</i>	370	1566
			<i>Pohi</i>	87	343
			<i>Wadghara</i>	713	3108
		<i>Dhanoli</i>	<i>Dhanoli</i>	48	235
			<i>Kanholi</i>	42	209
		<i>Shirul</i>	<i>Shirul</i>	532	278
			<i>Dewli Peth</i>	11	35
			<i>Kanholi Ri</i>	4	14
		<i>Wadgaw</i>	<i>Wadgaw</i>	179	748
			<i>Datala</i>	50	208
			<i>Panjri</i>	104	408
		<i>Dewli Aamgaw</i>	<i>Dewli Aamgaw</i>	187	851
			<i>Sukhli Ghat</i>	1938	7186
		<i>Satgaw</i>	<i>Satgaw</i>	122	498
	<b>Takalghat</b>	<i>Kadki</i>	<i>Khadki</i>	157	690
			<i>Lakhmapur</i>	57	223
			<i>Kinhi</i>	42	173
			<i>Mandwa</i>	92	400
			<i>Bhansoli</i>	86	446
			<i>Singadrip</i>	23	59
		<i>Degma Bu</i>	<i>Degma Bu</i>	127	458
			<i>Kokaradi</i>	33	135

		<i>Mathni</i>	40	155
		<i>Itewahi</i>	140	593
	<i>Dewli Pendhri</i>	<i>Kajali</i>	156	729
		<i>Dewli Pendhari</i>	243	1181
	<i>Kanholi Bara</i>	<i>Kanholibara</i>	1542	6844
	<i>Sawali Bibi</i>	<i>Sawali Bibi</i>	243	993
		<i>Bibi</i>	118	534
		<i>Dhokarda</i>	180	752
		<i>Chouki</i>	34	143
	<i>Pipal Dhara</i>	<i>Bidborgaw</i>	76	338
		<i>Pipaldhara</i>	139	603
	<i>Aamgaw Dewli</i>	<i>Katagdhara</i>	140	614
		<i>Mandhwa</i>	248	840
		<i>Aamgaw Dewli</i>	376	1687
	<i>Khapri Gandhi</i>	<i>Khapri Gandhi</i>	159	633
		<i>Pipri</i>	47	761
		<i>Dewli Nistani</i>	48	195
	<i>Khapri Moreshwar</i>	<i>Dongargaw Rithi</i>	1	1
		<i>Khapari Moreshwar</i>		
		<i>Khairi Khurd</i>	240	1040
			81	348
	<i>Ghodeghat</i>	<i>Kohla Rithi</i>	52	165
		<i>Ghgodeghat</i>	145	556
		<i>Waranga</i>	6	27
		<i>Aanjanagaw</i>	189	751
		<i>Kinhala Ri</i>	1	6
	<i>Haladgaw</i>	<i>Haladgaw</i>	123	357
		<i>Wadgaw Bakshi</i>	97	398
	<i>Takalghat</i>	<i>Bhansoli</i>	104	398
		<i>Takalghat</i>	2934	11363
		<i>Gangapur</i>	26	104
		<i>Sukli Beldar</i>	304	1123
		<i>Bidganeshpur</i>	663	2399
		<i>Murzadi</i>	65	267
		<i>Umari</i>	37	145
	<i>Sawangi Aasola</i>	<i>Khapa</i>	304	1128
		<i>Sawangi Aasola</i>	150	644
			247	1082

		<i>Dabha</i>	<i>Dabha</i>	124	535
			<i>Aagargaw</i>	135	652
			<i>Yerangaw</i>	104	482
		<i>Chicholi Pathar</i>	<i>Chicholi Pathar</i>	204	930
		<i>Umari wagh</i>	<i>Umari wagh</i>	181	846
		<i>Kawdas</i>	<i>Kawdas</i>	268	1541
		<i>Gaurala</i>	<i>Gaurala</i>	183	759
			<i>Dewli Kalambande</i>	174	754
		<i>Dewli Kalbande</i>	<i>Khapa Khurd</i>	10	45
			<i>Digdoh Pande</i>	197	775
		<i>Digdoh Pande</i>	<i>Walni</i>	39	775
			<i>Dhanoli Kawdas</i>	109	414
		<i>Dhanoli Kawdas</i>	<i>Mohgaw Dhole</i>	85	369
			<i>Khairi Khapa</i>	80	367
			<i>Khara Nipani</i>	34	138
			<i>Nawegaw Khurd</i>	73	262
			<i>Gidamgad</i>	110	448
		<i>Gidamgaw</i>	<i>Gothangaw</i>	69	279
			<i>Adegaw</i>	353	1527
		<i>Adegaw</i>	<i>Sukli Kalar</i>	139	591
		<i>Sukli Kalar</i>	<i>Nandera</i>	50	151
			<i>Neri Mankar</i>	317	1405
		<i>Sukli Kalar</i>	<i>Nandera</i>	50	151
			<i>Neri Mankar</i>	317	1405
		<i>Neri Mankar</i>	<i>Kinhi</i>	54	195
			<i>Turagondi</i>	94	376
			<i>Mangrul</i>	200	813
		<i>Mangrul</i>	<i>Nildoh</i>	98	426
			<i>Shinka</i>	2	5
			<i>Amabajhari</i>	181	801
<i>Flood affected Villages in Kuhi taluka</i>					
<b>Kuhi</b>	<b>Titur</b>	<b>Vadegaon</b>	<i>Vadegaon Kale , Aajni, Pipari , Khalasma</i>	<i>All</i>	1591
		<b>Kuchadi</b>	<i>Kuchadi Mohadi, Lanjala</i>	<i>All</i>	1880
		<b>Chitapur</b>	<i>Bhamewada, Chitapur, Tarni</i>	<i>All</i>	1768
		<b>Malni</b>	<i>Malni, Mangali,</i>	<i>All</i>	1852

			Chanoda, Powari Rithi		
		<b>Dodma</b>	Dodma , Dongargaon, Nawargaon, Shiwani, Hetameti Rithi	All	2401
		<b>Titur</b>	Titur, Dhanoli, DipalaTitur	All	1903
		<b>Sasegaon</b>	Sasegaon, Khetapur, Takali, Sonegaon, Mendha Rithi	All	1997
		<b>Akoli</b>	Akoli, Bhojapur, Tembhari , Mendhegaon, Sagundhara Rithi, Heti Rithi	All	3041
		<b>laapur Nave</b>	Isapur Nave, Mohdara, ParosodiRithi, Aajni	All	1346
	<b>Kuhi</b>	<b>Sisli</b>	Sisli	All	2154
		<b>Ambadi</b>	Ambadi, Sawali, Bhowardev, Umarpeth, Navegaon Rithi	All	2153
		<b>Khobna</b>	Khoban, Bodkipeth	All	634
		<b>Bhatra</b>	Bhatra, Pandegaon, Lohara, Lohara, BidbothaliBhandrabodi, pkalpar Rithi, DalpatpurRithi, Dawadpur Rithi	All	1162
	<b>Mandhal</b>	<b>Musalgaon</b>	Musalgaon, Chipadi, Katara, Sonegaon	All	2227
		<b>Satara</b>	Satara, Bamhani	All	709
		<b>Ruyad</b>	Ruyad, Siroli Rithi	All	1559
		<b>Wag</b>	Wag	All	1522
		<b>Banor</b>	Banor Murbi, Chada, Malachi, Ridhora	All	1809
		<b>Chapegadi</b>	Chapegadi , Mohgaon, Chichghat, Rithi, Pakegaon Rithi	All	3193
		<b>Salwa</b>	Salwa, Khairbi, Newari Sawargain	All	3162
		<b>Adam</b>	Adam hudpa,	All	2085

			Chikalabodi			
	<b>Mandhal</b>	Mandhal	All		9555	
<b>Rajola</b>	<b>Dewali Kala</b>	Dewali Kala, Bhiwkund, Khursapar	All		1355	
	<b>Dewali Khurd</b>	Dewali Khurdi ,Takali	All		1108	
	<b>Rajola</b>	Rajola Agargaon, Sawarkhanda, Kaneri Khurd, Kaneri Do	All		2983	
	<b>Bopri Naik</b>	Bori Naik, Awarmara, Navegaon, aamti	All		2683	
	<b>Hardoli Naik</b>	Hardoli Naik Tekepar, ruyad, Pohara, Borda Rithi, Yedmepar Rithi, Pratappur	All		2257	
	<b>Kujba</b>	Kujba, Khenda, Pouni	All		2443	
	<b>Channa</b>	Channa	All		703	
	<b>Mandhal</b>	<b>Vadegaon Ma</b>	Vadegaon Ma , Navegaon Devi	All		1208
	<b>Panchkhedi</b>	<b>Majari</b>	Majari , Chichal	All		1140
<b>Kinhi</b>		KInhi, Shiwni, kesori	All		2116	
<b>Parsodi Raja</b>		Parsodi Raja, Rengatur, Bori, Sadachar, Pipalgaon Rithi	All		2170	
<b>Mandhal</b>	<b>Virkhandi</b>	Virkhandi	All		763	
	<b>Hardoli Raja</b>	Hardoli Raja	All		757	
	<b>Tarna</b>	Tarna , Ranbodi, Polsa Rithi, Waghdhara, Kitali Rithi	All		3260	
	<b>Chikna</b>	Chikna Butibola	All		1248	
	<b>Dongarmouda</b>	Dongarmouda, Thana , Dhamana	All		1237	
	<b>Thana</b>	Thana Dhamana	All		1256	
<b>Panchkhedi</b>	<b>Gothan Gaon</b>	Gothangaon, Chandla Rithi	All		1649	
	<b>Karhan Dala</b>	Karhandala	All		1008	
	<b>Rajoli</b>	Rajoli	All		607	
	<b>Panchkedi</b>	Packhedi Kherdi, Khairlanji, Madnapur	All		4019	
	<b>Taroli</b>	Taroli	All		745	
	<b>Sawangi</b>	Sawangi, Pandhargota,	All		892	

		<i>Brahmani</i>		
		<b>Fegad</b>	<i>Fegad, Bhiwapur</i>	<i>All</i>
	<b>Veltur</b>	<b>Jiwanpur</b>	<i>Jiwanpur</i>	<i>All</i>
		<b>Sonegaon</b>	<i>Sonegaon, Kukudumari,</i>	<i>Shifted</i>
		<b>Kharada</b>	<i>Kharada</i>	<i>All</i>
		<b>Sirsi</b>	<i>Sirsi, Navegaon, Sonarwahi, TamaswadiRithi</i>	<i>All</i>
		<b>Tukda</b>	<i>Tukda, Balapur</i>	<i>All</i>
		<b>Gonha</b>	<i>Gonha, Maloda, Pipari</i>	<i>All</i>
		<b>Khokarla</b>	<i>Khakarla, Dhanla</i>	<i>All</i>
		<b>Shikarpur</b>	<i>Sikharpur, Ratnapur, Sonpuri</i>	<i>All</i>
		<b>Veltur</b>	<i>Veltur, Bothali</i>	<i>All</i>
		<b>Ambhorakhure</b>		<i>All</i>
		<b>Mhasali</b>		<i>All</i>
		<b>Welgaon</b>	<i>Walegaon, Dahegaon,</i>	<i>All</i>
		<b>Pardi</b>	<i>Pardi , Pachkhedi ta, Parsoodi Rithi, Salai Rithi, UdeswarRithi</i>	<i>All</i>



### 1.10 Flood Zone wise Marked Villages of Different Taluka

<b>Taluka Kamptee</b>		
<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>
<b>Kanhan River</b>	Bidbina	<b>Blue</b>
<b>Kanhan River</b>	Sonegaon Raja	<b>Red</b>
<b>Dhoya-Poya Nala</b>	Khedi	<b>Red</b>
<b>Taluka Bhiawapur</b>		
<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>
<b>Maru River (Nakshi River)</b>	Ghokhala	<b>Red</b>
	Nandkheda	<b>Red</b>
	Parsodi	<b>Blue</b>
	Nakshi	<b>Blue</b>
	Mangli	<b>Blue</b>
	Ghatmauri	<b>Blue</b>
	Ghadeghat	<b>Blue</b>
	Gohdali	<b>Blue</b>
	Knhi Kala	<b>Blue</b>
	Kinnhi Khurd	<b>Blue</b>
<b>Taluka Mouda</b>		
<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>
<b>Kanhan River</b>	Mouda	<b>Red</b>
	Chehadi	<b>Red</b>
	Jhullar	<b>Red</b>
	Mathani	<b>Red</b>
	Kotegaon	<b>Red</b>
	Mohkhadi	<b>Red</b>
<b>Boregaon sand (Nala)</b>	Singhori	<b>Blue</b>
	Kumbhapur	<b>Blue</b>

**Taluka Narkhed**

<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>
<b>Wardha</b>	<b>Thugaodeo</b>	<b>Red</b>
	<b>Khairgaon</b>	<b>Red</b>
	<b>Thadipawani</b>	<b>Red</b>
	<b>Kharbadi</b>	<b>Red</b>
	<b>Peth Ismailpur</b>	<b>Red</b>
<b>Jamba River</b>	<b>Didargaon</b>	<b>Red</b>
	<b>Bharshingi</b>	<b>Red</b>
	<b>Narsingi</b>	<b>Red</b>
	<b>Karanjoli</b>	<b>Red</b>
	<b>Sahajapur</b>	<b>Red</b>
	<b>Naygaon</b>	<b>Red</b>
	<b>Khadki</b>	<b>Red</b>
<b>Kad Nadi</b>	<b>Khalangondi</b>	<b>Red</b>
	<b>Tara</b>	<b>Red</b>
<b>Kad Nadi or Salai Nala</b>	<b>Kharasi</b>	<b>Red</b>
<b>Kad nadi or Lendi Nala</b>	<b>Loharisawanga</b>	<b>Red</b>
<b>Kad Nadi and Khadki Nala</b>	<b>Kharala</b>	<b>Red</b>
<b>Jag Nadi</b>	<b>Bhisnupur</b>	<b>Red</b>
	<b>Khusalpur</b>	<b>Red</b>
	<b>Naygaon (Dhote)</b>	<b>Red</b>
<b>Jiwna Nadi</b>	<b>Yerala</b>	<b>Red</b>
	<b>Gagaldoh</b>	<b>Red</b>
	<b>Belauna</b>	<b>Red</b>
<b>Madar Nadi</b>	<b>Narkhed</b>	<b>Red</b>
<b>Chnadrabhaga Nadi</b>	<b>Parsodi(Dixit)</b>	<b>Red</b>
<b>Jam Nadi and Jiwana Nadi</b>	<b>Thaturwada</b>	<b>Red</b>
<b>Nala</b>	<b>Ramthi</b>	<b>Red</b>
<b>Sarkari Nala</b>	<b>Datewada</b>	<b>Red</b>
<b>Taluka Gramin</b>		
<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>

<b>Bhosle Talab</b>	<i>Dahegaon</i>	<b>Red</b>
<b>Telhara Talab</b>	<i>Telahara</i>	<b>Red</b>
<b>Paradi Nadi</b>	<i>Paradi</i>	<b>Red</b>
<b>Vena Dam</b>	<i>Waranga</i>	<b>Red</b>
<b>Nag River</b>	<i>Hudkeshwar</i>	<b>Red</b>
<b>Nag river</b>	<i>Vihargaon</i>	<b>Red</b>
<b>Salai Godhani Nala</b>	<i>Salai Godhani</i>	<b>Red</b>
<b>Vena River</b>	<i>Bori</i>	<b>Blue</b>
<b>Vena Dam</b>	<i>Kinhamalakadi</i>	<b>Blue</b>
<b>Gomati Nala Nahar</b>	<i>Ghogli</i>	<b>Blue</b>
<b>Wadgaon dam</b>	<i>Aasta</i>	<b>Blue</b>

**Taluka Hingana**

<b>River Name</b>	<b>Villages Name</b>	<b>Type of Marking</b>
<b>Nand River</b>	<i>Hirava</i>	<b>Red</b>
	<i>Pipara</i>	<b>Red</b>
	<i>Singori</i>	<b>Red</b>
	<i>Kalamana (b)</i>	<b>Red</b>
	<i>Salai Khurd</i>	<b>Red</b>
	<i>Pawani</i>	<b>Red</b>
<b>Mohana Nadi</b>	<i>Sawangi Bu</i>	<b>Red</b>
<b>Kanhva Nadi</b>	<i>Kanva</i>	<b>Blue</b>
<b>Nand Lake</b>	<i>Sirsi</i>	<b>Blue</b>
<b>Matakazari Talab</b>	<i>Matakazari</i>	<b>Blue</b>
<b>Khapari Talab</b>	<i>Khaapari</i>	<b>Blue</b>
<b>Makardhokda Talab</b>	<i>Makardhokda</i>	<b>Blue</b>

<b>Sayki Talab</b>	<b>Sayki</b>	<b>Blue</b>
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### 1.11 History of Lightening between 1-04-2016 to 31-10-2016

#### List of Casualties due to lightening between 1-04-2016 to 31-10-2016

Sr No .	Taluka	Casualties due to Lighting		Total
		Deaths	Injured	
1	Nagpu City	1	0	1
2	Nagpur Gramin	3	1	4
3	Hingana	1	0	1
4	Kamptee	0	0	
5	Kalmeshwar	0	1	1
6	Katol	0	0	0
7	Saoner	5	2	7
8	Kuhi	0	1	1
9	Bhiwapur	2	0	2
10.	Umred	2	0	2
11.	Mouda	1	1	3
12.	Narkhed	1	0	1
13.	Ramtek	0	5	5
14.	Parseoni	3	2	5
	<b>Total</b>	<b>19</b>	<b>13</b>	<b>32</b>

### 1.12 Disaster Vulnerability and Impact

Sr No	Type of Disaster	Potential Impact	Areas to be Affected
1	Forest Fire	Low	Area near by the Pench forest / Umred Sactuary and Forests
2	Lightening	Medium	Urban as well as rural areas such as Saoner, Mouda and Ramtek
3	Hail / Storm	Low	Mainly in the Rural Area of Umred , Mouda , Kuhi , Ramtek and Parseoni
4	Flood/ heavy rain	Medium	Low lying area nearby to river course Vena Chandrabhaga , Nag , Wardha and residential area in the Bhiwapur, butibori , Hudkeshwar and Jalakhera etc
5	Drought	Medium	Rural area mainly Narkhed, Katol , Umred and Hingana rural areas as well as agricultural belts in the district
6	Industrial and chemical accidents	Medium	MIDC Butibori , MIDC Hingana , MIDC Kalmeshwar and MIDC Mouda area and nearby residential area
7	Fire	Medium	Lakadaganj Urban residential and rural area
8	Earthquake	Low	Not many earthquake has been felt in the District

### 1.14 Seasonality of Disasters

Sr No	Disaster	Month			
		Jan-mar	Apr-Jun	Jul-sep	Oct-Dec
1	Forest Fire	Yes	Yes	-----	-----
2	Lightening	Yes	Yes	-----	-----
3	Hail / Storm	Yes	Yes	-----	-----
4	Flood/ heavy rain	-----	-----	Yes	-----
5	Drought	-----	Yes	-----	-----

6	<i>Industrial and chemical accidents</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
7	<i>Fire</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
8	<i>Earthquake</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
9	<i>Epidemic</i>	<i>-----</i>	<i>-----</i>	<i>Yes</i>	<i>Yes</i>

### **Vulnerability assessment**

“Vulnerability in this context can be defined as the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard. The concept is relative and dynamic.”

“People of Nagpur are vulnerable to floods, drought, and hailstorm and Fire hazards, chemical industries the vulnerability increase due to lack of hazard.

<b>Vulnerable groups in the village – to different hazards</b>				
<b>Sr No</b>	<b>Name of the Hazards</b>	<b>Vulnerable Area</b>	<b>Vulnerable Group</b>	<b>Facilities Affected</b>
<b>1</b>	<i>Flood</i>	<i>Low Lying areas of the Village near the Maru River and other rivers</i>	<ul style="list-style-type: none"> <li><i>1. Old age Women,</i></li> <li><i>2. Children below 12 years of age</i></li> <li><i>3. Women</i></li> <li><i>4. People below poverty line</i></li> </ul>	<i>Roads , Electricity , Drinking Water , Agriculture, Communication, Animal Losses</i>
<b>2</b>	<i>Hailstorm &amp; Drought</i>	<i>Agriculture Fields and Cotton Production</i>	<i>Mainly Small land Holding famers in the village</i>	<i>Production of the cotton and soyabean would decrease due to hailstorm thus leading to dependency over the government and credit sahuks would increase in the people below the poverty line</i>
<b>3.</b>	<i>Heat Waves</i>	<i>The whole village is vulnerable to heat</i>	<i>Mainly small children and people who</i>	<i>-----</i>

		waves in the Summer Season	travel to out city and travel for field jobs fJobs	
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**Social vulnerability**

The city has a population of 24.05 lakhs (Census 2011) and has experienced a growth of 19% during the last decade. The density is 11,056 person/ sq km compared to the district density of 470 person/ sq km. Key socio economic variables were used for analyzing the social vulnerability. Social vulnerability is a factor of the social and economic capacity of the society, which otherwise are indicators of coping capacity. Therefore, for the social vulnerability analysis, the social setting and livelihood aspects are considered.

**Map Showing Development Plans of Nagpur for year 1953, 1976 and 2001**

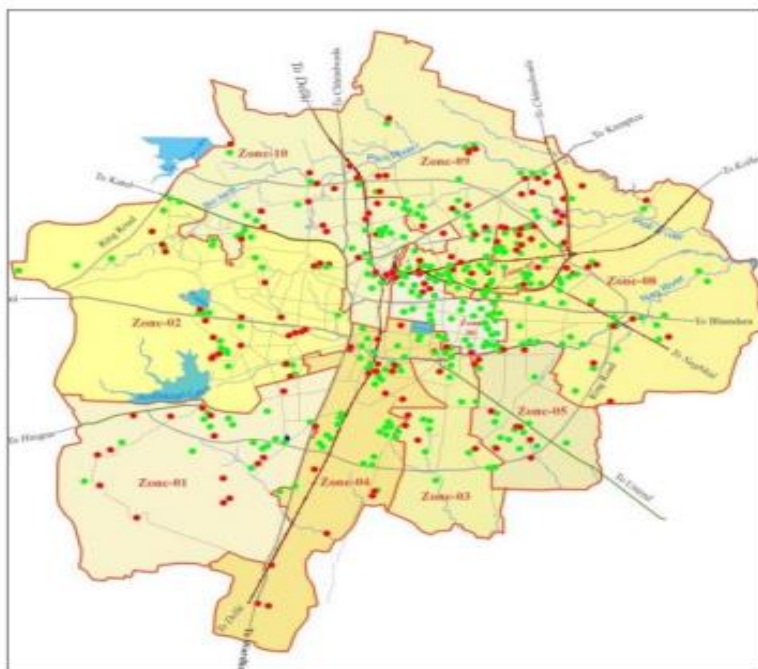


As per the Census of India 2001, 8.04 lakh people reside in slums. In 2001 slum population constituted about 26.54% of population. The number of slums in the city has increased from 424 slums in Year 2002 to about 446 in Year 2008 .Of total 446 slum settlements in the city 287 (65%) are notified. The total slum population is 858783 which is 34.84% of the total city population. The slum HHs in the city are 1, 71,645 and slum HH size is 5.0

As per the Census of India 2001, 8.04 lakh people reside in slums. In 2001 slum population constituted about 26.54% of population. The number of slums in the city has increased from 424 slums in Year 2002 to about 446 slums in Year 2008 .Of total 446 slum settlements in the city 287 (65%) are notified. The total slum population is 858783 which is 34.84% of the total city population. The slum HHs in the city are 1, 71,645 and slum HH size is 5.0.

Slums in Nagpur:	
Population	8,58,783
Households	1,71,645
Average Household Size	5.14 (NIUA)
Sex Ratio	963/1000 (NIUA)
Religion	Buddhist (54%)
Literacy Rate	74% (NIUA)
Child Population (0-14)	31.27% (NIUA)
Average Income	Rs. 2440 per month
Income (Female Headed Households)	Rs. 1424 (NIUA)
Average Expenditure	Rs. 2348
Food Expenditure	60% of income (NIUA)
Health and Education Expenditure	6% of income (base on NIUA average Income)
HH below Poverty Line (Rs. 540 for family w/ 5.14 persons)	63.39 (NIUA)

The map below depicts the spatial location of all slum settlements within the NMC municipal jurisdiction



Slums	
- TOTAL	446
Status of Notification	
• Notified	287
• Not Notified	137
• Newly Identified Slum Areas	22

LIST OF ZONES	No. of Slums (2002)	No. of Slums (2008)
Zone 1 (Lakshmi Nagar)	31	32
Zone 2 ( Dharampeth )	47	50
Zone 3 ( Hanuman Nagar )	17	19
Zone 4 ( Dhantoli )	62	64
Zone 5 ( Nehru Nagar )	25	26
Zone 6 ( Gandhibagh )	38	38
Zone 7 ( Satranjipura )	54	54
Zone 8 ( Lakadganj )	48	53
Zone 9 ( Aashi Nagar )	57	63
Zone 10 ( Mangalwari )	45	47
<b>Total</b>	<b>424</b>	<b>446</b>

Source: Handbook on slums by CHF International, 2007-08



### Zone wise Slum Population

Zones	City Area	City Population	Slum Population	% Slum Population
1	42.02	230624	47696	20.68
2	31.82	203242	86926	42.77
3	11.45	228664	38530	16.85
4	13.43	202753	114119	56.28
5	11.78	235000	79990	34.04
6	4.25	233058	120005	51.49
7	11.23	214049	113382	52.97
8	34.5	306319	97981	31.99
9	26.84	356741	96995	27.19
10	30.24	254557	63159	24.81
Total	217.56	2465007	858783	34.84

When we look at the statistics on the above tables and Graph we will find out that the almost 35 percent of the population is being living in the slum dwellings across the city, while when we look at the per capita Income is of these people, it is Rs 2440 per month, looking at the urban flooding scenario and concurrent fire hazard ratio in the District and its associative factor such as poor housing, poor living condition makes them more vulnerable to the urban flooding, they have less coping capacity to cope up from the other disaster.

The table below presents the access to basic services in the slums in Nagpur city.

Access to Basic Services in Slums		
Housing*	Total structures	
	Average Pucca Structures	40%
	Average Semi-Pucca Structures	38%
	Average Kaccha Structures	22%
Water Supply	Average piped water network coverage*	66%*
	Household coverage of individual water supply connections in slums	85.0%
Sanitation	Household coverage of individual toilets in slums	70.1%
	% of households defecating in open in slums	28.5%
Sewerage*	Average sewerage network coverage	72%
Solid Waste Management	Coverage of solid waste management services in slums	96.1%
Storm Water*	Slum settlements having storm water network coverage	57%
Road*	Average road coverage	78%
Streetlights*	Access to streetlights	54%
Electricity*	Access to electricity grid	60%
(1) * Handbook on slums by CHF International & NMC, 2007-08		
(2) PAS Data, 2010-11		

When we look at the slum population of Zone 2,4,6,7 has the highest slum dwelling population,

these areas has most schedule caste population and only 40 % of people has pucca structures while 60 percent is still living in semi pucca and Kaccha structures making people more vulnerable to during urban flooding and are more exposed to fire hazards due to high density of houses in the slum areas.

### **Physical Vulnerability**

Physical vulnerability refers to an area also depends on its geographic proximity to the source and origin of the disasters. It makes the area more vulnerable to disasters as compared to an area that is far away from the origin of the disaster.

Physical vulnerability includes the difficulty in access to water resources, means of communications, hospitals, police stations, fire brigades, roads, bridges and exits of a building or/an area, in case of disasters. Furthermore, the lack of proper planning and implementation in construction of residential and commercial buildings results in buildings that is weaker and vulnerable in earthquakes, floods, landslides and other hazards.

In order to check the physical Vulnerability of of the district mainly in the rural part ,4 villages were selected which falls under Red and blue zone of flooding in the different taluka of the district.The five villages were Butibori, Parsodi Dixit in Bhiwapur, Parsodi in Narkhed, Kanhwa in Umred and Sonegaon in Kamptee .Based on the findings of the various vulnerability pattern 4 villages which were located on the bank of various rivers has the settelements at its in the low lying areas of the vena river which makes the people vulnerable to the

Physical Vulnerability pattern in the 5 villages was the type of given below.

<b>Village</b>	<b>Vulnerability Pattern</b>
<i>Parsodi , Bhiwapur</i>	<i>River follows through the low lying areas of the village, people has been rehabilitated but stills people are living there in the Parsodi village which makes them vulnerable during flood and monsoon seasons.</i>
<i>Kanhwa, Umred</i>	<i>Kanhwa village falls in the edge of WCL Umred coal fields due to which half of the of the area falls WCL mining zone whenever the area of the WCL gets flooded during the water current moves towards Kanhwa village.</i>
<i>Butibori , Nagpur Gramin</i>	<i>Butibori has been developed in a town, in 1989 the village was rehabilitated and shifted to nai basti, but still due to enchroament and slum development is making people vulnerable who lives in the low lyingareas of purano basti</i>

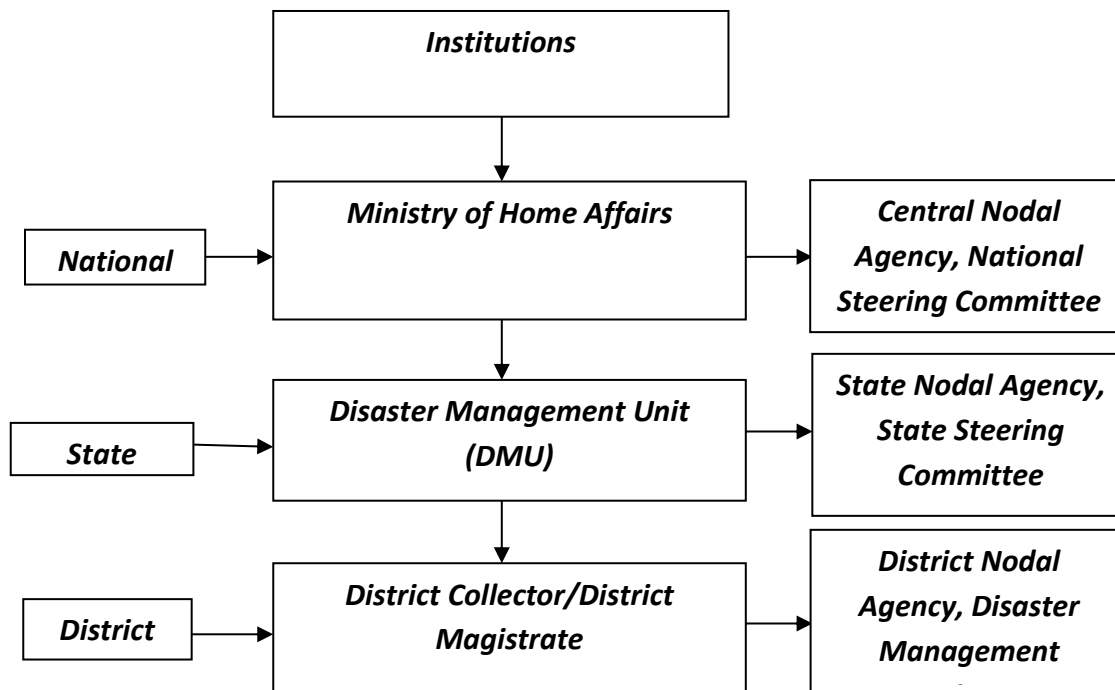
<i>Parsodi Dixit , Narkhed</i>	<i>The village has two rivers chandrabhaga and Nag flowing through east and west of the village due to which when there is flood the village gets disconnected the only road the other villages.</i>
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## Chapter 3 - Institutional Arrangement

### 3.1 DM Structure

The Disaster Management act 2005 provides legal and institutional framework for disaster management in India at the national level, state and district levels. In the national policy of India, disaster management is the primary subject vested with state government. The states act as the policy maker while districts are the implementing agencies of the various project and programme devised by the various states.

The primary responsibility of the District authority is follow the guidelines as provided by the State Disaster Management Authority based on that various awareness and training programme needs to be designed as per the hazards prevalent in the district. The DM acts, 2005 also mandates the District authority to take measures for preparation of District Disaster management plan, integration measures for prevention of disaster and mitigations measures need to be devised in the development plan of the district, it also mandates to develop and efficient early warning system in co-ordination with the various Department of the district.



### **3.2 District Disaster Management Authority**

*This authority has been constituted under section 25 (1) of the Disaster Management Act 2005 under the chairmanship of District Collector /District Magistrate with the following officers as its members, It is also responsible to co-ordinate in the implementation of the District Disaster Management plan, it also recommends the work to be done for mitigation and preparedness at the district level.*

<b>Sr No</b>	<b>Name of the officer</b>	<b>Position</b>
<b>1</b>	<i>Shri Sachin Kurve, District Collector ,</i>	<i>Chairperson</i>
<b>2</b>	<i>Smt Nisha Swarkar , Chairman , Zila Parishad ,</i>	<i>Vice –Chairman</i>
<b>3</b>	<i>Smt Kadmabari Balkavade, CEO, Zila Parishad</i>	<i>Member</i>
<b>4</b>	<i>Shri K N K Rao, Resident Deputy Collector</i>	<i>Member Secretary</i>
<b>5</b>	<i>Shri U B Navade , Civil Surgeon , Nagpur</i>	<i>Member</i>
<b>6</b>	<i>Shri Anant Rokade Superintendent of police, Nagpur Gramin</i>	<i>Member</i>
<b>7</b>	<i>Executive engineer, PWD Zone</i>	<i>Member</i>
<b>8</b>	<i>Executive engineer, Irrigation ,</i>	<i>Member</i>
<b>9</b>	<i>Municipal Commissioner</i>	<i>Special Invitee</i>
<b>10</b>	<i>Police Commissioner , Nagpur</i>	<i>Special Invitee</i>
<b>11</b>	<i>Commandant Homeguard / SDRF</i>	<i>Special Invitee</i>
<b>12</b>	<i>NGO Representative</i>	<i>Special Invitee</i>

### **Powers and Functions of District Authority (DDMA)**

- 1. Preparation of District Disaster Management Plan of the District of Nagpur and guidelines for local bodies on disaster management.*
- 2. District Disaster Management Plan and DDMA should implement the all measures should be made on the lines of National Policy, State Policy, National plan and State plan.*
- 3. DDMA should directed the various department for the identification of hazard affected areas of the district and based on that prevention and mitigation activities to be done and standard operating procedure to be made by very department has to be submitted by the district Authority.*
- 4. Responsible for preparation of district level response plan, organizing yearly meetings and*
- 5. Organization of different training for government officers, officials and NGOs on disaster management, and search and rescue.*
- 6. Holding regular meetings at District and Sub-Division level to reviewing the readiness of the administrative machinery to deal with disasters.*
- 7. Constitution of Relief Committees at all levels.*

8. Organizing Regular training programmes of Government functionaries, PRIs, ULBs and other stakeholders in various facets of disaster management.
9. To promote Public awareness and education in disaster management.
10. Community training and empowerment
11. Integration of Disaster Risk Reduction (DRR) into on-going development programmes of all departments.
12. Establishing effective early warning system, its maintenance and dissemination to vulnerable areas and communities
13. Periodic review of preparedness of departments at all levels.
14. Equip and prepare the district machinery before the disaster.
15. The disaster authority should make pre- disaster and post disaster SOP

#### **District Disaster Management Advisory Committee**

As per section 28 of the District Disaster Management Act 2005, an advisory committee may be constituted by DDMA for efficient discharge of the functions.

#### **District Disaster Management Committee**

In order to implement the District Disaster management Plan in the district the following committee has been constituted under the chairmanship of District Collector as below:-

<b>Sr No</b>	<b>Name of the officer</b>	<b>Position</b>
1	Shri Sachin Kurve, District Collector ,	Chairperson
2	Smt Nisha Swarkar , Chairman , Zila Parishad ,	Vice –Chairman
3.	Shri Shravan Harikar, Commisioner , NMC	Special Invittee
4.	Shri K Venkatesham , Commisioner of Police , Nagpur	Special Invitee
4	Smt Kadmabari Balkavade, CEO, Zila Parishad	Member
3	Shri K N K Rao, Resident Deputy Collector	Member Secretary
4	Shri U B Navade , Civil Surgeon , Nagpur	Member
5	Shri Anant Rokade Superintendent of police, Nagpur Gramin	Member
6	Executive engineer, PWD Zone .1	Member
7	Executive engineer, PWD Zone .2	Member
8	Executive engineer, PWD Zone .3	Member
9	Executive engineer, Irrigation , Pench prakalp	Member
10.	Executive Engineer, irrigation, VIDC	Member

11.	Executive Engineer, irrigation, Gosikhurd	Member
12.	Executive Engineer, irrigation,	Member
13.	Executive Engineer, Minor irrigation department , ZP	Member
14.	Executive Engineer,	Member
15	The Supdt. Engineer, MESC	Member
16	The Executive Engineer, MSEB	Member
17	The Deputy Director of Education	Member
18	The Divisional Manager, Railways	Member
19	The Regional Transport Officer	Member
20	The Regional Manager, M.S.R.T.C.	Member
21	The District Publicity Officer	Member
22	The District Supply Officer	Member
23	The Local Station Director, A.I.R.	Member
24	The Local Station Director, Doordarshan	Member
25	The District Commandant, Home Guards	Member
26	The Divisional Forests Officer	Member
27	The Sub-Divisional Officer(s)	Member
28	The Public Relation officer BSNL Department	Member
29	The Defense Units.	Member
30	The District Level NGOs representative	Members
31	The MARG representatives	Members

### **3.3 Classification of the Institutions at district level**

The various institutions at district level can be classified in different groups as below:

➤ *Classification as per levels*

The various government institutions at Nagpur district can be classified as per their administrative levels as below:

- *District Level*
- *Tehsil Level*
- *Gram Panchayat Level*

#### **Classification as per Stakeholders**

*Government Stakeholders: This includes the DDMA, line departments, ESFs, local self-governance etc. as below:*

- *District Disaster Management Authority (DDMA): DDMA is an institution constituted as per the National Disaster Management Act, 2005 at a district level to ensure effective management and response to any disaster.*
- *Line Departments: There are 28 line departments in the district and are accountable to district administration.*
- *Panchayati Raj Institutions (PRIs): Zilla Parishad is a local government body at the district level. It is the third tier of Panchayati Raj System. It looks after the administration of the rural area of the district and its office is located at the district headquarters. The Hindi word Parishad means Council and Zilla Parishad translates to District Council. The PRIs in the district with elected bodies at district, Block and GP level ensure the greater participation of the people and effective development and implementation of the rural programs in the district.*

**Non-Government Stakeholders:**

- *NGO's: There are several non-government organizations actively working in the district on various issues which directly or indirectly include the issues related to disaster management, capacity building, strengthening community capacities etc.*
- *Self Help Group: There are a number of SHG which have been started by the village community people for helping each other and dealing with crisis situations.*
- *Other Stakeholders: There are various other stakeholder groups in the district who have resources, capacities etc. in one form or the other and have been quite supportive during disaster times.*

**Emergency Support Agencies**

*Emergency Support Agencies play a major role in preparedness and mitigation. Each nodal officer will be accountable to his own department in terms of the disaster management. District Project Officer and project coordinators have been appointed in the district to look after the day-to-day affairs of disaster management in the district.*

*The objective of these Departments is to provide necessary guidance and inputs in preparedness, mitigation and management planning through a participatory approach. It is responsible for all disaster management activities (prevention, mitigation, preparedness, relief, rehabilitation, reconstruction) at the district level, including formation and training of Disaster Management Teams in specific areas such as warning dissemination, damage assessment, first aid & medical relief, search & rescue, trauma counseling, shelter management, water & sanitation, carcass disposal, relief & coordination etc. Capacity building and training activities at all levels, awareness generation; preparing District Disaster Management Plan; replication of activities at the taluka and community levels, periodic organization of mock drills and disaster preparedness exercises at*



various levels involving co-ordination of the various agencies, are contributing significantly in attaining the ultimate goal of disaster management.

### **3.4 District Emergency Operation Centre**

*District Emergency Operation Centre or District Control Room is the nerve of the Disaster Management system in the district. It is the primary agencies for co-ordination and monitoring agency in case of any disaster.. There is a proposal of making state of art DEOC in all the districts of Maharashtra by Disaster Management Unit (DMU)*

*The Centre should be well-equipped with various Information Technology (IT) based equipment's such as Computer with internet facilities. 24x7 Control Room is manned by trained Civil Defense volunteers and is equipped with Emergency Rescue Kits, Power Generator etc. Further it may be strengthened with HAM equipment's, Early Warning Systems, etc. The EOC is also well connected with other control rooms of the Government Departments. A resource data base inventory has been uploaded in IT network. The resource inventory include all the information related to availability and location of the equipment's, vehicles and manpower available with the various department such as Fire service, Police Service, Health Department, Municipal Corporation, Food and Civil Supply, Transport Department, Road and Building, Public Welfare Department etc. This inventory would be helpful in mobilizing the available resources within various districts and states at the time of emergency.*

*District emergency operation centre has been established under the aegis District Disaster Management authority at Collector Office, Nagpur, which is fully operational 24\*7 with officials on duty. DEOC has landline no. 0712-2562668 and Toll free No. 1077 for proper communication and dissemination of information in case of any emergency and disaster. To monitor, coordinate and implement the actions for disaster management;*

#### **Functions and Responsibilities**

- 1. Activate the ESF in the event of a disaster and coordinate the actions of various departments/agencies.*
- 2. Ensure that all warning, communication systems and instruments are in working conditions;*
- 3. Receive information on a routine basis from the district departments on the vulnerability of the various places and villages (parts of the districts).*
- 4. Receive reports on the preparedness of the district level departments and the resources at their disposal to arrange and meet their requirements.*
- 5. Upgrade the Disaster Management Action according to the changing scenario.*

6. *Maintain a web-based inventory of all resources through the India Disaster Resource Network (IDRN)*
7. *Provide information to the Relief Commissioner' Office of the disaster/emergencies/accidents taking place in the district regularly and maintain a database of disasters and losses caused by them.*
8. *Monitor preparedness measures and training activities;*
9. *Providing information at district level, local level and disaster prone areas through appropriate media.*
10. *Brief the media of the situations and prepare day to day reports during the disasters.*
11. *To report the actual scenario and the action taken by the District Administration*
12. *Maintain a database of trained personnel and volunteers who could be contacted at any time.*
13. *Liaise with on-site operation centre, State EOC and other emergency services.*

### **Quick Response Team**

*QRTs have been formed by the District Disaster Management Authority for providing speedy and swift response to any kind of emergency situation. The team comprises of volunteers from trained firemens, swimmers from Home Guard department, NMC and police department etc. These personals are trained for disaster response situations. For eg in Nagpur district, flood is main cause of any emergency, so the team is provided with training in swimming how to rescue people during floods etc.*

### **3.5 Taluka Level Disaster Management Committee**

*The Taluka level Disaster Management Committee should be constituted which will be headed by the Tahsildar of that Tehsil and Officers from other line departments, representatives from local Panchayat body will be the members of this committee. The committee will look into all the aspects of disaster management including preparedness, mitigation, response and relief. Following will be the composite structure of the Committee.*

<b>S No.</b>	<b>Detail</b>
1	<i>Sub Divisional officer / Magistrate</i>
2	<i>Tehsildar</i>
3	<i>Taluka Development Officer</i>
4	<i>Dy. Executive Engineer(Panchayat)</i>
5	<i>Dy. Executive Engineer(irrigation)</i>
6	<i>Dy. Executive Engineer(PWD)</i>
7	<i>Dy. Executive Engineer(Water Supply)</i>
8	<i>Junior Engineer(Telecom)</i>

9	Dy. Executive Engineer(MSED)
10	Medical Officer(PHC)
11	Police Inspector
12	Tehsil Home Guard Commandant
13	Deport Manager(State Transport)
14	Taluka Panchayat representative
15	MLA
16	NGO representative

### **3.6 Village Disaster Management Committee**

*Each village shall have a Disaster Management Committee consisting of officials and nonofficial. 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 members are as follows*

<b>S no.</b>	<b>Detail</b>
1	Sarpanch
2	Talathi
3	Primary School Principal
4	Health Worker
5	Anganwadi Worker
6	Community Representative
7	Community Representative(women)
8	PDS dealer

### **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 lifesaving 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.*

### **Media Management**

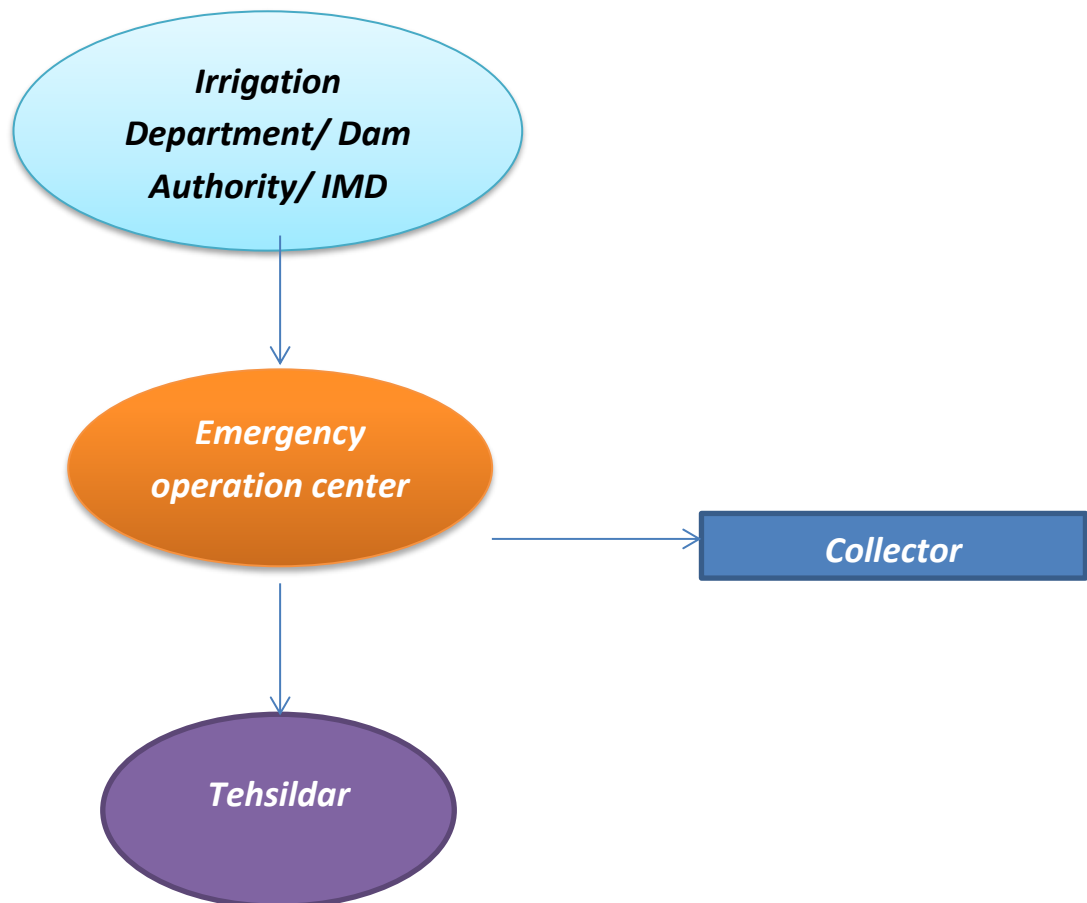
The role of media, both print and electronic, in informing the people and the authorities during emergencies becomes critical, especially the ways in which media can play a vital role in public awareness and preparedness through educating the public about disasters; warning of hazards; gathering and 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.

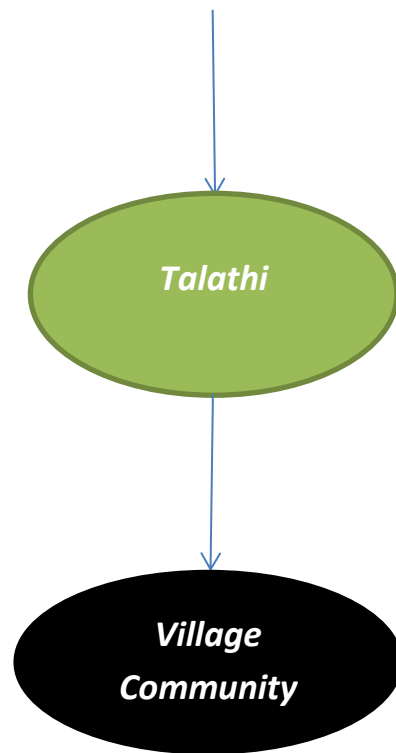
Amravati Collector office has established an effective system of collaborating with the media during emergencies. Both print and electronic media is regularly briefed at predetermined time intervals about the events as they occur and the prevailing situation on ground.

### **Early Warning Action Plan**

The availability of early warning system is of utmost important for proper dissemination of warnings to the people. Thus for floods which is the most prominent disaster in the district there is an agency designated with the responsibility of keeping track of development in respect of specific hazard and inform the designated authorities at the district level about the impending disaste

### **3.7 Flow of Command for Floods**





### **3.8 Department Wise Role of Primary and Secondary Agencies**

- *Municipal Corporation*
  - ✓ *Search and Rescue operations*
  - ✓ *Providing Temporary Shelters*
  - ✓ *Public Information*
  - ✓ *Relief Distribution*
  - ✓ *Construction materials*
  - ✓ *Restoration of infrastructure*
- *Fire Services*
  - ✓ *Search and Rescue operations*
  - ✓ *Evacuation*
  - ✓ *Disposal of Dead (as per customs)*
  - ✓ *Public Information*
- *PWD*

- ✓ *Construction materials*
- ✓ *Restoration of infrastructure*
- ✓ *Providing temporary shelters*
- *Civil Defense*
  - ✓ *Cordoning off area*
  - ✓ *Search and Rescue operations*
  - ✓ *Evacuation*
  - ✓ *First Aid operations*
  
- *Home Guards*
  - ✓ *Providing Temporary Shelters*
  - ✓ *Relief Distribution*
  - ✓ *Reception/ Information Centres*
- *Department of Health*
  - ✓ *Medical aid (Treatment of injuries and surgical operations)*
  - ✓ *Health and sanitation*
  - ✓ *Disposal of Dead ( as per customs)*
- *Irrigation and Flood Control*
  - ✓ *Construction materials*
  - ✓ *Restoration of infrastructure*
- *BSNL*
  - ✓ *Communication*
  - ✓ *Reception/ Information Centres*
  - ✓ *Restoration of infrastructure*
- *Water Resource Department*
  - ✓ *Drinking Water arrangements*
  - ✓ *Restoration of infrastructure*
- *MSRTC*

- ✓ *Provision of vehicles*
- ✓ *Transportation of materials, manpower etc.*
- *MSED*
  - ✓ *Restoration of infrastructure*
  - ✓ *Provision of power*
- *Red Cross Society*
  - ✓ *Providing Temporary Shelters*
  - ✓ *Medical aid (Treatment of injuries and surgical operations)*
  - ✓ *Health and sanitation*
  - ✓ *Relief Distribution*
- *Information and communication department*
  - ✓ *Public Information*
  - ✓ *Communication*
  - ✓ *Reception/ Information Centres*
- *SDRF/NDRF and NCC*
  - ✓ *Search and Rescue operations*
  - ✓ *Evacuation*
  - ✓ *Traffic Management and Security of properties*
  - ✓ *Temporary Shelters*
  - ✓ *Disposal of Dead*
  - ✓ *Relief Distribution*
  - ✓ *Relief Supplies*

## Chapter 4- Prevention and Mitigation Measures

### 4.1. Definition

*Prevention consists of the actions and measures to detect contain, forestall events and circumstances to reduce risk from natural and human made disaster. Preventions include actions or measures taken to cover or shield assets from exposure, injury or destruction.*

*Prevention activities are designed to provide permanent solution from the disasters. Natural disaster cannot be prevented but taking some of the steps, human loss and injury can be reduced. Preventive measures which can be taken to reduce the impact of various disaster are structural planning based on National building Code (NBC, 2005), environmental regulation and planning and evacuation plan.*

*Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. In order for mitigation to be effective we need to take action now, before the next disaster to reduce human and financial consequences later (analyzing risk, reducing risk, and insuring against risk).*

*Under mitigation and prevention, structural and non-structural measures are taken basically to reduce the risk from the natural and unnatural disaster. Mitigation and preventive measures mainly consist of structural and non-structural measures. Structural measures includes construction of Dams, flood walls, watershed, and evacuation shelters. While Non Structural measures refers to awareness in education, implementation of NBC, land use planning and practices training and capacity building*

### 4.2. Disaster Mitigation Measures

#### 4.2.1. Flood Mitigation

*Flood mitigation seeks to reduce the risk from the flood events by modifying the areas susceptible to floods. Modifying susceptibility to floods damage and disruption is the flood plain management strategies to avoid dangerous, uneconomic, undesirable or unwise use of the flood plain .The tools use to implement this strategy are regulation, development and redevelopment policies, flood proofing and elevation.*



#### 4.2.2. Development of Regulation

Task	Activities	Responsibilities
Development of Techno-Legal Regime	<ul style="list-style-type: none"> <li>➤ Prohibition of development in wet lands, flood zone and low lying areas</li> <li>➤ Encourage for flood proofing structures in flood prone areas.</li> <li>➤ Build new water and sewage systems and utility lines</li> <li>➤ Prescribing standards for different flood prone Zones on flood maps.</li> <li>➤ Enactment and enforcement of laws regulating developmental activities in floodplain</li> <li>➤ To monitor specific building by-laws for flood plains</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Public Work Department</b></li> <li>➤ <b>Irrigation Department</b></li> <li>➤ <b>Panchayats</b></li> </ul>

#### **This 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 safeguards for new water and sewage systems and utility lines from flooding
- Enforcing risk zone, base flood elevation, and floodway requirements
- Prohibition on development in wetlands

#### 4.2.3 Flood Mapping and Zonation

Flood Mapping and Zonation assists the various department such as housing development, Nagpur Improvement trust, Nagpur Municipal Corporation to plan according based on the Flood Zones. It also helps the other department in installation of proper response mechanism in order to mitigate the events and would ensure safe sitting area in the hazard prone regions. This Includes

Task	Activities	Responsibilities
Arrangement of safe sitting in flood hazard areas	<ul style="list-style-type: none"> <li>➤ Development of flood hazard map</li> <li>➤ Study of past history on floods occurred and estimated loss and</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>Irrigation Department</b></li> <li>➤ <b>Flood control Board</b></li> <li>➤ <b>NMC</b></li> </ul>

	<p>damage</p> <ul style="list-style-type: none"> <li>➤ Asses the vulnerability of risk elements</li> <li>➤ Build houses in safer zone</li> </ul>	➤ <b>NIT</b>
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*It is important to check the history of flooding in the area. Wherever possible*

- *Map the extent of land covered by past floodwaters*
- *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*

#### **4.2.4. Flood Proofing and Elevation**

*Flood proofing is the use of permanent, contingent, or emergency techniques to either prevent flood waters from entering buildings or to minimize the damages from water that does get in. Some of the techniques involve using water-tight seals, closures or barriers,using water resistant materials, and temporarily relocating the contents of a building.Elevating a structure means raising it on fill, piers, or pilings so that it is above expected flood levels*

*Most new floodplain structures should be designed to incorporate foodproofing and/or elevation. Flood proofing could be applied retroactively (“retrofitted”) to existing structures.*

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
<i>Modifying flood by construction works</i>	<ul style="list-style-type: none"> <li>➤ <i>Construction of dams and reservoirs, dikes,levees, and flood walls, channel alterations, built high flow diversions, storm water management,coastline protection works and watershed management.</i></li> <li>➤ <i>Development of catchment</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Irrigation</b></li> <li>➤ <b>PWD</b></li> <li>➤ <b>DDMA</b></li> <li>➤ <b>FCB</b></li> </ul>

	<p style="text-align: center;"><i>area of the flood plain</i></p> <ul style="list-style-type: none"> <li>○ <i>forestation and vegetation</i></li> <li>○ <i>land sloping and small check dam</i></li> </ul> <p>➤ <i>Construction</i></p>	
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#### **4.2.5. Dams and Reservoirs**

*Storing flood water in reservoirs can modify floods by reducing the speed, at which the water flows, limiting the area flooded, and reducing and altering the timing of peak flows. However, misconceptions about or lack of understanding of dams can create an exaggerated sense of security. Reservoir sedimentation can significantly reduce flood control capacity. Competing uses of the reservoir can impair flood control. In addition, most dams are designed for purposes other than flood control, although they do have the temporary effect of flood reduction through storage. The availability of water or power associated with dams, therefore, often attracts new.*

*Developments, regardless of the flood risk or the ability of the dam to provide flood protection. Over time, without adequate land use regulations, encroachment onto the floodplain downstream of dams can increase exposure to flooding. Once signs of dam failure become visible, breaching often occurs within minutes or a few hours, leaving little or no time for evacuation. The massive volume of water and its high velocity will cause severe damage.*

#### **4.2.6. Channel Alterations**

*Channel alterations increase the flow-carrying capacity of a stream’s channel and thereby reduce the height of a flood. The various types of alterations include straightening, deepening, or widening the channel, removing debris, paving the channel, raising or enlarging bridges and culverts, and removing other obstructions. Alternative designs now developed include less straightening of channels, employ more gradual slopes, and use natural vegetation or riprap rather than concrete-lined channels. This minimizes destruction of fish and wildlife habitat, helps maintain water quality, and avoids undesirable downstream impacts*

#### **4.2.7 High Flow Diversions**

*Diversions intercept flood waters upstream of a damage-prone or constricted area and convey them around it through an artificial channel or a designated flow-way. Diversions may either completely reroute a stream or collect and transport only excessive or potentially damaging flows. A negative*

*aspect of such diversions is the false sense of security that may prevail in the protected areas along with a lack of awareness that the floodway actually exists*

#### **4.2.8. Dikes, Levees and Flood walls**

*Dikes, including levees and flood walls, can be thought of as dams built roughly parallel to a stream rather than across its channel, or parallel to the shorelines of lakes and other water bodies. Levees are generally constructed of earth, flood walls of masonry or steel. Although they can be effective in reducing flood losses, they are poorly designed and maintained.*

*Areas behind levees and flood walls may be at risk of greater than normal flood damage for several reasons. Many floodplain residents in those areas believe that they are protected from floods and do not think it necessary to take proper precautions. Development may also continue or accelerate, based on expected flood protection. A levee breach or flood wall failure, like a dam 'break; can release a large wave of flood waters with high velocity. After a breach, the downstream portion of the levee system may also act like a dam, catching and prolonging flooding of the once-protected area.*

#### **4.2.9 Watershed Management**

*Watershed Management measures reduce overland run-off from agricultural lands to streams or other waters by improving infiltration of rainfall into the soil, slowing and minimizing run off, and reducing the sedimentation that can clog stream channels or storage reservoirs. These techniques are most commonly, used in agricultural areas. They include maintaining trees, shrubbery and vegetative cover, terracing, slope stabilization, using grass waterways, conservation tillage, and strip farming. Some measures involve building structures to retain or redirect run-off. Several land treatment measures involve little additional costs to the farmer, and some, such as no till or minimum tillage, actually reduce costs. Technical and financial assistance is provided through government and international development organizations. Although the impact of an individual measure is limited, extensive watershed management programs can effectively reduce flooding in small headwater areas.*

#### **4.2.10. Development of Catchment Area**

*Flood plains need to be developed with a forestation, land slopes and check dams, small reservoirs and vegetations. All these will check the flow of water and protect the soil erosion. The flow of flood water is fast in soil eroded area. Thus catchment areas should be protected with all possible protective measures*

### 4.3. Flood Forecasting and Warning System

<b>Task</b>	<b>Activities</b>	<b>Responsibility</b>
Updating of flood forecasting and warning system	<ul style="list-style-type: none"> <li>➤ Strengthening and upgradation of existing flood forecasting system</li> <li>➤ Stay in touch with IMD and CWC</li> <li>➤ Establish infrastructure for flood warning and dissemination</li> <li>➤ Ensure proper communication between district authority, DEOC and SEOC.</li> </ul>	<b>DDMA</b> <b>CWC</b> <b>IMD</b> <b>Tahsil Level Rain Monitoring Office</b>

#### 4.3.1. Non-Structural Measures

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
Capacity Building	<ul style="list-style-type: none"> <li>➤ Prepare departmental flood contingency plan</li> <li>➤ Establish rain gauge recording station with trained manpower in the district</li> <li>➤ Train the flood rescue teams and ensure they have</li> <li>➤ Functional rescue materials.</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>NMC</b></li> <li>➤ <b>Irrigation Department</b></li> <li>➤ <b>Home Guards</b></li> <li>➤ <b>Fire Departments</b></li> <li>➤ <b>SDRF</b></li> </ul>
Awareness Generation	<ul style="list-style-type: none"> <li>➤ Undertake public awareness activities in flood affected areas and let people know what to do and what not to do after, before and during flood.</li> <li>➤ Design and develop the IEC</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>SDRF</b></li> <li>➤ <b>NMC</b></li> <li>➤ <b>Irrigation</b></li> </ul>

	<p><i>materials in local language and ensure their storage and distribution among people.</i></p> <p>➤ <i>Motivate all families in flood prone areas to prepare the family kit of emergency materials.</i></p>	<p><b>Department</b></p> <p>➤ <b>Home Guards</b></p>
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#### **4.4. Drought**

*Drought is a natural phenomenon that has drastic implications on human lives, food insecurity and natural resources degradation. Drought leads to water shortages affecting agriculture, with social consequences such as famine, hunger, and migration. Climate change is gradually exacerbating droughts through increased frequency and severity in many parts of Vidarbha and Nagpur. The district should come up with drought mitigation plan at the district level and taluka level*

*The salient features of Drought mitigation plan should be:*

- i) A Drought Management Cell (DMC) will be established in the Local Agriculture Department.*
- ii) Drought management plans for the entire season will be prepared by the Agriculture Department well in advance in the month of May, based on the long season forecast issued by IMD in April and also the previous season's rain fall.*
- iii) Drought management plans will be prepared block wise.*
- iv) As the season progresses from June onwards, the DMC will review the plans prepared earlier at the onset of the monsoon and revise the strategy if required.*
- v) Weekly monitoring of the season and crop condition from June onwards till the end of the season and make necessary midseason corrections as and when required.*
- vi) The DMC will make use of the frontier techniques like remote sensing and GIS while providing the inputs to the DDMA.*

- vii) *A sound database will be created and updated regularly on weather, crop conditions, input supply, credit, insurance and market information, fodder supply etc. in order to assist the DDMA for Drought declaration and Management.*
- viii) *Awareness will be brought among the farmers on drought regulations and enforcement.*

*In order to cope with multitudinal approaches need to be followed such as structural and non-structural measures can be taken to mitigate the drought situation. As it is directly related to water, soil and crop, priority must be given to manage these to minimize its effect.*

**4.4.1. Structural Measures**

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
<i>Water Management Construction works</i>	<ul style="list-style-type: none"> <li>➤ <i>Construction/repair/strengthening of dams, reservoirs, lift irrigation, water sheds, tube wells and canals for surface irrigation</i></li> <li>➤ <i>Construction/repair/strengthening of percolation tanks, farm ponds, check dams etc.</i></li> <li>➤ <i>Construction/repair/strengthening of warehouses and cold storages for preservation/storage of food grains</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Public Work Department</b></li> <li>➤ <b>Irrigation Department</b></li> <li>➤ <b>Agriculture</b></li> <li>➤ <b>Revenue</b></li> </ul>
<i>Soil Management</i>	<ul style="list-style-type: none"> <li>➤ <i>Use of organic fertilizer to enhance water holding capacity of soil</i></li> <li>➤ <i>Prefer shorter growing period plants</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Agriculture Department</b></li> </ul>

Crop Management	<ul style="list-style-type: none"> <li>➤ Adaptation of strip cultivation of different crops</li> <li>➤ Adaptation of cover cropping to moisture the soil for long period</li> <li>➤ Do crop rotation for soil fertility and moisture contents.</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Agriculture</b></li> </ul>
Forecasting and Warning	<ul style="list-style-type: none"> <li>➤ Strengthening the existing drought forecasting system</li> <li>➤ Establish infrastructure for drought warning and dissemination</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>IMD</b></li> <li>➤ <b>Agriculture</b></li> <li>➤ <b>Irrigation</b></li> </ul>

Convergence with the development programme should be done such as proper watershed management. Keeping in this mind development programme such as Jalyukta Shivar, Integrated watershed development should be made focal point for drought mitigation in the district. Keeping in view the drainage and irrigation as interdependent to maintain the quality of soil, following water conservation related measures are required to be taken in drought prone areas:

- Construction/repair/strengthening of dams, reservoirs lift irrigation, water sheds, tube wells and canals for surface irrigation. Check dams, farm ponds and percolation tanks are also constructed for irrigation purpose.
- Digging of recharge wells and water harvesting structures to conserve water through rain water harvesting and by developing the culture of roof water harvesting in each household.
- Spring water harvesting by diverting hill streams through small excavated channels, for irrigation and domestic use.
- Construction of warehouses and cold storages for preservation/storage of food grains.

#### **4.4.2. Soil Monitoring**

Soil plays an important role in drought management. Measures to be taken to enhance the water holding capacity of soil.

- The use of organic fertilizers which not only enriches the soil with minerals but also slowly but surely enhances its water holding capacity. Besides, the use of organic fertilizer gets better values of the products in the market, specifically in the developed countries.



- *Afforestation which helps in both water and soil conservation. Such plants that have shorter growing period should be preferred.*

*The third factor responsible for agricultural drought is kind of cropping being done. There are cropping patterns that help in soil conservation as well as in getting better farm yield.*

*They are:*

- *Strip cultivation: Consist of cultivation of different crops in different strips simultaneously.*
- *Cover Cropping: In plantation fields where gestation period of trees is long., creeper crops are planted which spread fast and provide cover to the top soil and thereby conserve it.*
- *Crop rotation: Instead of grooming the same crop in the same field every year which tends to exhaust the same kind of mineral in the soil, as well as the moisture content in the soil. By rotating different types of crops soil fertility and moisture contents both are preserved.*
- *Alternate cropping: In deficit and/or irregular rainfall situations,alternate crops requiring less irrigation like maize, toria etc need to be sown*

#### **4.4.3. Non structural**

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
Capacity Building	<ul style="list-style-type: none"> <li>➤ <i>Develop Departmental Drought contingency plan action plan and SOP</i></li> <li>➤ <i>Provide training on drought mitigation and management to all stakeholders.</i></li> <li>➤ <i>Arrange demos on drip and sprinkle irrigation and water harvesting for farmers</i></li> <li>➤ <i>Encourage farmers to adapt crop pattern developed for drought prone areas</i></li> <li>➤ <i>Rational use of fertilizers and pesticides.</i></li> <li>➤ <i>Motivate farmers to adapt the technique for preservation of green</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Agriculture Depart</b></li> <li>➤ <b>Irrigation</b></li> <li>➤ <b>MID</b></li> </ul>

	<i>folder</i>	
Awareness	<ul style="list-style-type: none"> <li>➤ <i>Aware general public on drought consequences and provide tips on water conservation, drought resistant crops, new technology, off-farming activities and alternative livelihood sources.</i></li> <li>➤ <i>Aware farmers about government schemes and insurance policies for crops, animal husbandry, fishery, horticulture etc.</i></li> <li>➤ <i>Make exposure visits of farmers to observe new technology, and off-farming businesses,</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>Irrigation dept</b></li> <li>➤ <b>MID</b></li> <li>➤ <b>Agriculture Dept</b></li> </ul>

#### **4.5. Fires**

*Fire and emergency services are essentially under the control of municipal authorities and hence, are discouraged from crossing the municipal limits. District Disaster Management authority in coordination with Nagar parishads, private and government hazard prone industries and Industrial safety departments should establish and coordinated fire monitoring system with mapping all the resources available at the various fire stations and throughout the district to reduce the time lapse in the response process of any fire incident .*

##### **4.5.1. Structural Measures**

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
<i>Develop fire infrastructure and other fire facilities</i>	<ul style="list-style-type: none"> <li>➤ <i>Extension of fire and emergency services at the Nagar Parishad and Taluka Level</i></li> <li>➤ <i>Creation of Fire Volunteers at District level</i></li> <li>➤ <i>Modernization of fire department at all the levels</i></li> <li>➤ <i>Inclusion of Fire</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>NMC fire department</b></li> <li>➤ <b>Department of industrial safety and health</b></li> <li>➤ <b>District Disaster Management Authority</b></li> <li>➤ <b>Nagar parishads</b></li> </ul>

	<p>warning system in all the government buildings and fire hazard prone industries</p> <p>➤ Special burn wards in all the hospitals be established</p>	<p>➤ <b>Private and Government Hazardous industries</b></p>
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#### 4.5.2. Mitigation Strategy for Fires

- i) Identification of vulnerable habitations/ Industries / hazard prone area and mitigation actions would be taken to avoid/reduce incidents of domestic fires.
- ii) Community education would be initiated to reduce and mitigate fire incidents.
- iii) Fire and emergency services would be strengthened in the district.
- iv) Fire insurance would be promoted to transfer the risk.
- v) Community would be involved in tackling forest fires and their participation would be ensured.
- vi) Equipping fire services with communication facilities like wireless etc. and whenever such facilities exists these should be upgraded.
- vii) Computerized data management system should be introduced to keep the record of all fires including frequency, extent, fatality, economic losses etc.
- viii) The roles and responsibilities of district administration, police, fire services and medical services should be clearly laid down.

#### 4.5.3. Non Structural Measures

Task	Activities	Responsibility
	➤ Impart fire management	

<b>Capacity Building</b>	<p>training to fire staff and strengthen their working skill</p> <ul style="list-style-type: none"> <li>➤ Organize regular demo for fire brigade to familiar them with fire equipment</li> <li>➤ Training of homewards and assistant fire officer for the fire safety</li> <li>➤ Conduct Mock drill and to check departmental preparedness</li> </ul>	<p><b>NMC fire cell</b>  <b>Regional Fire Service Centre</b>  <b>DDMA</b>  <b>Nagar Parishads</b>  <b>MIDC</b>  <b>DISH</b></p>
<b>Awareness Generation</b>	<ul style="list-style-type: none"> <li>➤ Organize awareness programmes on fire safety in schools, colleges and offices</li> <li>➤ Disseminate fire safety tips among public through print and electronic media</li> <li>➤ Develop IEC materials on dos and don'ts for public distribution</li> </ul>	<p><b>NMC fire Cell</b></p> <p><b>DDMA</b></p> <p><b>MIDC</b></p> <p><b>DISH</b></p>

#### 4.6. Industrial and Chemical Accidents

##### 4.6.1. Structural

<b>Task</b>	<b>Activities</b>	<b>Responsibility</b>
Industrial Safety Measures	<ul style="list-style-type: none"> <li>➤ To set up emergency response center in close co-ordination with DDMA and Municipal Corporation</li> <li>➤ To set up Crisis Management group for Industrial safety in</li> </ul>	

	<p><i>all MIDCs and industrial cluster</i></p> <ul style="list-style-type: none"> <li>➤ <i>Development of On site plan and off site plan of all the large scale industries</i></li> <li>➤ <i>To set up leakage set up facilities at the chemical and fuel storing industries</i></li> <li>➤ <i>Installation of fire and safety devices and modern equipment at the hazard prone industries</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DISH</b></li> <li>➤ <b>MIDC</b></li> <li>➤ <b>NMC</b></li> <li>➤ <b>DDMA</b></li> <li>➤ <b>Industries</b></li> </ul>
<i>Strengthening EOC and warning systems</i>	<ul style="list-style-type: none"> <li>➤ <i>Installation of state of art DEOC equipments at all the EOC at MIDC and it should be mutually connected to each other</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DISH</b></li> <li>➤ <b>MIDC</b></li> <li>➤ <b>NMC</b></li> <li>➤ <b>DDMA</b></li> </ul>
<i>Techno –Legal regime</i>	<ul style="list-style-type: none"> <li>➤ <i>Implement the Acts and Rules related to industrial safety firmly.</i></li> <li>➤ <i>Ensure structural safety inspection/audit by competent authority</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>DISH</b></li> </ul>

- *All industrial settlements should be encouraged to establish MARG for management of industrial accidents*
- *Industries involved in the production or transportation of inflammable, hazardous and toxic materials should have a mandatory responsibility for preparing an off-site plan and communicating the same to the District Collector. Simulation exercises should be undertaken in the adjoining communities.*
- *Hazmat training should be imparted to the all the Resident doctors and PHC doctors in the industrial clusters and Hospitals*
- *A common format for chemical data sheets should be devised which should be used by DISH to collect information from all industries in the state and the same should be available with fire brigade & police.*
- *Common effluent treatment plant should be Initiated for the small industrial clusters*

#### **4.6.2. Non -Structural**

<b>Task</b>	<b>Activities</b>	<b>Responsibility</b>
<b>Organize Capacity Building</b>	<ul style="list-style-type: none"> <li>➤ <i>Organize industrial</i></li> </ul>	

	<p>safety trainings for officer's and staff working in the factories.</p> <ul style="list-style-type: none"> <li>➤ Set up an on-site and off-site monitoring team to check up all safety measures</li> <li>➤ Conduct mock drills in a regular interval.</li> <li>➤ Encourage disaster insurance</li> </ul>	<p><b>MIDC</b> <b>DDMA</b> <b>DISH</b></p>
<p><b>Awareness Activities</b></p>	<ul style="list-style-type: none"> <li>➤ Organize community awareness programmes for the communities residing near the factories and let people know what to do what not to do in case of industrial disaster.</li> <li>➤ Develop IEC materials on local language and distribute them in schools and local communities.</li> <li>➤ Organize school level awareness activities and ensure students participation in large number.</li> </ul>	<p><b>DDMA</b> <b>DISH</b></p>

**4.7. Risk transfer mechanisms:**

Considering that the assistance provided by the Government for relief, and reconstruction needs cannot compensate for massive losses on account of disasters, new financial tools such as catastrophe risk financing, risk insurance, catastrophe bonds, micro-finance and insurance etc., will be promoted with innovative fiscal incentives to cover such losses of individuals, communities and the corporate sector. In this regard, the Environmental Relief Fund under the Public Liability Insurance Act, 1991, enacted for providing relief to chemical accident victims is worth mentioning.

*Some financial practices such as disaster risk insurance, micro-finance and micro-insurance, warranty on newly constructed houses and structures, and linking safe construction with home loans would be considered for adoption.*

#### **4.7.1. Crop Insurance:**

- 1. The District shall promote agricultural insurance programmes such as **Pradhan Mantri Fasal Bima Yoajna** suitable for different agro-climatic zones*
- 2. Farmers should be informed about the availability of insurance products and educate them about the need for managing their yield and income risks through insurance coverage.*
- 3. Agro Bima Camp should be organized to educate, aware and motivate farmers to Enroll for crop insurance.*

#### **4.7.2. Flood Insurance**

*The Department of Water Resources Department and Irrigation along with insurance companies should jointly take up studies for a graded system of insurance premium according to the flood risk in flood prone areas of the district based on the cyclicity of the flood event . The irrigation department, agriculture should explore the possibility of introducing schemes where insurance of structures, buildings and crops in flood plains is made compulsory.*

#### **4.8. Partnerships for Mitigation and Preparedness**

##### **4.8.1. Mobilising Stakeholders' Participation**

*The DDMA will coordinate with Home Guards, NCC, NYKS, NSS, sports and youth clubs, women based organisations, and faith based organisations and local Non-Governmental Organisations (NGOs), CSOs etc. for DM. They will be trained in various aspects of DM more particularly in SAR and MFA, Auxillary fire fighting .They will also be encouraged to empower the community and generate awareness through their respective institutional mechanisms. Efforts to promote voluntary involvement will be actively encouraged.*

##### **4.8.2. Media Partnership**

*The media plays a critical role in information and knowledge dissemination in all phases of DM. The versatile potential of both electronic and print media needs to be fully utilised. Effective partnership with the media will be worked out in the field of community awareness, early warning and dissemination, and education regarding various disasters. The use of vernacular media would be harnessed for community education, awareness and preparedness at the local level. Hoardings and vedios should be channelized through the district for awareness on drought , flouht and coping mechanism from drought*

<b>Task</b>	<b>Activities</b>	<b>Responsibilities</b>
<i>Digital awareness generation</i>	<ul style="list-style-type: none"> <li>➤ <i>Promotion of water harvesting techniques</i></li> <li>➤ <i>Soil Management process</i></li> <li>➤ <i>Promotion of Do and Don't during heat waves</i></li> <li>➤ <i>Promotion of Do and Don'ts during epidemic</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>Doordarshan</b></li> <li>➤ <b>Entertainment Department</b></li> <li>➤ <b>DIO</b></li> <li>➤ <b>Health</b></li> </ul>

*The DPRO in consultation with the DDMA would take appropriate steps in this direction.*

#### **4.8.3 Corporate Social Responsibility (CSR) and Public-Private Partnership (PPP)**

*The corporate sector has been supporting disaster relief and rehabilitation activities. However, the involvement of corporate entities in disaster risk reduction activities is not significant. PPP between the Government and private sector would also be encouraged to leverage the strengths of the latter in disaster management. The DDMA would need to network with the corporate entities to strengthen and formalise their role in the DM process for ensuring safety of the communities. The corporate sector also needs to be roped up for on-site and off-site emergency plans for hydro-power projects. The role of corporate sector for awareness generation and local capacity building would also be important and efforts would be made to involve corporate sector in this effort.*

#### **Different CSR techniques which could be used Disaster Risk Reductions**

*Awareness Generation:*

- (i) To make people aware of their vulnerabilities and the need for prevention, mitigation and preparedness measures.*
- (ii) Preparation of a booklet containing information on various hazards and the steps to be taken for mitigating the same by industries.*
- (iii) Co-opting Vidharbha chamber of commerce and industry as a member of the Steering Committee for Mass Media Campaign.*
- (iv) Sponsoring awareness generation capsules in print and electronic media.*



*Training:*

- (i) Training of industrial personnel, nearby community and volunteers in disaster management.*
- (ii) Linking the trained personnel with the Disaster Management Teams under the District Administration.*

*CSR could be benefiting when Companies in association with district authority establishes weather machine of Doppler radar and lightning arrestor within the areas where the CSR activities done by the respective companies. This will increase the weather monitoring station for district administration for proper monitoring, gives accurate data for the farmers, help in getting information of rainfall monitoring and hailstorm monitoring within the district thus, leading to help farmers as well as the state machinery.*

### 5.1. Preparedness

*The preparedness is the process to gather knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters*

*Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response to sustained recovery.*

*Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required.*

*A **preparedness plan** establishes arrangements in advance to enable timely, effective and appropriate responses to specific potential hazardous events or emerging disaster situations that might threaten society or the environment.*

*The following disaster management activities may be taken into consideration under preparedness measures.*

- *Update the resource inventory*
- *Review and update the DM plans*
- *Develop Departmental DM plan and*
- *Establishment of EOC and early warning system*
- *Formation of DM committees and task forces*
- *Organize capacity building trainings*
- *Purchase/repair the search and rescue materials and critical supplies*
- *Identify disaster prone areas and complete the HRVA study*
- *Prepare the hazard maps*
- *Organize community-based DM trainings, orientations and awareness activities*
- *Make fund provision for disaster response, mitigation and relief works*
- *Implement all preventive and mitigation activities in disaster prone areas*
- *Conduct mock drills*

- *Formation Various team based on various hazards*
- *Develop coordination and net working with various stakeholder*

*As per DM Act, disaster management is defined but mentioning different stages of disaster including preparedness and it is defined as preparedness means the state of readiness to deal with a threatening disaster situation or disaster and the effects thereof.*

*As per the High Powered Committee Report, India should have 4 new cultural practices of disaster management*

- *Culture of prevention*
- *Culture of preparedness*
- *Culture of quick response*
- *Culture of strategic thinking*

*Among these culture of preparedness is of great importance which was proved with by Phailin cyclone of 2013. It was the major cyclone happened in Odisha after Super cyclone 1999. Super cyclone killed about 10000 people and with adequate preparedness the death toll was decreased to 44 in 2013 cyclone.*

*The HPC Report on Disaster Management gives suggestions regarding the level of preparedness needed at various levels to tackle disasters. As per the report the first thing to be given importance is the mapping of disaster prone areas. As per the suggestions given in the report, existing maps of scale 1: 50,000 and 1:25,000 can be used until large-scale map of 1:10,000 scales is made available for planning purpose. Preparedness helps in proper planning and it helps to link the disaster management unit to various departments in forehand and this will help in smooth functioning of official work during emergencies. Also preparation of disaster management plan at various levels and linkages f each level parallel and horizontally will help especially if the disaster happens in a large area or in neighbouring districts or states.*

*As planning happens in LO phase, trigger mechanism can also be planned for various levels of disasters based on its intensity and sufficient help can be sorted from national agencies or even international agencies can be made without wasting time. Preparation of Incident Command System and SOP for the smooth functioning of government and stakeholders during disaster helps to tackle to tackle the situation easily.*

*In the preparation of the plan, hazard, risk, vulnerability assessment is a crucial part and is the foundation for the plan. This helps to understand the disaster prone area in district along with the most vulnerable population and the risk elements there. This helps to for preparedness including training of people living there, conducting mock drills, education, preparation of task force etc. This immensely helps in the minimizing the loss during disaster.*

## **5.2. General Preparedness Measures**

### **1. Establishment of the Control Rooms**

*The district administration should ensure the operation of control rooms. The control rooms are presently run by major line departments at revenue, police, MSED, Hospital, Zila Parishad etc. at taluka and district level should be functional and connected with each other.*

### **2. Plan Updation**

*Disaster Management Plan needs updation at every interval. It includes the skilled manpower, their addresses and contact numbers, necessary equipments, medicinal stock, daily necessities, list of flood prone villages etc. All these things have to be updated after a certain interval of time.*

*3. Communication System Training is given for search and rescue teams, first aid teams disaster management teams at village, taluka and district level. These teams will provide timely help during any type of disaster. Provision of wireless sets at all Sub-division and Taluka Offices for effective communication of cyclone/heavy rainfall/flood warning. Fire Brigades at all the Municipal Offices. Setting up of a special Highway Safety Patrol along the Mumbai-Goa highway. Effective and stricter implementation of flood zone regulations disallowing construction within 200 m of river banks. Widespread community awareness programmes in flood prone villages so that villages are sensitized about the flood hazard and there are no problems when there is need for evacuation.*

*4. Training is a core preparedness activity which helps in gaining practical knowledge to deal with disasters. Disasters are events which need the attention for different stakeholders and hence the training for each of the stakeholders is important to minimize the impact of hazards. As affected communities are the first responders, the training should be given to disaster prone villagers and even nearby villagers. Training should include search and rescue, swimming, Medical First Aid and CPR etc. This will help to increase the chances of rescuing human lives. Training should also be given to all village level government officials like Talati, Gram sevak, Kotwal, Clerk in Panchayat office etc for proper maintenance and updating of their records and also to regarding communication during disasters. Government officials at Taluka and District level, major department like PWD, Police, Health department etc should be given training for coordination of activities during disasters. The table below shows the some of the training provided at the District level. The training calendar for the year has been attached below*

<b>Sr No</b>	<b>Name of the Course</b>	<b>Duration</b>	<b>Training Institution</b>
1.	Orientation and Sensitization towards Civil Defence & Disaster Management	04-January to 05 January	NCDC
2.	Road Safety Campaign 2017	11 January to 17 January	DDMA, Traffic Police, School & NGOs
3.	ToT in Disaster Pyscho-social Intervention	16 January to 20 January	NCDC
4.	Training Programme for Civil Defence Instructor	16 Feb to 10 March	NCDC
5.	Management of Diseased	20 February to 22 February	NCDC
6.	Industrial Safety Week	4 March to 10 March	Directorate of Industrial Safety , DDMA , National Fire Service College
7.	Incident Command Management System	27 March to 31 March	NCDC
8.	Biological Incident First Responder	3April to 7 April	NCDC
9.	Orientation of Planning at Emergency Operation Centre	10 April to 13 April	NCDC
10.	Heat Wave Awareness Programme	15April and 16 April	DDMA , Civil Surgeaon and Zilla Parishad
11.	ToT Civil Defence	17 April to 31 April	NCDC
12.	ToT on School Safety For Teacher	1 <sup>st</sup> May to 4 May	DDMA , NCDC instructors and other NGOs
13.	Orientation for the Preparation of Village Disaster Management Plan to Talathis	15 May to 16 May	DM professional , DDMO
14.	Orientation Programme for the preparation of Departmental DM Plan	20 May to 24 May	DM professional , DDMO , NCDC instructor
15.	Flood Rescue Training in the	26 May to 30 May	NDRF , SDRF , NCDC

	<i>Flood affected Villages</i>		
<b>16.</b>	<i>TOT Advance life Support</i>	<i>31 May to 09 June</i>	<b>NCDC</b>
<b>17</b>	<i>TOT on Radiological &amp; Nuclear Emergencies</i>	<i>27 June to 7 July</i>	<b>NCDC</b>
<b>18</b>	<i>Flood Cyclone Disaster Responder</i>	<i>10 July to 11<sup>th</sup> August</i>	<b>NCDC</b>
<b>19</b>	<i>Industrial Disaster Management</i>	<i>4 September to 15 September</i>	<b>NCDC</b>
<b>20</b>	<i>Emergency Response to Rail Accident</i>	<i>11 September to 22 September</i>	<b>NCDC</b>
<b>21</b>	<i>ToT on Basic Life Support</i>	<i>28 September to 29 September</i>	<b>NCDC</b>
<b>22</b>	<i>Collapse Structure Search and rescue</i>	<i>3 October to 6 October</i>	<b>NCDC</b>
<b>23</b>	<i>International Disaster Risk Reduction Day Awareness Programme</i>	<i>13 October 2017</i>	<b>DDMA in Association with NGOs</b>
<b>24</b>	<i>Advance search and Rescue</i>	<i>09 October to 27 October</i>	<b>NCDC</b>
<b>25</b>	<i>National School Safety Awareness Week</i>	<i>13 October to 21 October</i>	<b>DDMA in Association with NGOs , Fire Department.</b>
<b>26</b>	<i>Advance HAZMAT life Support for Medical Officer</i>	<i>4 December to 08 December</i>	<b>NCDC</b>
<b>28</b>	<i>Management of Media During Emergencies</i>	<i>11 December to 13 December</i>	<b>NCDC</b>
<b>29</b>	<i>Rope Rescue and Techniques for evacuation</i>	<i>20 Decemeber to 28 December</i>	<b>NCDC</b>

5. *Organization of Mock Drills* Mock drill is an integral part of the Community based disaster management plan, as it is a preparedness drill to keep the community alert. Mock drills are organized in all the villages of the district to activate the DMTs and modification of the DM plan. Mock drill is organized once in six months as per the seasonality calendar of natural disaster events that is likely to occur.
6. *Community Awareness on Various Disasters* 1. Construction of Earthquake Resistant Structures 2. Retrofitting the weak structures 3. House insurance 4. Construction of embankments for flood control 5. Rehabilitation of people in safe lands 6. Development of plans for shifting people from vulnerable areas to safe places

### **5.3. Forecasting, Warning and Alert Systems**

Forecasting and early warning is one of the major components of preparedness. Not every disaster can be forecasted but those which can be forecasted, if early warning, preparedness and major trainings are given to people, then loss of lives and livelihood can be minimized. Even after the forecasting of the incident/ event with the support of technology, it is the responsibility of government to provide early warning and take necessary steps for evacuation or prevention or any other mitigation measure so that the impact will be minimal. Also learning new technologies which is developed in different parts of the world and cross country learning helps in disaster risk reduction. This is how education is a crucial part of preparedness towards disaster.

<b>Task</b>	<b>Activities</b>	<b>Responsibility</b>
<i>Flood Forecasting</i>	<ul style="list-style-type: none"> <li>➤ Daily Monitoring of rain fall tehsil level and District level ,</li> <li>➤ Data gathered from tehsils should be matched with IMD data and Airport meteorological department data</li> <li>➤ Proper communication need to be maintained between SE CADA , all incharged of Dam in</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>TDMA</b></li> <li>➤ <b>IMD</b></li> <li>➤ <b>SECADA</b></li> <li>➤ <b>CE WRD</b></li> </ul>

	<i>the District</i>	
<i>Drought Monitoring</i>	<ul style="list-style-type: none"> <li>➤ <i>Daily Monitoring of rain fall tehsil level and District level ,</i></li> <li>➤ <i>Data gathered from tehsils should be matched with IMD data and Airport meteorological</i></li> <li>➤ <i>Data of agriculture loss should be assessed by agriculture department should be done at the Village and taluka level.</i></li> <li>➤ <i>Ground water Monitering should be properly done by the concerned department</i></li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>DDMA</b></li> <li>➤ <b>Revenue</b></li> <li>➤ <b>IMD</b></li> <li>➤ <b>Airport Meteorology</b></li> <li>➤ <b>Agriculture</b></li> <li>➤ <b>GSDA</b></li> </ul>

**Structural Measures**

*Preparedness includes structural modifications that help to mitigate disasters. Usage of earthquake resistant building codes, construction of all-weather roads as transportation becomes crucial during disaster. For victims of disasters or those disasters where forecasting is possible, providing temporal shelter is also important. This if not planned then identifying the location itself will be difficult during the time of disaster. Preparation of warehouses in places which are prone to disasters every year or the return period is less can be meaningful. This helps in saving time and cost during relief phase.*

**Human Resource Development**

*Capacity building is relevant in the mitigation and preparedness phase of disaster. It can include training people at village level including the task force and health workers t training officials in Taluka, district and state level for better management of disaster. Structural measures can be adopted with sufficiently trained man power. In HPC Report training of technicians, masons and*



artisans in disaster resistant construction is mentioned. Some of the basic training and human resource development which can be provided in the district are .

<b>Task</b>	<b>Activities</b>	<b>Responsibility</b>	<b>Training Type</b>
Capacity Building trainings	➤ Training of Government official on Disaster Management plan preparation	DDMA Line Departments	Orientation and Sensitization towards Civil Defense & Disaster Management Plan Preparation
	➤ Training of Search and rescue to Nagar Parishads fire men	DDMA NMC NCDC	Advance Search and Rescue Training at NCDC
	➤ Training to Emergency operation Staff	DDMA NCDC	Emergency Operation Centre Management
	➤ Training to DIO and PRO	DDMA NCDC	Management of Media during Emergencies
	➤ Training to homeguards & police on Flood /cyclone responder	DDMA Homeguards Police NCDC	Flood /cyclone responder
	➤ Training to health professional	Zila Parishad Health Department DDMA NCDC	ToT on Psycho-social Intervention
	➤ Training to Railway Official	Railway DDMA NCDC	Emergency Response to Rail Accident
	➤ Training to School Teachers on School Safety	DDMA Education department	Disaster Management And School Safety

#### **5.4. Availability of Disaster Management Resources**

*The available resources in the district have been uploaded in the IDRN web site. India Disaster Resource Network (IDRN), a web based information system, is a platform for managing the inventory of equipment, skilled human resources and critical supplies for emergency response. The primary focus is to enable the decision makers to find answers on availability of equipment 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 58 technical items are listed in the resource inventory which is available at district level with DDMA and NMC .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.*

*For better management of disasters, better preparedness is needed. Planning needs different resources including the preparation of DEOC and its equipment such as communication devices, maps of the scale 1:10000 as suggested by HPC, rescue equipment and relief materials at least for the initial 48-72 hours of the incident. A checklist can be made for search and rescue operations based on the type of disaster*

#### **Rescue and Relief workforce**

*Rescue and relief workforce includes Fire and Emergency brigade, Police, paramilitary and military people. Even though they have trained sufficiently, their work can be made better by using proper coordination between different workforces. As part of preparedness fire brigade which are trained to manage most disasters should be given better training and safety equipment and this*

#### **5.5. DEOC**

*Even though control room exist in every district, the efficiency of the control room to be raised into an DEOC or making a new EOC near to a location of disaster is negligible in few districts. Hence preparedness also includes building an EOC as per guidelines and makes it fully functional during the time of disaster. A well equipped EOC along with a proper SOP helps to manage disasters in better way and helps in better coordination.*

#### **Objectives of setting up of District Emergency Operation Centre**

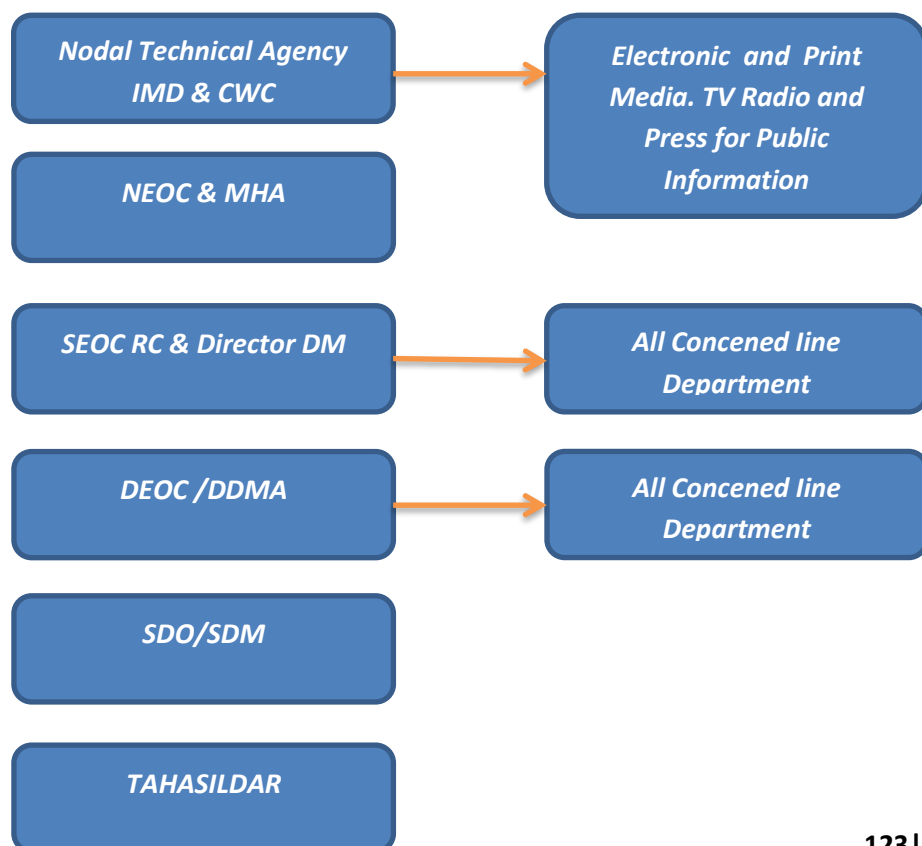
- *Receive and process alerts and warnings from nodal agencies and other sources such as municipal corporations, Tehsil office and communicate the same to all designated authorities.*

- Monitor emergency operations
- Facilitate Coordination among District/Departments/Agencies.
- Requisitioning additional resources during the disaster phase
- Issuing disaster/incident specific information and instructions specific to all concerned
- Consolidation, analysis, and dissemination of damage, loss and needs assessment data
- Forwarding of consolidated reports to all designated authorities.

### **Nodal Agencies for Early Warning**

<b>Disasters</b>	<b>Agencies</b>
Cyclone	Indian Meteorological Department
Tsunami	Indian National Centre for Oceanic Information Services
Floods	Central Water Commission
Landslides	Geological Survey of India
Avalanches	Snow and Avalanche Study Establishment
Heat & Cold Waves	Indian Meteorological Department

### *Line of Command when disaster happens with early warning*



## **5.6. Incident Command System**

*Preparation of ICS and making it practical is a part of preparedness. As part of planning, at every level from national to district ICS can be made. Trainings and orientation regarding the assigned roles to different officials will help in better preparedness.*

### **Planning and updating**

*Preparation of disaster management plan at district, Taluka and at village level is part of preparedness as per DM Act. Even though the plan exists in few village level is negligible. Hence along with the preparation of plan, communicating to the villagers in vulnerable area is also part of preparedness. Also updating plan annually helps to make the plan functional. SOP which will be part of the plan should be communicated to the every member who has been assigned the duty. Simulation exercises and mock drills helps to evaluate the SOP and its efficiency and it can be updated as per the lacunas.*

## **5.7. Roles and Responsibilities of line Departments in Context to Preparedness**

*The High Powered Committee Report on Disaster Management (August 1999) has identified disasters, and categorized them into five categories given in a table below:*

<p><b>1. Water and Climate Related Disasters</b></p> <ul style="list-style-type: none"><li>• Floods and Drainage Management</li><li>• Cyclones</li><li>• Tornadoes and Hurricanes</li><li>• Cloud Bursts</li><li>• Heat Wave and Cold Wave</li><li>• Sea Erosion</li><li>• Droughts</li><li>• Thunder and Lightning</li></ul>	<p><b>4. Accident Related Disasters</b></p> <ul style="list-style-type: none"><li>• Forest Fires</li><li>• Urban fires</li><li>• Mine Flooding</li><li>• Oil Spill</li><li>• Major Building Collapse</li><li>• Serial Bomb Blasts</li><li>• Festival related Disasters</li><li>• Electrical Disasters and Fires</li><li>• Air, Road and Rail Accidents</li><li>• Boat Capsizing</li><li>• Village Fire</li></ul>
<p><b>2. Geologically Related Disasters</b></p> <ul style="list-style-type: none"><li>• Landslides and Mudflows</li><li>• Earthquakes</li><li>• Dam Failures/ Dam Bursts</li><li>• Mine Fires</li></ul>	<p><b>5. Chemical, Industrial and Nuclear Related Disasters</b></p> <ul style="list-style-type: none"><li>• Chemical and Industrial Disasters</li><li>• Nuclear Disasters</li></ul>

### **3. Biologically Related Disasters**

- *Biological Disasters and Epidemics*
- *Pest Attacks*
- *Cattle Epidemics*
- *Food Poisoning*

*The following are the Line Departments that play a major role in disaster preparedness:*

<b>Serial No.</b>	<b>ESF Functions</b>	<b>List of Line Departments</b>
<b>1.</b>	<i>Debris Clearance</i>	<i>Public Works Department (PWD)</i>
<b>2.</b>	<i>Law and order</i>	<i>Police</i>
<b>3.</b>	<i>Epidemic Control Trauma</i>	<i>Animal Husbandry</i>
<b>4.</b>	<i>Medical Response and Conselling</i>	<i>Health Department</i>
<b>5.</b>	<i>Flood Control and Forecasting</i>	<i>Irrigation and Water Supply Department</i>
<b>6.</b>	<i>Communication</i>	<i>Aakashvani</i>
<b>7.</b>		<i>Telecommunications Department (B.S.N.L)</i>
<b>8.</b>	<i>Transport</i>	<i>Transportation Department</i>
<b>9.</b>	<i>Evacuation</i>	<i>Police Department / Home-Guard Department</i>
<b>10.</b>	<i>Search and Rescue</i>	<i>Fire Department</i>
<b>11.</b>	<i>Mass Awareness Generation</i>	<i>Education Department</i>
<b>12.</b>	<i>Food Supplies and Relief</i>	<i>District Supply Office</i>
<b>13</b>	<i>Electricity</i>	<i>Maharashtra State Electricity Board (MSEB)</i>

*Hence the roles and responsibilities of the line departments in the context to preparedness for the above mentioned disasters in the following tables:*

<b>DEPARTMENTS</b>	<b>ROLES AND RESPONSIBILITIES</b>
	<ul style="list-style-type: none"><li>• <i>One of the major roles of PWD is to conduct resource mapping in an area prone to disasters.</i></li><li>• <i>Keeping records on details of infrastructure along with the name of the owners, for future use.</i></li><li>• <i>Conducting a thorough inspection of bridges and roads, railway tracks before the monsoons and regular cleaning of area beneath the bridges for proper flow of water.</i></li><li>• <i>Checking roads and railway tracks and repairing</i></li></ul>

<b>Public Works Department</b>	<p>them regularly so that no obstruction is brought about during supply of relief.</p> <ul style="list-style-type: none"> <li>• Strict application and observation of earthquake building codes in earthquake prone zones.</li> <li>• Appointment of an Assistant Engineer at the District Control Room.</li> <li>• Conducting a landslide risk assessment and rehabilitating residents living in a landslide prone zone.</li> <li>• Purchase and maintenance of equipments or emergency toolkits which can be used during emergency situations.</li> </ul>
<b>Agriculture Department</b>	<ul style="list-style-type: none"> <li>• Preparation of maps show casing details on agricultural resources with statistical data or resource mapping of agriculture related resources.</li> <li>• Keeping details on agricultural production for future purpose.</li> <li>• Preparation of an Action Plan stating alternate arrangements if agricultural production is disrupted by calamities like floods and droughts.</li> <li>• Making advance arrangement and maintenance of equipments and public resources related to agriculture, which can be used in case of damage of crops and property loss.</li> </ul>
<b>Animal Husbandry</b>	<ul style="list-style-type: none"> <li>• Setting up of Veterinary Health Care Institutions, making provisions for water resources (drought) and disaster aid in times of need.</li> <li>• Stocking up conventional feed and fodder resources and making arrangement of substitutes.</li> <li>• Construction of shelters like cyclone shelters in order to protect the cattle or animals.</li> <li>• Stocking up medicines and preparing first-aid kits.</li> <li>• Vaccinations of animals.</li> <li>• Maintenance of equipments used dispose carcass.</li> </ul>
	<ul style="list-style-type: none"> <li>• Setting up of Control Room and making arrangement of operators before monsoons.</li> <li>• Construct an alternate contingency plan for</li> </ul>

<p><b>Irrigation and Water Supply Department</b></p>	<p><i>provision of water in case of water shortage or failure of water distribution system caused by a disaster.</i></p> <ul style="list-style-type: none"> <li>• <i>Keeping a detailed record on water resources and irrigated resources available in an area. Also conducting a detailed survey to find out disaster prone areas.</i></li> <li>• <i>Supervising and making arrangements for periodical checks of major dams, reservoirs, canals and so on.</i></li> <li>• <i>Avoiding construction of dams in earthquake prone zones.</i></li> <li>• <i>Availability of modern equipments which can be used to reduce flooding or drought condition in the area or can be used at the time of any disastrous situation.</i></li> </ul>
<p><b>Aakashvani</b></p>	<ul style="list-style-type: none"> <li>• <i>Setting up early warning systems.</i></li> </ul>
<p><b>Telecommunications Department</b></p>	<ul style="list-style-type: none"> <li>• <i>Preparation of maps showing telephone exchanges, important telephone lines, towers under the telecommunications department. Statistical data should be prepared.</i></li> <li>• <i>Arrangement of important telephone numbers that of Control Rooms, hospitals, departments, NGO's and other communication channels which can be used in an emergency.</i></li> <li>• <i>Organization of action plans for alternate arrangement of communication in case of interruption of telephone lines and microwave towers.</i></li> <li>• <i>Accumulation of resources and materials which can be used for immediate response like existing telephone phones and transformers.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• <i>Preparation of a detailed account on contact numbers of people from the department skilled for an emergency situation.</i></li> <li>• <i>Preparation of a detailed account on the availability of buses and ST stops in the any area for future</i></li> </ul>

<p><b>Transport Department</b></p>	<p>reference.</p> <ul style="list-style-type: none"> <li>• Making advance arrangement of buses and transport facilities for crisis situation.</li> <li>• Arrangement of equipments that can be used during an emergency.</li> <li>• Resource mapping of S.T bus stops, garages, control points, telephone lines or SOS's, megaphones, public properties of the department (located in damage prone areas) and so on which can be useful, for the department.</li> <li>• Figuring out alternative routes for transportation and road networks.</li> <li>• Planning out reinstatement of goods in case of damage.</li> <li>• Storage of fuel in advance which can be used during an emergency.</li> <li>• Appointing personnel at the respective control rooms.</li> <li>• Maintenance of equipments and emergency toolkits.</li> </ul>
<p><b>Police Department</b></p>	<ul style="list-style-type: none"> <li>• Formation of emergency traffic plan.</li> <li>• Identification of buildings which can be later used as relief camps and for storage of food grains and relief materials.</li> <li>• Planning out Security Plan to provide security to victims who get affected during an emergency event.</li> <li>• Resource mapping of essential resources in an area.</li> <li>• Training and arrangement of mock-drills.</li> </ul>
<p><b>Health Department</b></p>	<ul style="list-style-type: none"> <li>• Identifying community resources, and groups mostly at risk from disasters.</li> <li>• Providing disaster education in advance to the locals.</li> <li>• Disaster planning and ensuring topics like primary health, mental health and public health in the planning processes.</li> <li>• Storing medicines and making arrangement of medical equipments beforehand.</li> </ul>



	<ul style="list-style-type: none"> <li>• <i>Conducting resource assessment.</i></li> </ul>
<b>Education Department</b>	<ul style="list-style-type: none"> <li>• <i>Involving educational institutions in providing education on disasters to the locals, staffs and students.</i></li> <li>• <i>Conduction of trainings and mock exercises.</i></li> </ul>
<b>Fire Department</b>	<ul style="list-style-type: none"> <li>• <i>Conduction of risk assessment.</i></li> <li>• <i>Working on logistical challenges beforehand.</i></li> <li>• <i>Maintenance of equipments useful in an emergency situation.</i></li> </ul>
<b>MSEB</b>	<ul style="list-style-type: none"> <li>• <i>Preparation of details of man power, infrastructure and resources for emergency situations.</i></li> <li>• <i>Mapping out MSEB related resources like Power-stations, sub-stations, power-units, transformers and major electric lines and providing detailed information.</i></li> <li>• <i>Making a contingency plan with details departments or infrastructures which requires electricity during an emergency.</i></li> <li>• <i>Inspection of power stations, substations and other infrastructures on a regular basis.</i></li> </ul>

### **5.8. Communication**

*Establishing proper communication channels helps in proper management of disasters. During the time of disasters mostly the communication network will not function or will be disturbed. Hence making provision for alternative modes of communication is important. Use of HAM radio or other facilities will help in this.*

#### **Checklists**

*A checklist can be made for search and rescue operations based on the type of disaster. Search and rescue equipment includes pry bars, crowbars, sledgehammer, flat chisels, chipping hammers, hand drills, shovels, flashlights, brick hammers etc. Survival equipments includes power generators and its fuels, warmth and shelter equipment such as blankets, tarpaulins, tents, drinking water supply facilities and water purifying facilities, first aid and emergency kits, cooking supplies, facilities for lighting such as flashlights, candles etc.*

#### **Shelter Management**

*Shelter management becomes crucial when people are displaced from their location due to disasters. Identifying a proper location which is not geographically vulnerable is significant while making temporary or permanent shelters. Schools or youth hostels or Ashram schools or any other building which is having sufficient space and not in vulnerable location can be used as shelter. If such buildings are not available in the locality then flat surfaces can be used and temporary tents or shelters can be made. After the initial days of providing food and drinking water, facilities should be made for community kitchen or individual households can be given cooking utensils and uncooked materials. Construction of adequate number of toilets and its location and lighting is crucial for safety and security of people living in shelters. District has identified various schools, government buildings and government guest houses throughout the district to accommodate people in case any disaster happens within the District. The list of shelter sites has been added in ANNEXURE*

***Information database***

*As per the HPC Report, Disaster Knowledge Network can be made which will provide sufficient database regarding land use, demographic, socio-economic data, infrastructure, geography, etc. This record can be maintained at national, state and local levels and can be made available anytime. Resource inventories of governmental and non-governmental systems, personnel and equipment should be made and networked*

***Names and addresses of all key functionaries of all concerned departments at the district to be kept with the principal functionary of the department***

### 5.9. Equipments

List of equipment and stores for rescue and relief operations in each type of type of disaster and their availability at various places—private and government—be prepared and kept in the DECR and with the concerned department at the district level. The list gives

<b>List of Resources Available with Nagpur Municipal corporation Fire Services</b>			
<b>Sr No</b>	<b>Resources</b>	<b>Available</b>	<b>Needed</b>
1.	Water tender	16	4
2..	Lahan Water Tender	03	4
3	Recue(Emengency Tender )	3 (technically unusable)	4
4	Hydrolic Platform	01	01
5.	Water tanker	02	02 Boucher
6.	Rapid Intervention Vehicle	02	02
7	Water Mist Motaorable Cycle	04	04
8	Foam tender	1	----
9	Rubber Boat	04	----
10	Ambulance	03	02
11	Potable Pump	04	04
12	Pick Up Vehicle	02	06
13	Jeep	04	05
14	PPE	17	200
15	Petrol Chain Saw	17	-----
16	Hydrolic Cutter	1	-----
17	Electric Chain saw	5	-----
18	Multi Gas Cutter	1	-----
19	Thermal Image Camera	1	-----
20	Honda Pump	14	-----
21	Submersible Electric Pump	3	-----
22	Electric Generator	2	-----
23	NUematic Lifting Bag	3set	-----
24	Oxygen Gas Detector	1	-----
25	BA set	24	-----
26	BA set Compressor	1	-----
27	Inflatable Lighting System	11	-----
28	Reachable Lightning System	1	-----

29	<i>Concreat Metal Cutter</i>	3	-----
30	<i>Combination Tool</i>	1	-----
31	<i>Exhaust Blower</i>	3	-----
<b>Communication Resources</b>			
1	<i>Base Wireless Set</i>	8	-----
2.	<i>Mobile Wireless Set</i>	12	-----
3	<i>Walky Talky</i>	18	-----
	<i>Fireinformtration system</i>	01	-----
<b>Other Important Resources</b>			
1.	<i>Pressure Cylinder</i>	10	-----
2.	<i>RDF Immersion Suit</i>	1	-----
3.	<i>Head Light</i>	21	-----
4.	<i>Search Light</i>	1	-----
5.	<i>Life Jacket</i>	75	-----
6.	<i>Life Bouy</i>	60	-----
7.	<i>Helmet Torch</i>	18	-----
8.	<i>Combination Tool</i>	02	-----
9.	<i>Concreat Breaker</i>	02	-----
10.	<i>Special Fire Resistant Cloth</i>	02	-----
11.	<i>Strecher</i>	10	-----
12.	<i>Full Body Harness</i>	10	-----
<b>List of Resources Available with Home Gaurds</b>			
1.	<i>B A Set</i>	1	-----
2.	<i>Safety Helmets</i>	10	-----
3.	<i>Emergency Bracelets</i>	5	-----
4.	<i>Head lamp</i>	10	-----
5.	<i>Life jacket</i>	25	-----
<b>List of Resources available with Police department</b>			
1	<i>Generator</i>	5	-----
2.	<i>Search light</i>	1	-----
3.	<i>Torch</i>	4	-----
4.	<i>Ambulance</i>	1	-----
5.	<i>Strecher</i>	1	-----
6.	<i>First Aid Box</i>	1	-----
7.	<i>Megaphone</i>	4	-----
8.	<i>Pendal/Rohati</i>	65	-----
9.	<i>Heavy Vehicle</i>	8	-----
10.	<i>Light Van</i>	8	-----
11.	<i>Wireless Sanch</i>	129	-----

12.	Walky/ talky	80	-----
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**5.10. Equipments Present at Taluka level at Tahsil Offices**

<b>Equipment/Taluka</b>	<b>Life Jacket</b>	<b>Life bouy</b>	<b>Helmet Torch</b>	<b>Head Light</b>	<b>Inflatable Light</b>	<b>Boats Available at Various Ghats</b>
<b>Umred</b>	4	4	2	2	1	1.Kalmatha Bela
<b>Narkhed</b>	4	4	2	2	1	-----
<b>Bhiwapur</b>	4	4	2	2	1	-----
<b>Kuhi</b>	4	4	2	2	1	1.Rajola 2.Tidi 3.Pawani 4.Dhamani 5. Kochhi 6.Kharada 7.Sirsi 8.Jiwanpur 9.Awaramara
<b>Mouda</b>	4	4	2	2	1	-----
<b>Ramtek</b>	0	0	0	0	1	-----
<b>Hingana</b>	0	0	0	0	1	-----
<b>Parseoni</b>	0	0	0	0	1	-----
<b>Saoner</b>	0	0	0	0	1	1.Bhamewada 2.Pota
<b>Kamptee</b>	0	0	0	0	1	1.Bina 2.Sonegaon

### 6.1. Introduction

*The emergency response plan is a first attempt to follow a multi-hazard approach to bring out all the disasters on a single platform and incorporates the 'culture of quick response'. Under the plan, common elements responsible for quick response have been identified and a set of responsible activities has been articulated. It provides a framework to the primary and secondary agencies and departments, which can outline their own activities for disaster response. The plan will also include specific disaster action plans along with modal scenarios in detail to conduct practice drills at district administration level*

### 6.2. Operational Direction and Coordination

#### 1. Various Response Levels

*Most of the disasters are to be managed at the state and district level. The Centre and State plays a supporting role in providing resources and assistance. It will mobilize support in terms of various emergency teams, support personnel, specialized equipment's and operating facilities depending upon the scale of the disaster. Active assistance would be provided only after the declaration of national emergency level. In case disaster may be managed at the district level, district emergency operation system would be activated where state and national level authorities would be on guard in case of assistance needed. Incident commander (IC) of the district would activate the emergency support functions and Incident Response System and similarly according to the guidance disaster management teams and quick response teams would respond.*

*If disaster may not be managed with district level and required active participation of state resources, State EOC would activate and Divisional Commissioner would take over the IC system.*

#### 2. Operational- –Coordination Structure

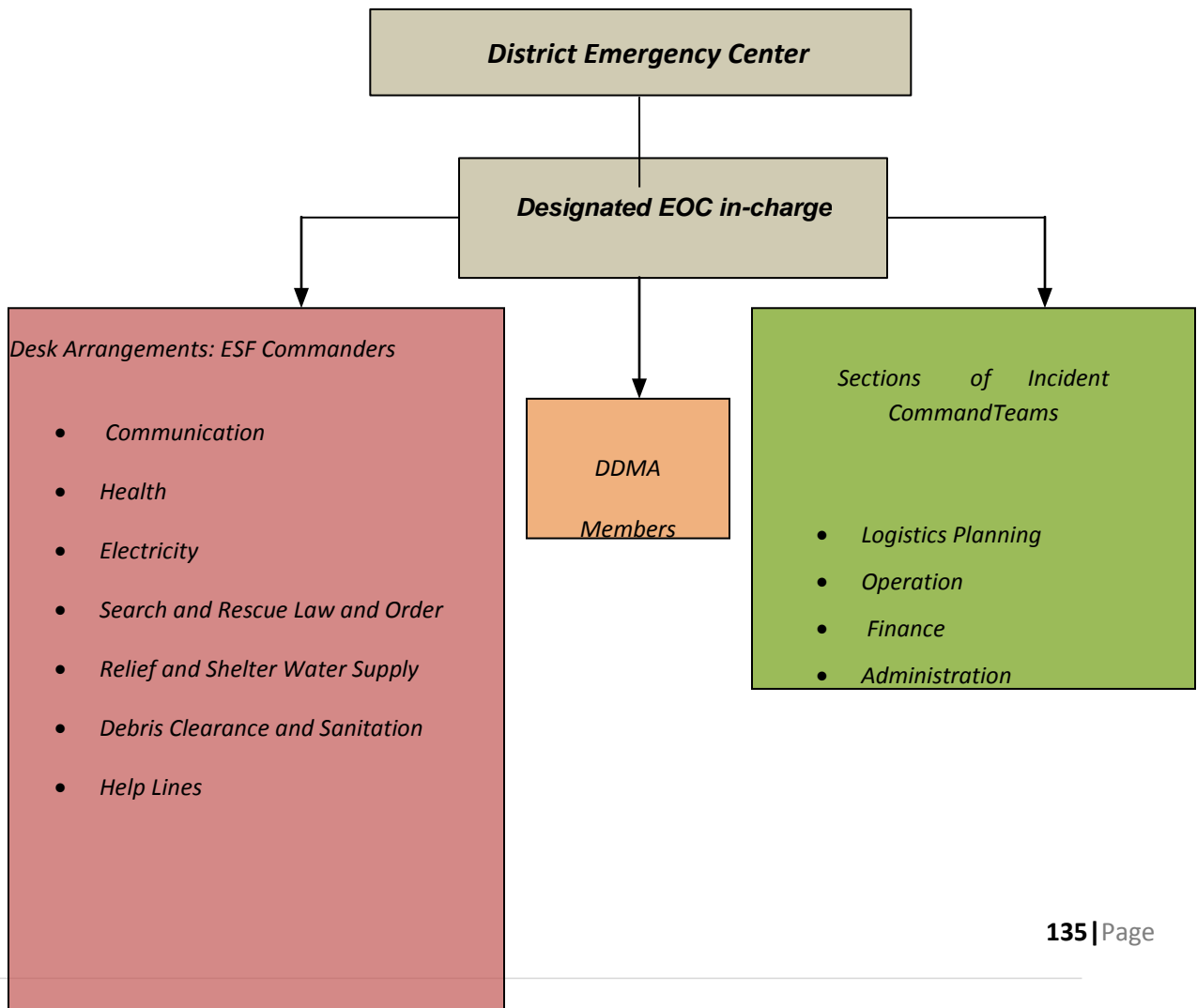
*Each organization generally has a framework for direction of its operation and coordination between its different units. Disaster Management generally requires partnership between organizations and stakeholders. An effective and early response requires mobilization of manpower, equipments and materials belonging to different organizations which may not be working together during normal times. Therefore a framework needs to be prescribed as a part of emergency planning for operational directions and coordination during response phase. This plan recognizes role of Divisional Commissioner in providing overall operational direction and coordination for all the response functions. With the help of District Disaster Management Committee (DDMC) and District Emergency Operation Centre, District Collector will formulate following coordination structure for response plan.*

### 3. Trigger Mechanism

As soon as District Emergency Operation Center would get the information about any emergency, the staff on duty in DEOC will pass the information the DC-Nagpur and seek for his instruction for further actions. If the information pertains to the occurrence of a disaster in any part of the district, the staff on duty will also try to inform DDMA members, Emergency Support Functions-team leaders, major hospitals and State Disaster Management Authority etc. The staff on duty will also be responsible to reclaim information related to type, magnitude and location of the disaster and also inform it to responsible authorities. The DEOC in-charge will also inform all the details to Divisional Commissioner and State EOC. All the desk officers/team leaders and Incident Response Team members will also be informed to immediately report at District EOC. Incident Response team and Desk officials would respond as per their standard operating procedures and directions of Incident Commander(IC).

### 4. Activation of Incident Response System

The emphasis in Disaster Management has shifted from relief centric approach to proactive regime, and as such a well-coordinated response with clockwork precision becomes one of the most important goals. Incident Response System has been developed in this reg



### 6.3. Incidence Response System

During emergency period District Collector Nagpur would be designated as Incident Commandant and shall take up following immediate actions

1. IC will designate IRS members according to the rank requirement and assign responsibilities under four sections of logistics, planning, finance and administration.
2. IC will also direct to the EOC in-charge (District Disaster Management Officer) to inform all the DDMA members about the incident and ICP(Incident Commandant Post)
3. IC will direct ADM-Nagpur to coordinate with the team leader of Emergency Support Functions (ESFs)
4. EOC/PCR will also pass the information to the DDMA members about the location of ICP.
5. Direct EOC in-charge to pass the information to the State apex body/Unified commander.

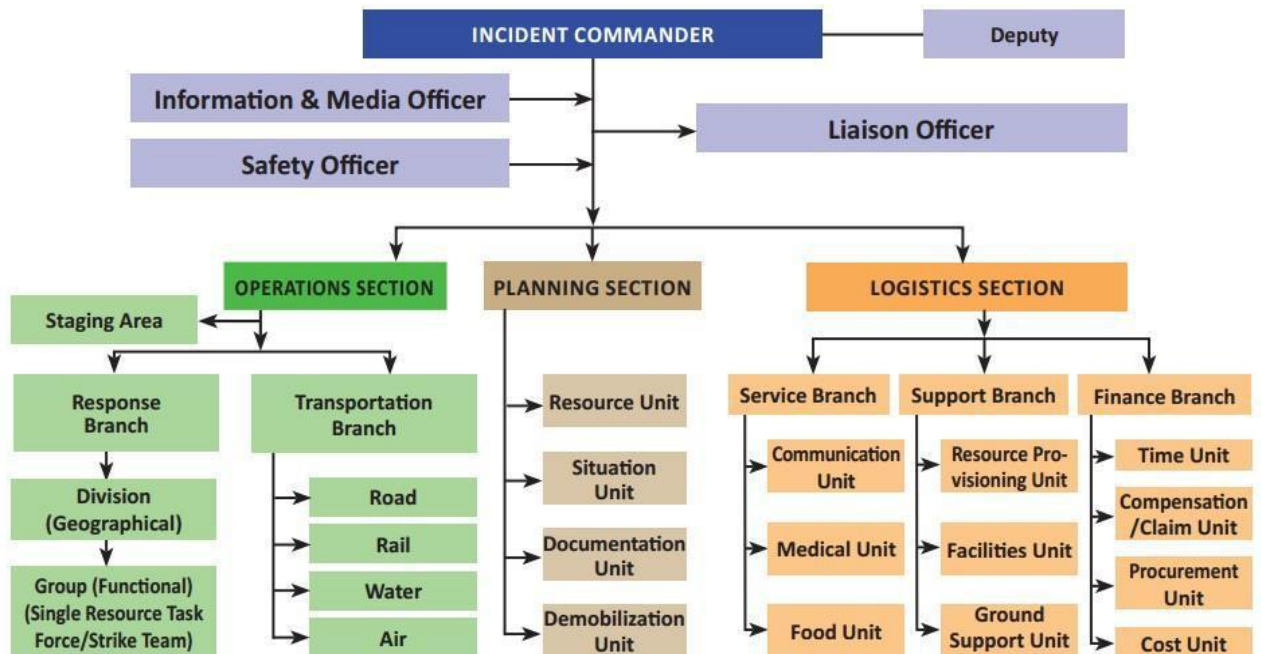
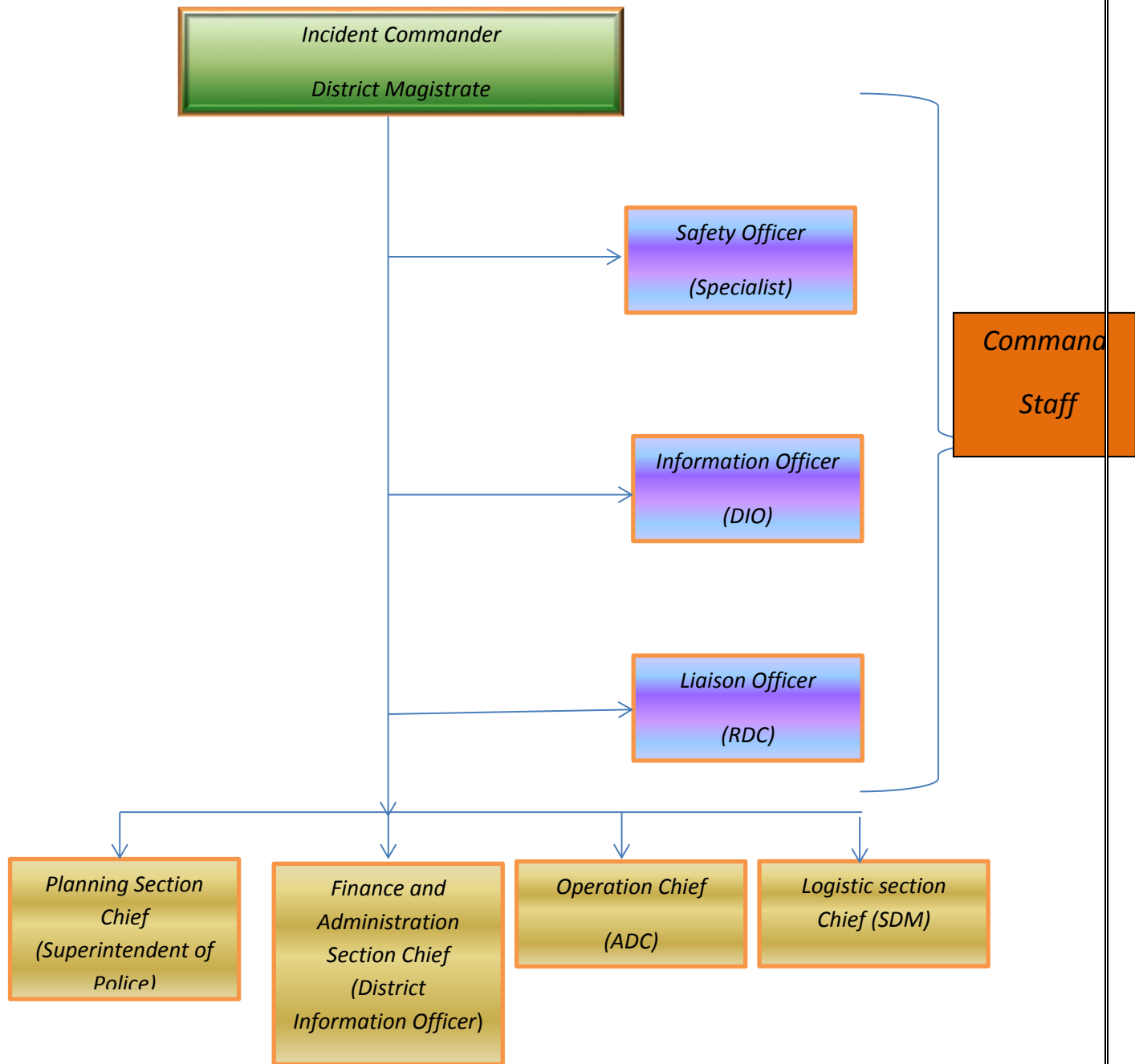


Figure 2: Structure of Incident Response Team





**Figure 1 Incident Response System**

**Table 1: Rank for District level Incident Response Team**

<b>S.No</b>	<b>IRS Position</b>	<b>Suggested rank and position for District level</b>
1.	<b>Responsible Officer</b>	District Magistrate-Nagpur
2.	<b>Incident Commander</b>	District Magistrate-Nagpur
3.	<i>Liaison Officer</i>	Resident District Collector Nagpur
4.	<i>Information and Media Officer</i>	District Information Officer
5.	<i>Safety Officer</i>	Specialist from DDMA/ Tahsildar
6.	<b>Operations Section Chief</b>	Additional District Magistrate/Collector
7.	<i>Staging Area Manager</i>	Area Tehsildar
8.	<i>Response Branch Director</i>	Divisional Fire Officer
9.	<i>Transportation Branch Director</i>	Regional Transport officer
10.	<b>Planning Section Chief</b>	Superintendent of Police
11.	<i>Situation Unit Leader</i>	Respective Tehsildar
12.	<i>Resource Unit Leader</i>	Area Tehsildar
13.	<i>Documentation Unit Leader</i>	DPO
14.	<i>Demobilization Unit Leader</i>	Area Tehsildar
15.	<i>Technical Specialist</i>	Specialist from DDMA,
16.	<b>Logistic Section Chief</b>	Area SDM

17.	<i>Service Branch Director</i>	<i>SDM(Election)</i>
18.	<i>Support Branch Director</i>	<i>Tehsildar 1</i>
19.	<i>Communication Unit Leader</i>	<i>SDM (Election)</i>
20.	<i>Food Unit Leader</i>	<i>Tehsildar 1</i>
21.	<i>Facilities Unit Leader</i>	<i>Tehsildar 2</i>
22.	<i>Ground Support Unit Leader</i>	<i>Tehsildar</i>
23.	<i>Medical Unit Leader</i>	<i>District Medical officer(DMO)</i>
24.	<i>Finance Branch Director</i>	<i>Account Officer (Nagpur district)</i>
25.	<i>Time Unit Leader</i>	<i>SDM(Election)</i>
26.	<i>Cost Unit Leader</i>	<i>Accounts Officer, Deputy Collector</i>

#### **6.4. Responsibilities under Incident Response System**

➤ **Incident Commander: Nagpur District**

- ❖ *Incident Commander (IC) shall rush to the District Emergency Operation Center (DEOC) where technical experts and section chiefs shall join him. He shall remain in the contact of DEOC to know the updated status of incident.*
- ❖ *In consultation to technical experts Incident Command Post (ICP) shall be selected near incident site. Site selection shall be on the basis of the wind prevailing directions and probability of secondary hazards etc.*
- ❖ *Obtain updates of the incident situation from ICP and establish a link for continuous communication through dedicated telephone lines with speaker phones, set of walkie-talkies, computer link etc. with the help of coordinator*
- ❖ *Supervise the overall management of each function through respective members of DDMA and expediting response whenever required*
- ❖ *Identify the hazardous and threatened areas based on map and information received ICP*
- ❖ *Take a decisions on requirement and priorities of evacuation and organize the resources to execute the same*
- ❖ *Based on the inputs from the first responders, and experts available at ICP, identify the additional resources requirement and initiate mobilization with the help of section chiefs.*
- ❖ *Coordinate with the other district authorities and state authority*
- ❖ *After making required arrangement, IC shall visit incident site to supervise the situation*
- ❖ *He shall also take decisions in demobilizing the resources after the incident*

*Following three officers will support Incident Commander along with Operation, logistic, planning and finance section chiefs.*

➤ **Safety Officer**

- ❖ *Recommend measures for assuring safety of responders and to assess or anticipate hazardous and unsafe situations and review it regularly*

- ❖ *Ask for assistants and assign responsibilities as required*
- ❖ *Participate in planning meetings for preparation of IAP (Incident Action Plan)*
- ❖ *Review the IAP for safety implication*
- ❖ *Obtain details of accidents that have occurred within the incident area if required or as directed by IC and inform the appropriate authorities*
- ❖ *Review and approve the Site Safety Plan, as and when required*

➤ **Liaison Officer**

- ❖ *Maintain a list of concerned line departments, agencies (CBOs, NGOs) and their representatives at various locations.*
- ❖ *Carry liaison with all concerned agencies including NDRF and Armed forces and line department of Government.*
- ❖ *Monitor Operations to identify current and potential inter-agency problems.*
- ❖ *Participate in planning meetings and provide information on response by participating agencies.*
- ❖ *Ask for personnel support if required.*
- ❖ *Keep IC informed about arrival of all Government and Non – government agencies and their resources.*
- ❖ *Help in organizing briefing sessions of all Government and Non-governmental agencies with IC.*

➤ **Information Officer**

- ❖ *Prepare and release information about the incident to the media agencies and others with the approval of IC.*
- ❖ *Jot down decision taken and directions issued in case of sudden disasters when Incident Response Team has not been fully activated.*
- ❖ *Ask for additional personal support depending on the scale of incident and workload.*
- ❖ *Monitor and review various media reports regarding the incident that may be useful for incident planning.*
- ❖ *Organize Incident Action Plan meeting as directed by the Incident Commander.*
- ❖ *Coordinate with IMD to collect weather information and disseminate it to all concerned.*

➤ **Operation Chief: Additional District Magistrate/Collector –Nagpur**

*Most preferred rank for the operation chief is Additional District Magistrate. Following are the duties designated for Operation Chief:*

*Responsible for the management of all operations directly applicable to the primary mission. He will activate the emergency support functions and will coordinate with the team leaders of ESFs. Activates and supervises organization elements in accordance with the Incident Action Plan (IAP) and directs its execution*

- ❖ *Determine need and request additional resources.*
- ❖ *Review suggested list of resources to be rebased and initiate recommendation for release of resources.*
- ❖ *Make expedient changes to IAP as necessary.*
- ❖ *Report Information about special activities, events or occurrences to Incident Commander.*
- ❖ *Maintain Unit / Activity details.*

➤ **Emergency Support Functions**

*ESFs shall be activated under Operation Chief. On the receipt of information Team Leaders (TLs) would take up following actions*

- ❖ *On the receipt of information about the off-site emergency Team Leaders (TLs) will activate their own Emergency Support Functions (ESFs)*
- ❖ *TLs will join IC and Operation Chief (ADM-Nagpur ) in EOC to ensure coordination and to provide assistance*
- ❖ *TLs would also move to the site for better operational control*
- ❖ *TLs will call the nodal officers of supporting agencies and immediately deploy the quick response teams (QRTs) from the location of nearest to the incident site*
- ❖ *They further reinforce their teams by deploying additional resources from surrounding areas so the*

*effective first respond can be rendered at site*

- ❖ *A high alert would be notified to move additional resources and manpower to the incident site*
- ❖ *According to the feedback report additional TLs will take decision of movement of more team and manpower. In some of cases TLs may need to mobilize resources from nearby districts or states. In such cases chiefs will organize this through respective head quarters*
- **Planning Section Chief**

***Planning section chief shall be responsible for performing following duties:***

- ❖ *Collection, evaluation, dissemination and use of information about the development of incident and status of resources. Information is required to understand the current situation and to prepare alternative strategies and control operations*
- ❖ *Supervise preparation of Incident Action Plan (IAP)*
- ❖ *Provide input to Incident Commander and Operation Chief in preparation of IAP*
- ❖ *Reassign out of service personnel already on site to other positions as appropriate*
- ❖ *Determine need for any specialized resources in support of the incident*
- ❖ *Establish information requirements and reporting schedules for Planning Section Unit (e.g. Resources, Situation Unit).*
- ❖ *Compile and display incident status information*
- ❖ *Facilitate the preparation and implementation of Incident Demobilization Plan.*
- ❖ *Incorporate Plans (e.g. Traffic, Medical, Site Safety, and Communication) into IAP.*
- ❖ *Maintain Unit / Activity details.*
- **Resource Unit Leader**

*Responsible for maintaining the status of assigned resources (Primary and support) at an incident. This is achieved by overseeing the check-in of all resources, maintaining a status keeping system indicating current*

*location and status of all resources and maintenance of a master list of all resources e.g. by key supervisory personnel, primary land support resources etc.*

- ❖ *Establish check-in function at incident locations.*
- ❖ *Prepare Organization Assignment List & Organization chart.*
- ❖ *Maintain & post the current status and location of all resources*
- ❖ *Maintain master list of all resources checked in at the incident.*

➤ ***Check-in/Status Recorder:***

*Needed at each check-in location to ensure that all resources assigned to an incident are accounted for:*

- ❖ *Prepare check-in form, resource status boards and status display board.*
- ❖ *Establish communications with the communications Centre and Ground Support unit.*
- ❖ *Post signs so that arriving resources can easily find the check in location*
- ❖ *Record check-in information on check-in lists*
- ❖ *Transmit check-in information to Resources Unit on regular pre-arranged schedule/ as per need.*
- ❖ *Receive, record and maintain status information for single resources, strike teams, task forces, overhead personnel*
- ❖ *Maintain file of check-in lists.*

➤ ***Situation Unit Leader***

- ❖ *Begin collection and analysis of incident data as soon as possible.*
- ❖ *Prepare post or disseminate resource and situation status information as required, including special requests.*
- ❖ *Prepare incident status summary*
- ❖ *Provide photographic services and maps if required.*



➤ **Display Processor (Draftsman-Computer trained):** Responsible for display of incident status information obtained for field observers, resource status reports, aerial photographs, etc.

➤ Determine:

- ❖ Location of work assignment
- ❖ Numbers, types and locations of displays required
- ❖ Priorities
- ❖ Map requirements for incident
- ❖ Time limits for completion
- ❖ Field observer assignments & communication means
- ❖ Obtain necessary equipment and supplies
- ❖ Obtain copy of IAP for each period
- ❖ Assist SITL in analyzing and evaluating field report
- ❖ Develop required displays in accordance with time limits for completion.

➤ **Field Observers**

Responsible to collect situation information from personal observations at the incident & give it to situation team leader.

- ❖ Determine:-
- ❖ Location of assignment
- ❖ Type of information required
- ❖ Priorities
- ❖ Time limit for completion
- ❖ Method of communication
- ❖ Method of transportation

- ❖ *Obtain copy of IAP for the operation period*
- ❖ *Obtain necessary equipment & supplies for his use.*
- ❖ *Collect data like*
  - o *Perimeter of location of hot spots etc.*
  - o *Be prepared to identify all facilities location (e.g. division boundaries)*
  - o *Report information to SITL*

➤ ***Demobilization Leader***

*Responsible for developing incident DMOB Plan*

- ❖ *Review incident resource records to determine the likely size and extent of DMOB effort addl. Personnel, work space and supplies needed*
- ❖ *Coordination DMOB with agency representatives*
- ❖ *Monitor ongoing operation section resource needs*
- ❖ *Identify surplus resources and probable release time*
- ❖ *Develop incident check out for all units*

1. ***Documentation Leader: District Planning Leader and Tehsildar***

- ❖ *Arranging for complete documentation of proceedings at the incident site*
- ❖ *Maintaining record of what happened and what actions were taken*
- ❖ *Recovering response costs and damages*

*Setting the record straight where there are charges of negligence or mismanagement resulting from the incident.*

- ❖ *Reviewing the efficiency and effectiveness of response actions*
- ❖ *Preparing for future incident response*
- ❖ *Videotaping of the entire combat the rescue operations*

## **2. Technical Coordinators**

*Two to Four experts in geo-sciences, fire safety, flood rescue, industrial safety and health shall be nominated as technical experts. Major issues shall be addressed by them are:*

### ***i. Formulation of response objectives and strategy***

*TC shall assess the incident before taking actions and formulate realistic response objectives. The assessment shall be based upon following points:*

- ❖ *Pre-incident plans*
- ❖ *Information related to material involved, container involved, vehicle and structure involved and atmospheric conditions affecting the incident*
- ❖ *Environmental monitoring and sampling data (if available)*
- ❖ *Public protective actions to be initiated*
- ❖ *Resource requirements (trained manpower, specialized protective gear and other equipments)*
- ❖ *Hazards posed to the nearby areas*

*On the bases of above-mentioned points they will formulate a defensive strategy to protect the public and environment from the immediate spill or discharge area.*

### ***ii. Identification of Hazard Zone***

*Technical experts shall be able to determine real time contaminant concentrations at various distances downwind. They shall be responsible to estimate downwind concentrations and feeding the information to the Team leaders of various ESFs for further response. To estimate the hazard zone in a particular emergency scenario, the technical coordinator shall place the transparency of the vulnerability template*

with its x-axis along the prevalent wind direction and start point on the source of release on the scaled map.

### **iii. Establishment of Hazard Control Zones at Incident Site**

Technical expert should determine the zones varying according to the severity of hazard. For example Hot Zone, Warm Zone and Cold Zone. According to the zones local commandant post and rescue operations should take place.

### **iv. Suppression of Hazardous Gas or Vapour Releases**

Technical experts should also identify response measures to any other probability of outburst due hazardous gas and vapor release directly in the atmosphere from the ruptured and punctured containers or from the evaporating and boiling pools of liquid that have been formed due to chemical spill.

### **V. Selection of Personal Protective Equipment's (PPEs)**

Technical persons should be able to guide the QRTs entering the hot zone on the correct type of PPEs as it is necessary to ensure that the materials from which clothing is fabricated will not be penetrating by the spill substance.

#### **➤ Logistic Section Chief**

Responsible to provide facilities, services and materials for effective management of disaster. Participates in development and implementation of Incident Action Plan (IAP) and activates & supervise Logistic section.

- ❖ Assign work locations & tasks to section personnel
- ❖ Participate in preparation of IAP
- ❖ Identify service and support requirements for planned and expected operations
- ❖ Coordinate and process requests for additional resources
- ❖ Provide input to / review communication plan, Traffic plan, medical plan etc
- ❖ Prepare service and support elements of IAP
- ❖ Recommend release of unit resources as per DDMP.

- ❖ *Maintain Unit/ Activity detail*

*Following are the team members who will assist him in the process under service and support branch.*

- ***Communication Unit Leader:***

- ❖ *Prepare & implement incident wireless communication plan*
- ❖ *Ensure that incident communication centre & Message centre are established*
- ❖ *Establish appropriate communication distribution/ maintenance locations within base/ camps*
- ❖ *Ensure communication systems are installed and tested*
- ❖ *Ensure equipment accountability system is established*
- ❖ *Ensure personal portable wireless sets from cache is distributed as for incident wireless communication plan*
- ❖ *Provide technical information required on:*
  - *Adequacy of communication system currently in operation*
  - *Geographic limitation on communication system*
  - *Equipment capabilities / limitations*
  - *Number and types of equipments available*
  - *Anticipated problems in the use of communication equipment's*
  - *Ensure equipments are tested and repaired*
  - *Recover equipments from released units.*
  - *Responsible to receive and transmit wireless and telephone messages among to*

*between personnel to provide dispatch services at the incident*

- *Set up message centre location as required*
- *Receive and transmit messages within and external to incident*
- *Maintain files of general messages*
- *Maintain a record of unusual incident occurrences.*

➤ **Medical Unit Leader:**

*Responsible for*

- ❖ *Development of medical response plan*
- ❖ *Respond to requests for medical side and transportation for injured & ill incident personnel medical supplies.*

➤ **Supply Unit Leader:**

*Primarily responsible for ordering personnel, equipment & supplies receiving and storing all supplies for the incident maintaining an inventory of supplies servicing non-expendable supplies to equipment.*

- ❖ *Determine the type & amount of supplies en route*
  - ❖ *Order, receive, distribute and store supplies & equipment*
  - ❖ *Receive and respond to requests for personnel, supplies and equipment*
  - ❖ *Maintain inventory of supplies & equipment.*
  - ❖ *Service reusable equipment*
- **Ordering Manager:**
- ❖ *Obtain necessary order forms*
  - ❖ *Establish ordering procedure*

- ❖ *Establish name and telephone number of personnel receiving orders*
- ❖ *Get names of incident personnel who leave ordering authority*
- ❖ *Check on what has been already ordered*
- ❖ *Orders when possible*
- ❖ *Place orders in a timely manner*
- ❖ *Keep time and location for delivery of supplies*
- ❖ *Keep receiving and distribution manager informed of orders placed*
- ***Receiving & Distribution Manager:***
  - ❖ *Organize physical layout of supply area*
  - ❖ *Establish procedures for operating supply area*
  - ❖ *Set up a system for receiving and distribution of supplies and equipment*
  - ❖ *Develop security requirement of supply area*
- ***Facilities unit leader:***
  - ❖ *Primarily responsible for the layout and activation of incident facilities e.g. base, camps, ICP*
  - ❖ *Provides rest and sanitation facilities for incident personnel*
  - ❖ *Manage base and camp operations (to provide security and general maintenance)*
- ***Ground support unit leader:***
  - ❖ *Support out of service resources.*
  - ❖ *Transportation of personnel, supplies, food & equipment.*
  - ❖ *Fueling, service, maintenance and repair of vehicles and other ground support equipment.*

- ❖ *Implementing traffic plan for the incident*

- **Food Unit Leader:**

*Responsible for supply needs for the entire incident including camps, staging areas.*

- ❖ *Determine food & water requirements*
  - ❖ *Determine method of feeding to best fit each facility or situation*
  - ❖ *Obtain necessary equipment & supplies and establish working facilities*
  - ❖ *Order sufficient food & potable water from the supply unit*
  - ❖ *Maintain an inventory of food, water*
  - ❖ *Maintain food service areas & ensure that all appropriate health & safety measures are being followed*
- **Finance and Administration Section Chief**

*Responsible to take decisions related to financial and cost related matters under given time frame.*

**Following positions would be helping him in conducting his duties:**

- ❖ **Time Unit Leader:** *Responsible for status recording and equipment's time taken recording*
- ❖ **Procurement Leader:** *Responsible for administering all financial matters pertaining to vendor contracts*
- ❖ **Cost Unit Leader:** *Responsible for collecting all cost data, performing cost effectiveness analysis & providing cost estimates & cost saving recommendations for the incident*

### **6.5.Desk Arrangements**

*District EOC will expand to include desk arrangements with responsibilities for specific tasks. The desk arrangement may continue to operate from EOC till the time long term plan for rehabilitation are finalized. The desk arrangements provide for divisions of tasks, information gathering and record keeping and accountability of the desk officer to the district commissioner. The Team leaders of emergency support functions shall be the desk officer and work under the coordination of Operation Chief. The desk officers shall be responsible to prepare, update and process reports according to the formats. Below given are emergency support functions of each desk*



➤ **Emergency Support Functions**

*Emergency Support Functions (ESFs) are the essentials of Emergency Management comprising of various coordinating agencies, which manage and coordinate specific kinds of assistance common to all disasters types. The plan establishes an organised set-up to conduct ESF operations for any of the Natural and Manmade Disasters. It outlines an implementing framework of sharing resources and co-coordinating, preparedness, Mitigation, response and recovery as per the requirement. The Plan has structured the activities of concerned agencies i.e. primary/nodal and support agencies into an organised manner according to their capabilities, skills, resources and authorities across the state and district government. It also attempts to unify efforts of state departments so that they are involved in emergency management comprehensively to reduce the effects of any emergency or disaster within the state. Refer table 6.2 for the list of ESFs and primary and secondary agencies involved.*

➤ **Organization Setup of the ESF at District Level**

*The Revenue Department of the district, which may be renamed as Department of Revenue and Disaster Management', as directed by the Ministry of Home Affairs, is the prime coordinating agency for disaster risk management efforts. However there will be other agencies involved in-charge of different ESFs. Each ESF is headed by a lead organization and assisted by supporting organizations for coordinating the delivery of resources and services to the disaster-affected area.*

*These ESFs form an integral part of the EOC and each ESF should coordinate its activities form the allocated EOC. Extension teams and quick response teams (QRTs) would be required to follow their response procedures at the affected site. Nodal officers of all the ESFs would constitute Incident Management Team. Nodal officer would also nominate names for the QRT members who will accomplish disaster management related work at the field level. Similarly supporting agencies would also nominate their nodal officers and QRT members who will assist to the primary officers during response phase. Additional names should also be proposed to backstop the requisite positions.*

*Nodal and Supporting agencies comprising of QRTs shall be trained to carry out their functions at the response site. The success of ESF will be of critical importance and would reflect in the lives saved in the golden hour. All ESFs have to assist the Incident Commander i.e. Deputy Commissioner at State level as per their assigned duties described in the SOP's and to be followed*

## 6.6. Specific Contingency Plans

### 6.7 Contingency actions for floods

<b>Sr No</b>	<b>Key Action</b>	<b>Responsibilities</b>
<b>Time Frame: Pre Flood Actions (Preparatory ),</b>		
1.	Convening a meeting of the DDMA official, EOC and other concerned institutions to take stock of department wise preparations.	DDMA chairman
2.	Take stock of functioning of the EOC and Control Rooms;	DDMA Chairman
3.	Closure of past breaches in river and canal embankments and guarding of weakpoints;	PWD and WRD
4.	Rain-recording and submission of rainfall reports.	,Revenue IMD , Water Resource Dept. , Tahsil
5.	Communication of gauge-readings and preparation of maps and charts	WaterResourceDept.
6.	Assigning charge of flood Circles;	DDMAChairman
7.	Dissemination of weather reports and flood bullet insissued by the meteorological Centres,Central Water Commission ,Flood Forecasting Organisation;	DEOC
8.	Deployment of boats at strategic points (most sensitive embankments);	DDMA
9	Arrangement and use of power/motorboats;	DDMA
10.	Installation of temporary Police Wireless Stations and temporary telephones in flood-prone areas;	Police Dept.,BSNL
11	Arrangement for keeping telephone active	BSNL
12.	Storage of food in interior,vulnerable strategic and key areas and arrangements for their safety	Food Supplies dept.
13.	Arrangements of dry foodstuff,essential medicines and othe necessities of life;	Food Supplies Dept., Revenue Dept.
14.	Alternative drinking water supply arrangements;	Public Health Dept.

15.	Arrangements for keeping the drainage system desilted and properly maintained.	Water Resource dept., <b>NMC</b>
16.	Appropriate measures for Health, Veterinary services etc.	<b>Health &amp; Animal &amp; Fishery Dept.</b>
17.	Identification /Selection of floodshelters;	<b>Revenue, DDMA</b>
18.	Advance arrangements for army assistance if required;	<b>DDMA</b>
19.	Training of department employees in flood relief work;	<b>DDMA</b>
<b>Time Frame : Post Flood Actions (Response )</b>		
20.	Report the occurrence of flood to DDMA, Heads of all line departments, ESF Nodal agencies ,DDMC	<b>DEOC</b>
21.	Establish communication links by activating alternate communication equipment's i.e. satellite phone, HF /VHF set, HAM radio, VSAT etc.	<b>DEOC</b>
22.	Deploy mobile emergency communication units to affected areas for establishing communication link	<b>DEOC</b>
23.	Verify the authenticity of the flood event from agencies like IMD, ISR, block level officers , police and fire department etc.	<b>DEOC</b>
24.	Organize first meeting of duty officers	<b>DDMA Chairman</b>
25.	Organising and despatch the search rescue teams to the affected areas.	<b>DDMA Chairman</b>
26.	Ask for SDRF/ NDRF/ Army assistance as per requirement.	<b>DDMA Chairman</b>
27.	Organise relief camps and flood shelters	<b>Revenue Dept.</b>
28.	Provision of safe drinking water to the affected communities	<b>PHED Dept.</b>
29.	Organising controlled kitchens to supply foods initially at	<b>Revenue &amp;</b>

	<i>least for 3 days.</i>	<b>Food supplies</b>
<b>30.</b>	<i>Provision of health, sanitation and hygiene facilities</i>	<b>Health Dept., PHED, NGOs and Community Groups</b>
<b>31.</b>	<i>Making necessary arrangements for air dropping of food packets in the marooned villages through helicopters.</i>	<b>DDMA Chairman</b>
<b>32.</b>	<i>Organizing cattle camps, if necessary, and provide veterinary care, fodder and cattle feed to the affected animals.</i>	<b>Animal and Fisheries Dept.</b>
<b>33.</b>	<i>Submission of daily reports and disseminates correct information through mass media and DDMA website to avoid rumors.</i>	<b>Revenue Dept</b>
<b>34.</b>	<i>Rehabilitation of homeless people</i>	<b>DEOC</b>
<b>35.</b>	<i>Commencement of agricultural activities-desiltation, resowing.</i>	<b>Revenue Dept</b>
<b>36.</b>	<i>Maintain constant communication with the onsite EOCs</i>	<b>DEOC</b>
<b>37.</b>	<i>Initiate relief distribution and recovery and actions</i>	<b>Revenue Dept</b>

## **6.8. Contingency actions for Drought**

### **Drinking Water:**

- *Make detailed plan to supply drinking water in areast hrough bores, tanker special trains and other suitable measures.*
- *Monitor continuously rural and urban drinking water availability in drought affected areas.*

### **WaterResources:**

- *Prepara water budget for each irrigation reservoir covering drinking water, kharif and rabi requirements and evaporation losses.*
- *Undertake repairs of tube wells to make all tubewells operational and install additional tube wells taking care at the same time to prevent over-exploitation of and damage to ground water regime.*
- *Regulate supply to water-intensive industries, if necessary.*

- *Minimize evaporation losses in tanks and small reservoirs by using chemical restorants subject to Health clearance.*

**Employment Generation:**

- *Adequatescarcityreliefworkstobetakenuptogeneratetherequiredemployment.*
- *The funds available under employment generation scheme like MGNREGA and scarcity relief etc.should be dovetailed and integrated.*
- *Projects should be kept readyto be taken up for employment generation during drought.*
- *Drought proofing schemes to be identified and to be given higher priority.*

**Fodder:**

- *Assess fodder requirement in the district and locate areas where shortages are likely to occur and arrange for supplies from outside.*
- *Monitoring the prices of fodder in selected places/markets.*
- *Arrange to procure fodder from surplus sub -division*
- *State Forest Departments to arrange for the cutting and bailing of grasses in the forests, wherever possible to meet the demand from fodder deficit districts.*
- *Fodder cultivation to been couraged wherever feasible.*
- *Ensure supply of molasses to cattle feed plants.*

**PublicHealth:**

- *Disinfect drinking water sources to prevent the spread of water-borne diseases.*
- *Draw up plans to cope with likely epidemics.*
- *Constantsurveillance of public health measures including immunization to be undertaken.*

**6.8. Contingency actions for Crowd Management**

- ❖ ***Location and structure of pandals and Mela***

- *In case the road is less than 15ft in width, a minimum passage of 4ft needs to be left unoccupied. In case the road is 15ft to 30ft wide, a minimum of 6ft passage has to be left open. In case the road is over 30ft wide, a minimum passage of 10ft has to be ensured.*
- *There must be 4ft clear open space on all sides from the property line of any building, boundary wall or any other permanent structure.*
- *The height of the super structure can be no more than 40 ft.*
- *Separate entrance and exit gates to be built in such a manner that in case of a fire or other exigencies, immediate measures can be taken.*
- *The gates shall measure at least 12ft by 14ft. The entry passage to the pandal should be wide enough to allow access to a fire brigade without any obstruction.*
- *Pandals should not be constructed within 100 meters of a hospital or nursing home.*
- *Pandals should withstand wind velocity.*
- *Proper lighting must be ensured.*
- *There should be enough emergency exits. These should be free of obstruction.*
- *There must be a public address*
- *CCTVs must be installed at vantage points (entry, exit, inside circulation) for security reasons.*
- *Alternative sources of energy/generator must be available.*
- *Stand by emergency light should be arranged.*
- *Display of hoardings/ banner is not to be allowed within 50 meters of the important roads and intersections that may divert the attention of drivers or disrupt traffic.*
- *Enough police/homeguards and other security forces must be deployed at the event.*
- *Each puja pandal/ organizers of such fairs and events must have a disaster management plan for the event.*

**Fire Safety:**

- *No open flame can be lit within 200 yards of the main pandal and no cooking arrangements would be allowed within that radius.*
- *Adequate quantity of water, sand filled buckets and fire extinguishers are required to be maintained.*
- *Only specific materials for construction of puja pandals should be used.*
- *Licensed electrical contractors should be engaged for lighting.*

- *Old or naked wires should not be used. Wires should not touch the cloth portion of the pandal.*
- *Organizers must obtain NOC (or safety certification) from Fire Brigade and Police.*
- *No synthetic material/ropes should be used.*
- *No structure should be erected underneath live electrical lines.*
- *No combustible straw, sheaving flammable, explosive chemicals to be stored inside the pandals*

**Necessary arrangements for visitors:**

- *75 percent of the space in the pandal area must be kept free for crowd circulation.*
- *Pandals must have proper ventilation.*
- *Proper drinking water arrangements must be made in the pandal area.*
- *Toilets (separate for ladies and gents) must be arranged.*
- *Organizers should engage sufficient number of volunteers. They should be trained in crowd circulation.*
- *Clear signage should be placed at each important point showing entrance, exit gates, emergency exits, location of fire extinguishers /water hydrants, first aid kit (or medical response unit) etc.*
- *Map/design of the pandal/puja place must be displayed at the entrance for the visitors.*
- *A health unit with doctors and necessary medicines must be deployed at the event for any emergency.*
- *There must be an information desk to give necessary information to the visitors and other*

**6.10. Fire and Industrial accident**

Sr No	Key Action	Responsibilities
<b>Time Frame : Response Phase</b>		
1.	<i>Convening a meeting of the DDMA official, EOC and other concerned institutions to take stock of department wise preparations.</i>	<b>DDMA chairman</b>
2.	<i>Take stock of functioning of the EOC and Control Rooms;</i>	<b>DDMA Chairman</b>
3.	<i>Hazard assessment of areas prone to Fire and Industrial Hazard</i>	<b>Fire Department and DISH</b>
4.	<i>Mapping of. Industries and MIDC</i>	<b>DISH</b>

<b>5.</b>	<i>Fire Coordination Meeting along with all the Fire and HSE department within the District</i>	<b>DDMA, DISH , NMC</b>
<b>6.</b>	<i>Dissemination of Fire accident weather reports and Flood Forecasting Organisation;</i>	<b>RDMC EOC , DEOC and Fire Station</b>
<b>7.</b>	<i>Deployment Fire station and fire realated resources (mostsensitive MIDC , and Industrial Zones );</i>	<b>DDMA, DISH , Nagar Parishad</b>
<b>8.</b>	<i>Arrangement and use of power</i>	<b>DDMA</b>
<b>9.</b>	<i>Installation of temporary Wireless Stations and temporary telephones in flood-prone areas;</i>	<b>Police Dept.,BSNL</b>
<b>10.</b>	<i>Arrangement for keeping telephone</i>	<b>BSNL</b>
<b>11.</b>	<i>Storage of food in interior, vulnerable strategic and key areas and arrangements for their safety</i>	<b>Food Supplies dept.</b>
<b>12.</b>	<i>Arrangements of dry food stuff,essential medicines and other necessities of life;</i>	<b>Food Supplies dept., Revenue Dept.</b>
<b>14.</b>	<i>Identification /Selection of shelters;</i>	<b>Revenue, DDMA</b>
<b>15..</b>	<i>Advance arrangements for air assistance if required;</i>	<b>DDMA</b>





## Chapter 7 -Recovery Measures

### 7.1. Definition

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

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

### 7.2. Build Back Better

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

### 7.3. 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*

### 7.4. Coordination

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

*Damage Assessment and Needs Assessment shall be the basis of recovery planning*

*Various Sectors for recovery process may be*

- ✓ *Essential Services- Power, Water, Communication, Transport, Sanitation, Health*
- ✓ *Infrastructural: Housing, Public Building and Roads*
- ✓ *Livelihood: Employment, Agriculture, Cottage Industry, Shops and Establishments*

*Basic services such as power, water supply, sanitation, wastewater disposal etc. should be restored in shortest possible time. Alternate arrangement of water supply, temporary sanitation facilities can be sought with help of special agencies.*

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

***Following tables are to be filled after an event of disaster for Damage and Loss Assessment***

- *Power*

<b>Service</b>	<b>Units Damaged</b>	<b>Villages affected</b>	<b>Population affected</b>	<b>Recovery measure</b>	<b>Implementing Agency</b>	<b>Tentative Duration</b>	<b>Budget</b>
<i>Feeder</i>							
<i>Transformer</i>							
<i>HT Lines</i>							
<i>LT Lines</i>							
<i>Electric Poles</i>							

*To be planned after initial damage assessment by departments*

▪ *Health*

	<b>PHC (Village name)</b>	<b>Sub PHC</b>	<b>Drug Store</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration (Months)</b>	<b>Budget</b>
<i>No of Buildings Damaged</i>							
<i>No of health centers inaccessible</i>							
<i>Refrigeration and other vital equipment's</i>							
<i>Drugs and medicines</i>							

*To be planned after initial assessment by the departments*

▪ *Social*

*This recovery process will people in need of immediate rehabilitation including psychological support (due to disaster)*

<b>Village</b>	<b>Men</b>	<b>Women</b>	<b>Children</b>	<b>Total</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Duration(Months)</b>	<b>Budget</b>

▪ *Water Supply*

<b>Type</b>	<b>Village</b>	<b>Number of Units affected</b>	<b>Population affected</b>	<b>Recovery Measures</b>	<b>Implementing Agency</b>	<b>Tentative Durations(months)</b>	<b>Budget</b>
<i>Well</i>							
<i>Borewells</i>							
<i>Pond</i>							
<i>Water-supply disrupted</i>							
<i>Contamination</i>							
<i>Pipeline damaged</i>							
<i>Hand pump</i>							
<i>Cattle trough damaged</i>							
<i>Reservoir damaged</i>							

▪ *Road and Transport*

<b>Road damage</b>	<b>Location</b>	<b>Severity</b>	<b>KM</b>	<b>Recovery Measures</b>	<b>Implementation Agency</b>	<b>Tentative Duration(Months)</b>	<b>Budget</b>
<i>Panchayat</i>							
<i>State Roads</i>							
<i>National Highway</i>							
<i>Nagar Palika</i>							

	<b>Village /Ward</b>	<b>Population</b>	<b>Alternate Route</b>	<b>Recovery Measures</b>	<b>Implemen- tation Agency</b>	<b>Tentative duration (months)</b>	<b>Budget</b>
<i>Road Cut off</i>							
<i>Rail connectivity</i>							

▪ *Communication*

<b>Type</b>	<b>Office Damaged</b>	<b>Village Affected</b>	<b>Recovery Measures</b>	<b>Implementation Agency</b>	<b>Tentative Duration(Months)</b>	<b>Budget</b>
Landline connectivity						
Mobile connectivity						
Wireless Tower						
Radio						

▪ **Food Supply**

<b>Type</b>	<b>No of godown damage</b>	<b>Type of grains perished (ton)</b>	<b>Qty of grain perished (ton)</b>	<b>Quant ity of grain at risk(ton)</b>	<b>Recovery Measure</b>	<b>Implemen tation Agency</b>	<b>Tentative Duration( months)</b>	<b>Budget</b>
Civil Supply								
APMC								
Other								

▪ **Housing**

<b>Partial Damage</b>		<b>Fully Damaged</b>		<b>Recovery Measure</b>	<b>Scheme/ Progrm</b>	<b>Implementat ion Agency</b>	<b>Tentative Duration( months)</b>	<b>Budget</b>
<b>Kucha</b>	<b>Pucca</b>	<b>Kucha</b>	<b>Pucca</b>					

▪ **Public Utilities**

<b>Public Buildings</b>	<b>Partial Damaged (no)</b>	<b>Fully Damag ed</b>	<b>Recovery Measures</b>	<b>Program /Scheme</b>	<b>Implement ation Agency</b>	<b>Tentative Duration (months)</b>	<b>Budget</b>
Panchayat							

Education Buildings							
Anganwadi							
Hospitals							
Office Buildings							
Market							
Police Station							
Community Halls							

▪ *Restoration of Livelihood/Provisioning of Employment*

<b>Occupational Category</b>	<b>No of workers</b>	<b>Implementation Agency</b>	<b>Tentative Duration(months)</b>	<b>Budget</b>
Skilled Laborers				
Unskilled and agriculture laborers				
Small and Marginal farmers				
Construction Workers				
Fisher Folk				
Weavers				
Other Artisans				

▪ *Land Improvement*

<b>Land Erosion/Siltation(Hec)</b>	<b>Households effected</b>	<b>Recovery measures</b>	<b>Implementation Agency</b>	<b>Tentative Duration(Months)</b>	<b>Budget</b>

▪ *Agriculture*

<b>Crop failure(hec)</b>	<b>Households effected</b>	<b>Recovery Measures</b>	<b>Implementation Agency</b>	<b>Tentative Duration(months)</b>	<b>Budget</b>

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▪ *Non-Farm Livelihood*

<b>Cottage Industry</b>	<b>Extent of Damage</b>		<b>Recovery Measures</b>	<b>Implementation Agency</b>	<b>Tentative Duration (months)</b>	<b>Budget</b>
	<b>Tools and equipment</b>	<b>Goods and materials</b>				
<i>Handloom</i>						
<i>Pottery</i>						
<i>Food-Processing</i>						
<i>Printing /Dying</i>						
<i>Other</i>						

▪ *Shops and Establishment*

<b>Extent of Damage</b>			<b>Recovery Measures</b>	<b>Implementati on Agency</b>	<b>Tentative Duration(mont hs)</b>	<b>Budget</b>
<b>No of Building</b>	<b>Tools and Equipment's</b>	<b>Goods and Materials</b>				

**7.5. Long Term Recovery Program**

*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 need more time and specialized assistance to recover and more formalized structure to support*

*them to reach a normalized space. This phase of long term recovery can also be termed as reconstruction and rehabilitation as now the focus of the authorities has shifted from short term needs to getting the normal lives of effected people on track. During this time the contribution of both government as well as affected people is significant to deal with all the issues properly.*

### **7.5.1. Housing Assistance**

*The fundamental problem immediately post disaster at the site area is housing. People who have lost their houses will have extreme problem in staying safe and safeguarding their properties from felonious elements. Government should be aware about these issues and should seriously work in restoring their houses without any delay and discrimination. In order to speed up the restoration process all damaged houses a compensation package should be declared. Besides, the process of distribution of compensation should be free, fair and faster.*

*The following bullet points should be kept in mind to have a proper and smooth functioning of the housing process.*

- ✓ Owner driven reconstruction*
- ✓ Public Private Partnership (PPP)*
- ✓ Joint possession of houses: names of both husband and wife*
- ✓ Financial, technical and material assistance to be provided by the government*
- ✓ Houses should be covered under insurance*
- ✓ Designing of hazard resistant houses which consider seismic and flood zone guidelines*
- ✓ Provide materials at subsidized rate*
- ✓ Having a proper monitoring and evaluation system for keeping a tab of the progress of the project and finances included.*

### **Relocation of Disaster Affected Families**

*Relocation is a tedious issue for administration. If disaster totally interrupted the base of the community at this situation a new location may be searched for rehabilitation of affected people. In fact, the affected communities do not feel comfortable to start their normal life in new locations since they want to stay closed to their farmland, market place, water sources, education institutions, electricity and other basic facilities. As they are very dearer and nearer to their native villages it becomes awkward for their movement to new areas.*

*In this regard government should prepare the rehabilitation guideline in consultation with affected families and local authorities considering the nature of calamity and the extent of damage. However, there should not be any extraneous factors in relocation process of affected people. The guideline may include people's consent, acceptable relocation package, getting due authorization for relocation, considering land use planning, completing land*



*acquisition process and legal clearances, arranging livelihood measures for affected families and making provision of all basic infrastructures.*

### **7.5.2.Funding and Monitoring**

*In recovery phase a series of projects will be taken up for reconstruction and rehabilitation works. Thus, funds will be required in huge amount. Besides, projects also need to be completed in time. The resource intensive projects are not easy to implement by State government alone in such disastrous situation. So, State government needs financial supports from Central government and other external agencies. For this purpose the government agencies will have to develop their reconstruction and rehabilitation plans properly as per the damage assessment report and submit to concerned authorities accordingly.*

*The project funds received from Central government and other external funding agencies must be utilized as per their final instructions. Due attention must be given not to breach any instructions but to make the purpose success without any deviation. Proper mechanism should be in place to spend the budget. Every fund also should be audited as and when necessary.*

### **7.5.3 Project Management**

*The State government with the help of local NGOs, voluntary Organizations, private agencies and community people needs to develop a plan to implement the projects in disaster affected areas. Proper coordination at each and every stage of implementation is important to make resources and funds useful. For disaster devastated communities the nature of reconstruction and rehabilitation works are different in nature. The overall recovery phase covers a variety of issues like health, education, infrastructure, livelihood, agriculture, business, security etc. Every project should have a management plan including designing, planning, implementation, monitoring and supervision. For technical supervision the competent authority is to be involved.*

*The point that is to be given more importance in project management is to mainstream the disaster management in all development projects and make the community disaster resilient. In reconstruction works the safe construction practices are important to incorporate. In this regard the following construction activities are vital.*

- ✓ *Retrofitting structures like houses, school buildings, hospitals, theatres and govt buildings*
- ✓ *Creation of disaster proofing dams, bridges, roads, canals, water towers etc.*
- ✓ *Restoration of infrastructure facilities – ports, airports, power stations, industrial and livelihood units etc.*

#### **7.5.4. Information, Education and Awareness**

*Coordination plays a vital role to make a number of stakeholders united and functional in implementation of a series of reconstruction and rehabilitation projects. Only effective communication helps people work together with better understanding. Thus, information, education and awareness activities should be undertaken by government departments, district administration and local authorities to disseminate all relevant measures related to reconstruction and rehabilitation of affected people, to help affected communities understanding and acquainted to their recovery plan, to collect necessary feedbacks, comments on on-going reconstruction and rehabilitation works.*

*Government assistance during disaster and post disaster become more helpful to people. So, media management and public relation is necessary to convey the accurate information to public. All possible efforts should be taken to organize considerable public awareness activities.*

#### **7.5.5 Social Rehabilitation**

*Disasters cause a lot of social problems. The number of disabled persons may be more after disaster. Government should provide health assistance to all disabled persons without deadly and discrimination. The following activities should be taken up seriously to assist the elderly people, women, children and other disables.*

- ✓ *Ensure artificial limbs fitted to affected persons.*
- ✓ *Provide modern wheelchairs and supportive devices to needy persons*
- ✓ *Ensure that the orphaned children are fostered.*
- ✓ *Set up Day centers to take care of children*
- ✓ *Establish orphanages*
- ✓ *Take care to set up child care helpline*
- ✓ *Ensure pensions given to aged persons*
- ✓ *Establish Old Age Homes*
- ✓ *Arrange physiotherapy under continuous supervision of doctors*
- ✓ *Start women's Livelihood Restoration Project*
- ✓ *Link women with government self-employment scheme*



## Chapter 8- Financial Mechanism

*With change of paradigm shift in DM from the relief-centric to proactive approach of prevention, mitigation, capacity building, preparedness, response, evacuation, rescue, relief, rehabilitation and reconstruction, effort would be made to mainstream and integrate disaster risk reduction and emergency response in development process, plans and programmes of the Government at all levels. This would be done by involving all the stakeholders – Government organisations, research and academic institutions, private sector, industries, civil society organisation and community. DDMA will ensure mainstreaming of disaster risk reduction in the developmental agenda of all existing and new developmental programmes and projects which shall incorporate disaster resilient specifications in design and construction. Due weightage will be given to these factors while allocating resources. Project, which help in reducing the existing vulnerability of the area would be given preference over projects which are likely to enhance it. Below are given some of the given funds in order to response, relief and Mitigation*

### **8. 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 13th 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.*

*This fund can asked for whenever there is the very intensive drought and flood whenever the District administration food and state level fund are in sufficient for Relief and Response.*

#### **8.1. 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.*

## **8.2. 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*

## **8.3. 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, As per the DM Act ,2005 the every line department should Invest in DM 10 percent of Its total fund on DRR activities within the District*

*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 on-going basis. There are different ways to raise the fund in the State as described below.*

## **8.4 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 13th Finance Commission.*

## **8.5 Disaster Response and Mitigation Funds**

*District Disaster Response Funds and District Disaster Mitigation funds would be created at the District Level as mandated in the Act (Section 48). The disaster response funds at the district level would be applied by the DDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines and norms laid down by the Government of India and the State Government. The mitigation funds shall be applied by the DDMA for the purpose of mitigation as per the Maharashtra Disaster Risk Management Programme, 2009.*

### **District Planning Fund**

*For preparedness, mitigation, capacity building and recovery fund can be raised from MP or MLA grant as received for developmental work also from departmentally arrangement. MP and MLA within the Nagpur District should be encouraged to spend on Disaster risk reduction and mitigation measures within the district*

### **Partnerships**

*District Disaster Management Authority should involve in the partnership with various National and International organisation such as Oxfam, UNICEF, UNDP and Other Local NGO's should encourage promote and invest in Disaster risk Reduction in the areas of Nagpur such as Drought prone villages on Watershed development .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). District Disaster Management Authority along with Private organizations and local business group should share their part with in DRR measures*

### **8.6. Responsibilities of the District Departments and Agencies**

*All District Departments, Boards, Corporations, PRIs and ULBS will prepare their DM plans including the financial projections to support these plans. The necessary financial allocations will be made as part of their annual budgetary allocations, and ongoing programmes. They will also identify mitigation projects and project them for funding in consultation with the DDMA to the appropriate funding agency. The guidelines issued by the SDMA Vis a Vis various disasters may be consulted while preparing mitigation projects.*

### **Techno-Financial Regime**

*Considering that the assistance provided by the Government for rescue, relief, rehabilitation and reconstruction needs cannot compensate for massive losses on account of disasters, new financial tools such as catastrophe risk financing, risk insurance, catastrophe bonds, micro-finance and insurance etc., will be promoted with innovative fiscal incentives to cover such losses of individuals, communities and the corporate sector. In this regard, the Environmental Relief Fund under the Public Liability Insurance Act, 1991, enacted for providing relief to chemical accident victims is worth mentioning. Some financial practices such as disaster risk insurance, micro-finance and micro-insurance, warranty on newly constructed houses and structures and linking safe construction with home loans will be considered for adoption.*



## **Chapter 9 - Mainstreaming of Disaster Management**

*India is growing at the rapid pace, be it urbanization or Industrial expansion. Maharashtra being one of the largest contributors in GDP is growing day by day with some of its largest cities population and Industrial area got almost getting doubled in decade. As the new developments such as urbanization, population and industries increases, it creates a new range of risk for the communities and social environment. There are many examples driven for economic growth and social improvement generating new disaster risks. Rapid and unplanned urbanization is an example. The growth of informal settlements and inner city slums, fuelled by internal migration from smaller urban settlements or the countryside, has led to the growth of unstable living environments. At the same time Industrial developments within the urban cities and town has led threats to the human population from fire, biological, radiation and nuclear hazards related risk for communities . This has led the government to integrate disasters risk reduction measures with development. The DM act mandates us to take measures for prevention/mitigation of disasters and to ensure that appropriate preparedness measures for integration of disaster management into development plans and projects are taken and further allocation of funds for prevention, mitigation, preparedness for disaster and capacity building are also made available. Since disaster management is not a function of DM department alone but of all departments hence mitigation concern must be addressed by the respective departments in all aspects of developmental plans and project.*

### **9.1. Concept of Disaster and Development**

*Disaster and Development goes parallel to each other. Development and disaster have both positive and negative correlation. Development can increase the vulnerability of people and assets if DRR measures are ignored. One of crucial example is building a skyscraper without soil testing and land use planning. At the same time if the developmental activities will be done taking into consideration of various hazards in districts can reduce the physical exposure to hazards for example flood protection measures at the affected sites , earthquake resistant structure. Developments can reduce vulnerability if proper measures are taken into consideration while if ignored can set wiping out and setting back years of efforts on development. On the other hand it provides opportunities in the form of sustainable recovery.*

### **9.2. Development Planning in Disaster Risk Reduction**

*Natural Disaster and human induced disaster is increasing day by day, looking at the frequency of various disaster in the district, disaster risk management should be put on the*



*fore front of the development planning. The development plans and policies should comply with sustainable developments goals agenda, where the development programmes and project need to be review with the potential of every project to reduce the vulnerability and associated hazards. At the same time disaster preparedness and responsive measure should be designed along side of development plans which should focus on the reducing the vulnerability accumulated due to past developmental processes.*

### **9.3. Legal Mandate**

*The Disaster Management Act, 2005 mandates District Disaster Management authority “lay down guidelines to be followed by the departments of the Government of the State and on the same line at different departments in district for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore” and to “review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein”. Under Section 38 (2) (e) of the Act the State Government is to ensure that the integration of measures for prevention of disaster or mitigation have been incorporated by the departments of the Government of the State in their development plans and projects. The State Government is further to ensure integration of measures to reduce or mitigate the vulnerability of different parts of the State to different disasters in the state development plan {38 (2) (f)}.*

*The Act also prescribes for preparation of District Plan and for incorporation of measures suggesting as to how mitigation shall be integrated into development plans and projects. The Act states that the DMPs shall prescribe “the manner in which the mitigation measures shall be integrated with the development plans and projects”. The DMPs of departments at State and district level shall also have provisions for prevention of disaster and mitigation of its effects or both in the development plans and programmes as provided for in the State DMP and as is assigned to the department or agency concerned.*

### **9.4. Environmental Regulations**

*Environmental and social surrounding is being severely affected by increased infrastructural development and Industrial development in the district. Environmental hazards create serious implication for the human beings and living creature. According to Environmental Protection act 1986, 2 (a) environments include water, air and Land and the interlinking between and among the air, water. Land, human being and other creatures, plant and micro organism and property. It mandates concern concerned departments such as Central Pollution Control Board and directed it as per the DM act as it supersedes environmental protection act am mandates*

to lay down standard measures for quality of air, water or soil for various areas and purposes. It mandates to allow maximum limits of concentration of various environmental pollutants including the procedures and safeguards for the handling of hazardous substances. Prohibition and restrictions on the handling of hazardous substances in different areas, prohibition and restriction on the location of industries and the carrying on process and operations in different areas. It mandates to take procedures and safeguards for the prevention of accidents which may cause environmental pollution and for providing for remedial measures for such accidents, noise for differ. No person carrying on any industry, operation or process shall discharge any environmental pollutants in excess of standards prescribed by the section (7) environmental protection ac, 1986. District Disaster Management Authority in co-ordination with concern department should implement the project related for the control of the environmental pollution and should take necessary measures to curb the pollution to past activities. MIDC and Industrials sites to be audited every year with extent of effluents and pollutants discharge by the different Industries and the concern department should check the nature of impact made by the effluents on the communities and environments. The developmental projects need to be made as per guidelines of environment and need to be sanctioned by National Green Tribunal. Necessary arrangements to be made as per the environments act for the treatment of affluent and procedural safeguards to be made compulsory as per section (8) of Environmental protection act, 1986.

## **9.5. Good Practices**

### **9.5.1. Common Effluent Pollution Treatment**

Maharashtra Pollution Control Board has initiated Common Effluent Treatment Plant (CEPT) at Butibori, Pune, Thane, Raigad and Aurangabad. Common effluent treatment plant (CEPT) not only helps the industries in easier control of pollution, but also act as a step towards cleaner environment and service to the society at large. Small scale industries, by their very nature of job cannot benefit much from economies of scale and therefore the burden of installing pollution- control equipment, falls heavy on them. Realizing this practical problem, under the policy statement for abatement of pollution the Govt. felt to extend the scheme for promoting combined facilities for treatment of effluent and management of solid waste for clusters of small scale industrial units and also to provide technical support to them. There is need to increase the CEPT plants at all the industrial clusters in the Nagpur region, thus helping in curbing water and air pollution due to affluent generated by industries.

### **9.5.2. State Water Monitoring Network**

Maharashtra State Pollution control Board has initiated a project of state water Monitoring Network at various location such at Nagpur, Chandrapur, Amravati, Nasik, Mumbai, Pune. It

*mandates the district should comply with state authority network which regulates the monitoring of water network and quality of water, level of the different content in the waters and level of affluent discharge by the different industrial units. District should look into the monitoring system of all the lakes, reserves, and rivers in order to maintain quality of water level in the district.*

### **9.5.3 Mainstreaming in Construction Practices**

*Urban Planning, PWD and town planning departments of the district is mandated to work as per the National Building Code, 2005. It is instrument to provide guidelines for regulating the building construction activities across the country. It serves as a Model Code for adoption by all agencies involved in building construction works to be done by Public Works Departments, other government construction departments, local bodies or private construction agencies. The Code mainly contains administrative regulations, development control rules and general building requirements; fire safety requirements; stipulations regarding materials, structural design and construction (including safety) and building and plumbing services..Under this the concern department should follow the measures in order to strengthen the building falling under different zones, the building areas which are closer to the back waters of dams and in the low lying areas of the need to be shifted and all the construction need to be made and sanctioned as per the guidelines of the National Building Code ,2005.*

## **9.6. Approaches for Mainstreaming**

*There are three suggested approaches of mainstreaming disaster management into the development process and disaster management plans-*

### **9.6.1 Structural Measures**

- *Re-enforcing building permit process*
- *Fire safety (in the residential as well as market area)*
- *Structural évaluation of public infrastructure (Govt, Buildings, bridges, roads)*
- *Reigning forcing and création of sewage system in order to reduce Urban flooding.*
- 

### **9.6.2 Non Structural Measures**

- *Situation analysis- figuring out the hotspots and vulnerable population in the city as well as district periphery by all the departments*

- *Improving access to information about disaster risk reduction at district and local level*
- *Strengthening capacities of communities at city level through awareness about various programmes in normal times and at the time of disasters.*
- *Zonation of the various hazards, likelihoodness of its occurrence, cyclicity and population which may be affected due to various hazards.*
- *Training and awareness programmes need to be provided to the government official*

### 9.6.3. Disaster mitigation Projects

- *Drought Prone Area Development Plan: Programmes like drought Drought Prone Area Developments need to be inducted into the villages of the district which are concurrently falling under the drought prone category.*
- *Flood Risk Mitigation scheme: Programmes like flood risk mitigation scheme need to be introduced in the villages concurrently coming under the flood red zone in the Nagpur District and other regions. The Scheme covers activities like a) Pilot Projects for development of model Multi-Purpose Flood Shelters and b) Development of River Basin specific Flood Early Warning System and Digital Elevation Maps for preparation of Inundation Models for giving early warning to the villagers for evacuation in case of flood.*

*Based on the suggested approaches the specific action would involve:-*

- *Adopting a Sectoral approach and identification of Key sectors for mainstreaming. Within each sector, key programmes/projects would have to be identified and this has to be followed by identifying the entry points within the programmes/projects for integration.*
- *DRR measures should also be involved at the policy and planning level be it national, state and district level and the process of integration of DRR should be clear at all levels*

- *It would also need a close coordination with District Planning Committee and Disaster management unit for promoting DRR into all development programmes and involve working with different departments to mainstream DRR into the Departmental Plans and policies.*
- *Advocacy would have to be done for allocation of dedicated budget for DRR within the Departmental plans.*
- *Further appropriate guidelines for different sectors would have to be developed and for it to be effective and sustainable it has DRR would have to be ultimately integrated to the development plans of various departments at the district and sub-district levels.*

*All the flagship programmes of government of Maharashtra and Central government funded programmes and projects should be initially integrated at the planning level with the Disaster reduction measures to be done under the process of integration and implementation should be clear at all the levels of administration, government officials need to be trained and aware specifically for the steps to be taken in all the developmental programmes initiated by the different department of the government.*

### ***Integrating DRR in departments***

*Integrating DRR with the development plays a vital role, thus each department must have their own role in formulating and implementing the DM plan. DDMC shall ensure the mainstreaming of DRR in the developmental agenda of all existing and new developmental programmes and projects that shall incorporate disaster resilient specification in designs and construction. And accordingly the inspection and monitoring of these structural implementations should be done to ensure the safety and enhancing the disaster reduction. Risk and impact assessment projects should be followed to ensure the better environmental policies and to mitigate the disasters.*

### **9.7. Approaches in Developmental Schemes**

#### *Pradhan Mantri Awas Yojana*

- *Construction of eco friendly houses for financially weaker section of the society.*
- *Conversion of kutcha houses into pucca or semi pucca houses.*
- *Use of flexi fund to incorporate risk reduction features.*

- *Coordinate with the other governmental schemes like Nirmal Bharat Abhiyan and rural water programme to ensure necessary amenities.*

#### *Deendayal Upadhyay Swamyam Yojan*

- *Educational Scheme for tribal students.*
- *Upliftment of education in the rural areas.*
- *Flexi- fund for the education of children between 6years to 14years.*

#### *Punjabrao Deshmukh Scheme*

- *Residential assistance for the students*
- *Financial help the tribals of the state*
- *Coordinate with the other governmental health schemes like ICDS, NRHM*

#### *Sarva Shiksha Abhayan*

- *Upliftment of education*
- *Free education for the single girl child till class 12.*
- *10 percent of flexi- fund in planning the activities undertaken to strengthen DRR and CCA.*

#### *Mahatma Jyotba Phule Jan Arogya Yojana (MJPYAY)*

- *Provide medical assistance to weaker section*
- *Provide free medicines according to the cards available to them.*

#### *Health Insurance (Rajiv Gandhi Jeevandayee Arogyee Yojana*

#### *Bal Thackeray Upgath Vima Yojana.*

- *Financial assistance for the treatment of the accident victims.*

#### *Krishi Gurukul Yojana*

- *Educate farmers with the new technique agriculture and floriculture.*
- *Promote climate resilient farming.*

#### *Pandit Deen Dayal UpadhyayKrishi Margadarshak Yojana*

- *Empower farmers in the overall growth of agriculture*

- Promotes for soil fertility tests
- Promotes study on change in weather pattern

*Palakmantri Earth Moving Machine Kharedi Yojana and Palakmantri Panand Rashte Yojana*

- Provide training to the rural youth for employment and their livelihood.
- Aims to promote rural economy
- Link them with different government projects accordingly.
- Provides loans from the nationalized banks to buy machinery.

*Mahatma Gandhi National Rural Employment Guarantee Act*

- Promote employment to the weaker section of the society.
- Strengthen the list of developmental activities according to DRR and CCA
- Enhance the number of working days in case of disasters like droughts

*Pradhan Mantri Gram Sadak Yojana*

- Identify habitations that tends to get cut off during heavy rains as a part of village HRVA to priorities build connecting roads to such habitates
- National drinking water program.

*National health Mission*

- Should promote to increase the social developmental indicators
- Community level health worker should be trained in DRR and CCA.
- Hazard resistant structures should be adopted in construction of new hospitals.

*Integrated Watershed Management Programme*

- Undertaken DRR project in drought prone areas.
- Ensure clean drinking water in the area.

*National Rural Drinking Water Programme*

- Access to drinking water in the rural areas
  - Undertaken project to ensure connectivity of wells in the villages
- Total Sanitation Campaign*

## **ANNEXURES- II**

**Table 1.1. Important District Level Contact No.**

<b>Sr No.</b>	<b>EOC Name</b>	<b>STD Code</b>	<b>Office No.</b>	<b>Other Office</b>
1.	<b>Collector Office</b>	0712	2562668	-----
2.	<b>Sub Divisional Office , Nagpur</b>	0712	2560048	232210
3.	<b>Sub Divisional Office , Saoner</b>	07113	232275	232210
4.	<b>Sub Divisional Office ,Ramtek</b>	07114	255302	255139
5.	<b>Sub Divisional Office , Katol</b>	07112	222040	222016
6.	<b>Sub Divisional Office , Umred</b>	07116	220259	220269
7.	<b>Tahsil Office , Ramtek</b>	07114	242177	242046
8.	<b>Tahsil Office ,Nagpur Gramin</b>	0712	2564577	-----
9.	<b>Tahsil Office ,Nagpur City</b>	0712	2561975	2741113
10.	<b>Tahsil Office , Kamptee</b>	07109	288220	288244
11.	<b>Tahsil Office ,Hingana</b>	07104	276134	-----
12.	<b>Tahsil Office ,Kalmeshwar</b>	07118	271358	271355
13.	<b>Tahsil Office , Saoner</b>	07113	232212	232268
14.	<b>Tahsil Office ,Umred</b>	07116	242004	242103
15.	<b>Tahsil Office , Bhiwapur</b>	07106	232241	232247
16.	<b>Tahsil Office ,Kuhi</b>	07100	222236	222237
17.	<b>Tahsil Office ,Ramtek</b>	07114	225124	255159
18.	<b>Tahsil Office ,Parseoni</b>	07102	225139	225140



19.	Tahsil Office ,Mouda	07115	281128	281129
20.	Tahsil Office ,Katol	07112	2222023	222046
21.	Tahsil Office, Narkhed	07105	232206	232383

**Table 1.2 Important Emergency Operation Centre Address and Phone Number**

Sr No	Department Name	STD Code	Phone No	Other No
1.	State Emergency Operation Centre , Mantralya	022	22027990/22854168	22024243
2.	NDRF 5 <sup>th</sup> Battalion ,Pune	02114	247000	2477008,9422315628
3.	SDRF, HIngana Nagpur	07104	238030	982345766 ( Commandant )
4.	Regional Emergency Control Room , NMC	0712	2567777	2567029
5.	Divional Commmissioner Flood control room	0712	2542518	9421
5.	Flood Control Room , Nagpur	0712	2564431	98503801417 (Datir) 9850371509(Charade)
6.	Station Headquater(GRC) ,Kamptee	07109	282884	7350015921
7.	Airforce Operations , Nagpur	0712	2280051	22802227
8.	Fire Control Room , NMC	0712	2567777	
9.	IMD Nagpur	0712	2282398	2288554
10.	Police Control Room , Nagpur	0712	2567040	9823577299
11	Police control Room Nagpur Gramin	0712	2560200	-----

**Table 1.3 Important Divisional level Contact Number**

<b>Sr No</b>	<b>Department Name</b>	<b>Std</b>	<b>Phone No</b>	<b>Other No</b>
1.	<i>Divisional Commissioner, Nagpur</i>	0712	2532123	2562132
2.	<i>Police commmsisoner, Nagpur</i>	0712	2560601	2561222(Control room )
3.	<i>District Emergency Control Room , Wardha</i>	07152	243446	Fax 240533
4.	<i>District Emergency Control Room, Gondia</i>	<u>07182</u>	<u>230196</u>	<u>Fax-236145</u>
5.	<i>District Emergency Control Room, Chandrapur</i>	<u>07172</u>	<u>251597</u>	<u>Fax-255400</u>
6.	<i>District Emergency Control Room, Bhandhara</i>	<u>07184</u>	<u>251222</u>	<u>Fax-252312</u>
7.	<i>District Emergency Control Room, Gadchiroli</i>	<u>07132</u>	<u>222017</u>	<u>Fax- 222022</u>

**Table 1.4 Boats Available With Various Organisation**

<b>Sr No</b>	<b>Name of Insitution</b>	<b>Mobile No</b>	<b>Total Inventory</b>
1	<i>Jagdamba Gomti Machhimar Co-operative Society</i>	<i>Shri Arun Waghmare 9923161025</i>	<b>11</b>
2	<i>Machindra Machhli Co-Operative Society Gandhi Sagar</i>	<i>Shri Pundalik Dahare 9371798277</i>	<b>02</b>
3	<i>Jal Chetriya Labour Co-operative Society , Nagpur</i>	<i>Shri Rajan Gaur 9326351526</i>	<b>04</b>
4	<i>Triveni Macchi maar Society, Nagpur</i>	<i>Shri Dattu Pandal</i>	<b>03</b>
5	<i>Dhamanpeth Macchi Maar Society , Dhamanpeth</i>	<i>Shri Shravan Bawane 9158920331</i>	<b>02</b>
6	<i>Fisherman Mutti Purpose Co-Operative</i>		<b>10</b>

**Table 1.5 List of Vehicle Present various Individual owned Privately**

Sr No	Vehicle Arrangement	Type	Phone no
1	MH -31 AF- 2209	Tata Magic	9764652778
2	MH-31-B-7393	Commander Jeep	9923862405
3.	MH-31-AH-2295	Tata Sumo	9823327527
4.	MH-31-AR-0773	Tata Magic	9673798098
5.	MH 31-Z-4389	Commander jeep	7038685560
7.	MH-31-CM-3954	Cruzer	
8.	MH31- CP-7372	Scorpio	9923862405
9.	MH 27-D- 3644	Truck	
10	MH31-5171	Qualis	9548086860

**Table 1.6 Important Contact Number of JCB And Bulldozer Owners**

Sr No	Inventry	Total in No	Location	Owner	Telephone No	Total Human Resources
1	Bulldozer/JCB	1	Narkhed	Mr Dinesh Sahu	94723684614	2
2	Bulldozer/JCB	1	Narkhed	Mr Amol Arghode		2
3	Bulldozer/JCB	1	Narkhed	Mr.Rahul Kamade	9423604275	2
4	Bulldozer/JCB	1	Narkhed	Mr Nayeem Khuraisi	8149931972	2
5	Bulldozer/JCB	1	Narkhed	Sharma Traders	9403119226	2
6	Craine/JCB	1	Nagpur	Mr .Akram bhai	9673106086 9922625891	2
7	Craine/JCB	1	Nagpur	Mr Ramjaan Bhai	9049977152	1
8	Craine/JCB	1	Nagpur	Mr O J bajaj	9923389882	2
9	Craine/JCB	1	Nagpur	Mr R M gopalini	9975493058	2
10	Craine/JCB	1	Nagpur	Mr. S K gurubaksani	9326182503	2
11	Craine/JCB	1	Nagpur	Mr R N dayaramani	9890007844	2
12	Craine/JCB	1	Nagpur	Mr L C Gurubaksani	9422110735	2

**Table 1.7 Police Statios under the Nagpur Police Gramin Jurisdiction**

<b>Sr No</b>	<b>Office /Police Station</b>	<b>Officers Name</b>	<b>Phone No</b>	<b>Mobile No</b>
1	Superintendent of Police Office (Gramin) , Civil Lines Nagpur	<b>Shri Anant Rokade (IPS)</b> Superintendent of Police	0712-252139	7888016921
2.	Superintendent of Police Office (Gramin) , Civil Lines Nagpur	<b>Shri Narsingh Sherkhane</b> Deputy Superintendent of Police	0712-2549122	7888016922
3.	Superintendent of Police Office (Gramin) , Civil Lines Nagpur	<b>Shri R F Yadav</b> Deputy Superintendent of Police	0712-2551875	7888016923
4.	Nagpur Sub Division	<b>Shri Sunil Jaiswal</b> (Additional Charge ) Sub Division Police Officer	0712-2556135	7888016950
5.	Kamptee Sub Division	<b>Shri Mangesh Shinde(IPS)</b> Sub Division Police Officer	07109-288245	7888016924
6.	Saoner Sub Division	<b>Shri Suresh Bhojar</b> Sub Division Police Officer	07113-233799	7888016951
7.	Katol Sub Division	<b>Shri I M Katkade</b> Sub Division Police Officer	07112-222329	7888016950
8	Ramtek Sub Division	<b>Dr. D Salunkhe(IPS)</b> Sub Division Police Officer	07114-256423	7888016949
9	Umred Sub Division	<b>Shri Sunil Jaiswal</b> Sub Division Police Officer	07116-242555	7888016951
10	Police Station Katol	<b>Shri D J Chauhan</b> Police Inspector	07112-222029	7888016928
11	Police Station Kuhi	Shri S G Kale Police Inspector	07100-222227	7888016929
12	Police Station Kamleshwar	<b>ShriP M Madame</b> Police Inspector	07118-271227	7888016943
13	Police Station Kondali	<b>ShriP V Chaugaonkar</b> Police Inspector	07112-258134	7888016931
14	Police Station Kanhan	<b>ShriVilash Vandile</b> Police Inspector	07102-236246	7888016930
15	Police Station Kelwad	<b>Shri Pardhi</b> Police Inspector	07113-256922	7888016933
16	Police Station Khapa	<b>Shri PV Wange</b> Police Inspector	07113-286122	7888016927
17	Police Station Kaparkhed	<b>Shri M D Chaate</b> Police Inspector	07113-268126	7888016942
18	Police Station Bori	<b>Shri B N Thakare</b> Police Inspector	07103-262122	7888016938
19	Police Station Bela	<b>Shri A M Gurnule</b> Police Inspector	07116-278526	7888016937
20	Police Station Umred	<b>Shri P G Haake</b> Police Inspector	07116-242003	7888016946

21	Police Station Bhiwapur	<b>Shri R M Gaikwad</b> Police Inspector	07106-232224	7888016947
22	Police Station Narkhed	<b>Shri D G Meshram</b> Police Inspector	07105-232325	7888016952
23	Police Station Parseoni	<b>Shri BalaShaheb Gayegole</b> Police Inspector	07102-225123	7888016934
24	Police Station Dewalpar	<b>Shri V V Patil</b> Police Inspector	07114-277422	7888016940
25	Police Station Mauda	<b>Shri B S Thele</b> Police Inspector	07115-281135	7888016954
26	Police Station Ramtek	<b>Shri Manish Thakare</b> Police Inspector	07114-255126	7888016955
27	Police Station Saoner	<b>Shri D A Wankhede</b> Police Inspector	07113-232209	7888016936
28	Police Station MIDC Bori	<b>Shri Manish Diwate</b> Police Inspector	07104-276137	-----
29	Police Station Jalal Kheda	<b>Shri V J Tiwari</b> Police Inspector	07105-238258	788801653
30	Police Station Veltur	<b>Shri P Y Thavre</b> Police Inspector	07100-223134	7888016957
31	Police Station Airoli	<b>Shri D C VANJARI</b> Police Inspector	0	7888016956
32	Emergency Operation Centre	<b>Shri Moula Sayyed</b> Police Inspector <b>Shri D N Matre</b> Police Inspector	<b>0712-2560200</b>  <b>0712-2560200</b>	7888016939  7888016939

**Table 1.8 District Co-ordination for Disaster Management committee at District level –Zila parishad**

Sr No	Name of Officer	Designation	Phone No.	Mobile No	Email ID
1.	Dr Yogendra Sawai	District Health Officer	2564843	9422190 8087	<a href="mailto:dhonaqpur2016@gmail.com">dhonaqpur2016@gmail.com</a>
2.	Dr Harsh Meshram	Additional District Health Officer	2560653	9657862 116	<a href="mailto:dhonaqpur2016@gmail.com">dhonaqpur2016@gmail.com</a>
3.	Dr Irfan	Additional District Health Officer	2564843	7588421 505	<a href="mailto:dhonaqpur2016@gmail.com">dhonaqpur2016@gmail.com</a>
4.	Dr Rahul Tathakre	Medical Officer	2564843	9766445 792	<a href="mailto:idsnqpur@gmail.com">idsnqpur@gmail.com</a>
5.	Monika Chormode	District Heat Wave Officer	2465988	9422473 811	<a href="mailto:dmonaqpur@gmail.com">dmonaqpur@gmail.com</a>
6.	Shri Raiwale	Reginal	2562163	9922039	<a href="mailto:rphlnq@gmail.com">rphlnq@gmail.com</a>

		Laboratory Officer		920	
7.	Dr Jayshree Walke	Medical Officer	2564843	9326014 978	<a href="mailto:dhonaqpur2016@gmail.com">dhonaqpur2016@gmail.com</a>
8.	Dr Y B Bagde	Medical Officer	2554403	9960942 021	<a href="mailto:dhonaqpur2016@gmail.com">dhonaqpur2016@gmail.com</a>

**Table 1.9 District Co-ordination Team Animal Husbandry**

Sr No	Officer Name	Contact No	Email Id
1.	Dr B A Wani District Deputy Commissioner of Animal Husbandry	0712-2511621 8888845134	<a href="mailto:nagpurddcah@gmail.com">nagpurddcah@gmail.com</a>
2.	Dr U S Hirudkar District Animal Husbandry Officer, Zila Parshad Nagpur	0712-2560150 9423104814	<a href="mailto:dahozp.nagpur@gmail.com">dahozp.nagpur@gmail.com</a>
3.	Dr Deepak Kaddo Livestock Development Officer, Zila Parishad ,Nagpur	0712-2560150 7350220222	<a href="mailto:dahozp.nagpur@gmail.com">dahozp.nagpur@gmail.com</a>
4.	Shree A S Gaffar Assiatant Livestock Development Officer	0712-2560150 9660696607	<a href="mailto:dahozp.nagpur@gmail.com">dahozp.nagpur@gmail.com</a>

**1.10 Rivers and Ghats in Various taluka**

Sr No	Panchayat Samiti	DongeGhat	River
1.	Nagpur	Aashta	Vena River
2.	Kuhi	1.Kochhi 2.Sirsi 3.Sawargaon 4.Kharada 5.Shodhad 6.Jiwanpur 7.Pawani 8.Tiwadi 9.Dhamani 10.Ambhora Devashthan 11.Gond Pipri	Ven Ganaga River

		12.Sawangi 13.Rajola 14.Aawarmara	Kanhan River
		15.Navegaon Chichghat	Aam River
		16.Gohali 17.Salebhati	Maaru River
3.	Kamptee	1.Bina 2.Sonegaon Raja 3.Neri	Kanhan River
4.	Parseoni	1. Umbrapali 2. Mahul 3. Kolutamara 4. Bakhari	Pench River
		5. Itgaon 6. Vaghoda 7. Nilaj	Kanhan River
5.	Saoner	1.Pota 2.Bhanegaon	Kanhan River
6.	Umred	1.Bela	Nand River
7.	Narkhed	1.Mahendri 2.Rampuri	Wardha River Kad River

**Table 1.11 List of Rural Hospital and Contact Info**

**All SDH/RH Contact.No.List (Civil Surgeon Area)**

Sr.No.	District	Institute Name	Civil Surgeon/Medical Supriendent Name/Medical officer	Office Phone No.	Mobile No.	E-Mail id
1	NAGPUR	SDH Kamptee (50 Beds)	Dr.Barve (MS)	07109-282660	9850341472	mssdhkamptee@rediffmail.com
2		SDH Ramtek (50 Beds)	Dr.Dange(MS)	07114-255164	9422265341	sdhramtek@gmail.com
3		RH Narkhed (30 Beds)	Dr.Balpande(MO)	07105-232336	9422821608	msrhnarkhed@rediffmail.com
4		RH Katol (30 Beds)	Dr.Pankaj Karande(MO)	07112-222529	9822462409	rh_katol1@rediffmail.com
5		RH Kalmeshwar(30 Beds)	Dr.Nimbalkar (MS)	07118-271245	8956659270	<a href="mailto:msrhkalmeshwar@rediffmail.com">msrhkalmeshwar@rediffmail.com</a>
6		RH Hingna(30 Beds)	Dr.Ghoderav(MS)	07104-325556	9850330366	rhhingna111@rediffmail.com

7		RH Kuhi (30Beds)	Dr.Theete (MS)	07100- 222512	9422542730	msrhkuhi@gmail.com
8		RH Umred(30 Beds)	Dr.Tadas (MS)	07116- 242059	9960226337	msrhumred@rediffmail.com
9		RH Bhivapur (30 Beds)	Dr.Theete (MS)	07106- 232003	9422542730	rhbhiwapur@rediffmail.com
10		RH Parshivni (30 Beds)	Dr. Savarkar (MO)	07102- 225336	9975761144	msrhparsshivni@gmail.com
11		RH Devlapar(30 Beds)	Dr. Akhtar (MS)	07114- 689439	9822360760	rhdeolapar@rediffmial.com
12		RHTC Saoner	Dr. Jadhav		9422807333	rhtcsaoner@gmail.com
13		PHC Mowad	Dr.Parise		9096323895	mophcmowad@gmail.com
14		PHC Mohapa	Dr.Uke & Dr.Mankar		9922660705, 9765772696	mophcmohpa@gmail.com
15		PHC Khapa	Dr. Dange	07113- 236062	9326938884	mophckhapa@gmail.com
16		NUHM Umred	Shri. Vijaykumar Sarnait CEO	07116- 242557	9970793303	mcu_umrcs@yahoo.co.in
17.		NUHM Kamptee	Shri. Shrimohan Nanda	07109- 286665	9422904777	<a href="mailto:shbnamwaseemkanooni@gmail.com">shbnamwaseemkanooni@gmail.com</a> , <a href="mailto:chiefofficermckampte@gmail.com">chiefofficermckampte@gmail.com</a>
18.		DISTRICT MALERIA OFFICE	Dr.Charmode Madam (DMO)		9422473811	dmonagpur@gmail.com

**Table 1.12 List of PHC and Sub Centre in the Nagpur District**

Sr. No.	Taluka	Sr. No.	PHC Name	Sr. no	Name of Sub Centre	Sr. no	Name of Ayur.Dis p.	Sr.no	Name of Allo.Di sp
1	Nagpur Rural	1	Borkhedi	1	Butori New	1	Kanalga on	1	Butibo ri
				2	Butori Old	2	Salai godhni		
				3	Bothali				
				4	Sonegaon				
				5	Kanhalgaon				
				6	Khaparirelway				
				7	Dongargaon				
				8	Borkhedi 2				



		2	Vyahad	9	wadi			2	shiva
				10	Nerimankar				
				11	Dhamana				
				12	Bajargaon				
				13	Shiwa				
				14	Lawha				
2	Hingna	3	Raipur	15	Raipur			3	Mohagaon
				16	Mohgaon				
				17	Mondha				
				18	Nildoh				
				19	Digdoh				
				20	Kairipannase				
		4	Takalghat	21	Takalghat			4	Gumgaon
				22	Asola				
				23	Shurid				
				24	Gumgaon				
				25	Kotewada				
		5	Kanholibara	26	Kanholibara			5	Amgaon Deoli
				27	Amgaon De				
				28	Devali Pe.				
				29	Khaprigandhi				
				30	Salaidabha				
		6	Adegaon	31	Adegaon			6	Kawdas
				32	Umariwagh				
				33	Degma khurd				
				34	Kawdas				
3	Umred	7	Bela	35	Ashta (Nagpur)	3	Khursapur	7	Ashta
				36	Bela (Nagpur)				
				37	Nishanghat				
				38	Sawangi				
				39	Shedeshwar				
				40	Wadgaon (nagpur)				
		8	Makardhokdha	41	Aamagoan				
				42	Davha				
				43	Godhni				

				44	Hevti				
				45	Makardhokada				
				46	Navegaon sadhu				
		9	Panchgaon	47	Borgaon (Nagpur)				
				48	Champa				
				49	Kalmna				
				50	Panchgaon				
				51	Salaigodhni				
				52	Vihirgaon (Nagpur)				
				53	Virli				
		10	Sirsi	54	Hiwra			8	Pipri
				55	Kinhala (Nagpur)				
				56	Pipra				
				57	Sirsi				
4	BHIVAPUR	11	SOMANALA	58	BHIVAPUR			9	Salesh ahari
				59	PULLAR				
				60	DHARMAPUR				
				61	ADYAL				
				62	SALESARI				
				63	NAXI				
				64	DHAPRLA				
		12	JAWALI	65	JAWALI	4	Kargaon	10	Shiwa pur
				66	MEDHA			11	Mend ha
				67	DHAMANGAON				
				68	MALEWADA				
				69	KARGOAN				
				70	SHIVAPUR				
		13	NAND	71	NAND	5	Mahalg aon		
				72	DHAMANGAON	6	Besur		
				73	BHAGWANPUR				
				74	BESUR				
				75	MAHALGOAN				
				76	MANGARUD				
5	Kuhi	14	Mandhal	77	Mandhal			12	Welga on
				78	Wag			13	Tarna
				79	Pachakhedi			14	Packh

									<i>edi</i>
				80	<i>Gothangaon</i>				
				81	<i>Thana</i>				
				82	<i>Dongarmauda</i>				
				83	<i>Tarana</i>				
		15	<i>Salwa</i>	84	<i>Salwa</i>			15	<i>Adam</i>
				85	<i>Adam</i>			16	<i>Kujba</i>
				86	<i>Rajola</i>			17	<i>Rajola</i>
				87	<i>Chapegadi</i>				
				88	<i>Kujba</i>				
		16	<i>Veltur</i>	89	<i>Veltur</i>			18	<i>Fegad</i>
				90	<i>Ambhora</i>			19	<i>Jivnapur</i>
				91	<i>Hardoli</i>				
				92	<i>Gonha</i>				
				93	<i>Sirsi</i>				
				94	<i>Jiwanapur</i>				
				95	<i>Fegad</i>				
				96	<i>Dhanla</i>				
		17	<i>Titur</i>	97	<i>Titur</i>	7	<i>Dongargaon</i>	20	<i>Bramhini</i>
				98	<i>Khalasna</i>	8	<i>Mangli</i>		
				99	<i>Dongargaon</i>				
				100	<i>Malani</i>				
				101	<i>Ambadi</i>				
				102	<i>Silli</i>				
				103	<i>Musalgaon</i>				
				104	<i>Aptur</i>				
				105	<i>Bamhani</i>				
6	<i>Kamptee</i>	18	<i>Gumthala</i>	106	<i>Temsana</i>	9	<i>Tarodi</i>	21	<i>Dighori</i>
				107	<i>Mahalgaon</i>			22	<i>Bhugaon</i>
				108	<i>Digori</i>				
				109	<i>Tarodi</i>				
				110	<i>Parasd</i>				
				111	<i>Awandi</i>				
				112	<i>Ajni</i>				
				113	<i>Shirpur</i>				
				114	<i>Sonegoan</i>				
				115	<i>Walada</i>				
				116	<i>Bhugaon</i>				

		19	<i>Gumthi</i>	117	<i>Mahadula</i>				
				118	<i>Navi. Koradi</i>				
				119	<i>J. Koradi</i>				
				120	<i>Lonekhairi</i>				
				121	<i>Khairi</i>				
				122	<i>Khasala</i>				
				123	<i>Yerkheda</i>				
				124	<i>Gumthala</i>				
				125	<i>Godani</i>				
7	<i>MOUDA</i>	20	<i>Mouda</i>	126	<i>Mouda B</i>	10	<i>Dhanla</i>		
				127	<i>Dhanala</i>	11	<i>Gowari</i>		
				128	<i>Wanjara</i>				
				129	<i>Anjangaon</i>				
				130	<i>Govari</i>				
				131	<i>Mathani</i>				
				132	<i>Bhameada</i>				
		21	<i>Tarsa</i>	133	<i>Nimkheda</i>			23	<i>Chacher</i>
				134	<i>Tuman</i>				
				135	<i>Babdev</i>				
				136	<i>Gangner</i>				
				137	<i>Chacher</i>				
				138	<i>Dudhala</i>				
		22	<i>kodamendhi</i>	139	<i>Kondamendhi B</i>				
				140	<i>Aroli</i>				
				141	<i>Dhanoli</i>				
				142	<i>Revral</i>				
		23	<i>Khat</i>	143	<i>Khat B</i>			24	<i>Niharwani</i>
				144	<i>Tanda</i>				
				145	<i>Dharmapuri</i>				
				146	<i>Dahegaon</i>				
				147	<i>Niharwani</i>				
8	<i>PARSHIVNI</i>	24	<i>Kanhan</i>	148	<i>Kanhan</i>				
				149	<i>Pipari</i>				
				150	<i>Kandri</i>				
				151	<i>Juni Kamathi</i>				
				152	<i>Kolmines</i>				
				153	<i>Kandala</i>				
				154	<i>Sihora</i>				

				155	<i>Takadi</i>				
		25	<i>N. Khairi</i>	156	<i>N. Khairi</i>	12	<i>Ghatpen dhari</i>		
				157	<i>Saleghat</i>				
				158	<i>Mahuli</i>				
				159	<i>Palasawali</i>				
				160	<i>Kolitmara</i>				
				161	<i>Narhar</i>				
		26	<i>Dorli</i>	162	<i>Dorli</i>				
				163	<i>Tamaswadi</i>				
				164	<i>Mehadi</i>				
		27	<i>Satak</i>	165	<i>Satak</i>				
				166	<i>Nimkheda</i>				
				167	<i>Warada</i>				
				168	<i>Amdi</i>				
		28	<i>D. Joshi</i>	169	<i>D. Joshi</i>	13	<i>Salai Tekadi</i>		
				170	<i>Parshivni</i>	14	<i>Mahuli</i>		
				171	<i>Palora</i>				
				172	<i>Karanbhad</i>				
				173	<i>Salai</i>				
9	<i>Ramtek</i>	29	<i>Karwahi</i>	174	<i>Wadamba</i>				
				175	<i>Bandra</i>				
				176	<i>Karwahi</i>				
				177	<i>Devalapar</i>				
				178	<i>Lodha</i>				
				179	<i>Pipariya</i>				
		30	<i>Bhandarbodi</i>	180	<i>Bhandarbodi</i>				
				181	<i>Mandri</i>				
				182	<i>Gugguldoh</i>				
				183	<i>Shiwani</i>				
				184	<i>Mahadula</i>				
				185	<i>Musewadi</i>				
				186	<i>Umari</i>				
		31	<i>Hiwarabajar</i>	187	<i>Hiwara (Ba)-2</i>	15	<i>Musewadi</i>		
				188	<i>Tangala</i>				
				189	<i>Manegaon</i>				
				190	<i>Belda</i>				
				191	<i>Ghoti</i>				
				192	<i>Sitapur</i>				
				193	<i>Patharai</i>				

				194	Dahoda				
		32	Nagardhan	195	Nagardhan (B)				
				196	Kachurwahi				
				197	Chichala				
				198	Dongari				
		33	Mansar	199	Mansar	16	Khairi Bijewad		
				200	Bondri				
				201	Kandri				
				202	Borda				
				203	Khumari				
				204	Khairibijewada				
				205	Patgovari				
10	Kalmeshwar	34	Tishti	206	Telgaon	17	Telkamp tee		
				207	Telkamptee				
		35	Gondkhairi	208	Mahurzari	18	Ubali		
				209	Fetari				
				210	kalambi				
				211	Linga				
				212	Uparwahi				
				213	Ubali				
				214	Gondkhairi				
				215	Sonegaon				
				216	Waroda				
		36	Mohpa	217	Mandavi	19	Kohli		
				218	Susundri				
				219	Pardi De.				
				220	Pipla				
				221	Kohali				
				222	Parsodi				
		37	Dhapewada	223	Dhapewada Khu.				
				224	Borgaon				
				225	Sawali khu.				
				226	Adasa				
11	Saoner	38	Badegaon	227	Kotcchi			25	Kothu rna
				228	Bichwa - Sironji			26	Bichw a
				229	Khubala				
				230	Nagalwadi				
				231	Kothurana				

				232	<i>Badegaon</i>				
		39	<i>Kelwad</i>	233	<i>Kelwad</i>	20	<i>Nanda gomukh</i>		
				234	<i>Nanda</i>				
				235	<i>Khapa</i>				
				236	<i>Joga</i>				
				237	<i>Jatamkhora</i>				
				238	<i>Khursapar</i>				
				239	<i>Umari</i>				
		40	<i>Patansawangi</i>	240	<i>Patansaongi</i>				
				241	<i>Waki</i>				
				242	<i>Pipala (D)</i>				
				243	<i>Isapur</i>				
				244	<i>Kothodi</i>				
				245	<i>Malegaon</i>				
				246	<i>Sawarmendha</i>				
		41	<i>Khapa</i>	247	<i>Wakodi</i>				
				248	<i>Khairi Dhalgaon</i>				
				249	<i>Ajani</i>				
				250	<i>Kodegaon</i>				
				251	<i>Khapa</i>				
		42	<i>Chicholi</i>	252	<i>Khaparkheda</i>				
				253	<i>Walani</i>				
				254	<i>Bina</i>				
				255	<i>Pota</i>				
				256	<i>Sillewada</i>				
				257	<i>Suradevi</i>				
				258	<i>Bhanegaon</i>				
				259	<i>Chicholi</i>				
12	<i>Katol</i>	43	<i>kacharisawanga</i>	260	<i>Kachari Sawnga</i>	21	<i>Ridhora</i>	27	<i>Bhorgad</i>
				261	<i>Ridhora</i>			28	<i>Metpanjra</i>
				262	<i>Gharatwada</i>				
				263	<i>Ladgaon</i>				
				264	<i>Bhorgad</i>				
				265	<i>Kondhasawli</i>				
				266	<i>Mendhepathar</i>				
				267	<i>Dhawlapur</i>				
				268	<i>Roulgaon</i>				
				269	<i>Dorli</i>				
		44	<i>Kondhali</i>	270	<i>Kondhali</i>	22	<i>Masod</i>	29	<i>Murti</i>

				271	<i>Dhudhala</i>				
				272	<i>Masala</i>				
				273	<i>Panjara</i>				
				274	<i>Pusagondi</i>				
				275	<i>Khursapar</i>				
				276	<i>Murti</i>				
				277	<i>Masod</i>				
				278	<i>Garamsur</i>				
		45	<i>Yenwa</i>	279	<i>Yenwa</i>			30	<i>Parad singa</i>
				280	<i>Digras</i>			31	<i>Zilpa</i>
				281	<i>Bordoh</i>				
				282	<i>Zilpa</i>				
				283	<i>Esapur Khu</i>				
				284	<i>Wandli</i>				
				285	<i>Paradsinga</i>				
				286	<i>Khangaon</i>				
				287	<i>Mendaki</i>				
				288	<i>Yerla</i>				
				289	<i>Dorli</i>				
				290	<i>Masli</i>				
13	<i>Narkhed</i>	46	<i>sawargaon</i>	291	<i>sawargaon</i>	23	<i>Pipla Kewalra m</i>		
				292	<i>sindhi</i>	24	<i>Mannat Khedi</i>		
				293	<i>Pithori</i>				
				294	<i>Ambada Deshmukh</i>				
				295	<i>Yanikoni</i>				
				296	<i>pipla ke</i>				
				297	<i>Singarkheda</i>				
		47	<i>Mowad</i>	298	<i>Belona</i>	25	<i>Khairga on</i>		
				299	<i>Mowad</i>				
				300	<i>Khairgaon</i>				
				301	<i>Thugaondev</i>				
				302	<i>Kharsoli</i>				
				303	<i>Tinkheda</i>				
		48	<i>Jalalkheda</i>	304	<i>Jalalkheda</i>	26	<i>Bishnur</i>		
				305	<i>Bhishnur</i>	27	<i>Jamgao n</i>		
				306	<i>Bharsinghi</i>				



				307	Rohana				
				308	Jamgaon				
				309	Mahindri				
		49	Mendhala	310	Mendhala	28	Thadipa uni	32	Lohari sawan ga
				311	Wadvihira				
				312	Dawasa				
				313	Ramathi				
				314	Thadipaoni				
				315	Khapa				
				316	Lo Sawa				
<b>Sr No.</b>	<b>Fire Station Name</b>				<b>Detailed Address</b>	<b>Landline Line No/ Emergency No</b>	<b>Name of Fire Officer</b>	<b>Mobile No. Fire Officer</b>	
		49			316		28	32	

**Table 1.12 List of Fire Station and Contact No**

	<b>Nagpur Municipal Corporation Fire and Emergency Services</b>	New NMC Building, Civil lines ,Nagpur - 440001	<b>0712-2567777 0712-2567029 101</b>	Mr. RD Uchake	<b>9765391409</b>
2.	<b>Lakadganj Fire Station</b>	Jalaram Mandir Samoranf, Telephone Exchange Chowk, 440008	<b>0712-2760920 0712-2760774 0712-2760680</b>	Mr M K Gudage	<b>9765559811</b>
3.	<b>Sugatnagar Fire Station</b>	Near Water Tank Jaripatka Ring Road , Nagpur - 440017	<b>0712-2650100 0712-2650034 0712-2650033</b>	Mr R R Dubey	<b>9923101712</b>
4	<b>Ganjipeth Fire Station</b>	Tata Parsi School, Bhalدارपुरा, Gandhi Chowk , Nagpur -440018	<b>0712-2760906 0712-2760919 0712-2760908</b>	Mr D N Nakod	<b>9765490433</b>
5.	<b>Cotton Market Fire Station</b>	Near Ganeshpeth New ST Stand ,Nagpur-440018	<b>0712-2720355 0712-2720373 0712-2720576</b>	Mr A P Bawankar	<b>9765490433</b>
6.	<b>Sakkardhara Fire Station</b>	Near NIT Garden ,Dattatreya Nagar , Nagpur - 440021	<b>0712-2703852 0712-2703834 0712-2703829</b>	Mr A A Barde	<b>9765490429</b>
7	<b>Narendra Nagar Fire Station</b>	Near Vena Ganga, Apartment Narendra Nagar Ring Road , Nagpur -440015	<b>0712-2703091 0712-2703834</b>	Mr S K Kale	<b>9923101729</b>
8	<b>Kalmana Fire Station</b>	Near Hariom Cold Storage , Chikhali, Nagpur -440035	<b>0712-2021820</b>	Mr B P Chandankhede	<b>9923751402</b>

9.	<b>Nagar Parishad Umred Fire Station</b>	Municipal Council Umreed Toward Makardhokda Road, Nagpur	<b>07116-249101</b>	Mr. Ravindra Bhelawe	<b>9421750870</b>
10.	<b>Nagar parishad kalmeshwar Fire Station</b>	Nagar parishad Kalemshwar	<b>07118271333</b>	Smt Bhagyashree Suresh Tongse	<b>726600358</b>
11	<b>Nagar parishad Ramtek Fire Station</b>	Municipal council Ramtek	<b>07114-255104</b>	Mr . Amit B Kawale	<b>9763411386</b>
12	<b>Nagar parishad Saoner Fire Station</b>	Nagar Parishad Saoner	<b>07112-232217</b>	Mr Anil Patruji Govradhan	9158404323
13	<b>Indorama Synthetics Pvt Ltd Fire Station</b>	A-31 , MIDC Butibori industrial Area , Butibori , Nagpur	<b>07104-663562 07104-663101</b>	Mr Vinod Pise	8308847059
14.	<b>MIDC fire Station</b>	MIDC Fire Station Hingana Industrial area ,Hingana Nagpur	<b>07104-234101,235555</b>	Shri D U Bhakt	<b>8108077786 9970971206 dhananjaybha kt @midcindia.or g</b>
15.	<b>Morarajee Textlies</b>	Plot G2 MIDC Butibori, Nagpur	<b>07104-281100</b>	Shri Tushar Deshpande/ Ajay Pandey	<b>9763599214 8407927923</b>
16.	<b>Oradnance Factory Fire Station Ambazhari</b>	Oradnance Factory Fire Station Ambazhari	<b>07104-237845-49</b>	Shri Moreshwar Meshram	<b>Ofaj.afb@nic.i n</b>

### 1.13 High Risk villages in various Taluka

Sr No .	Names of Taluka	Name of Villages
1	Nagpur	Kollar, Bori, Ghoghali
2	Hingana	Sangam, Raipur, Gumgaon, Kotewada, Sukuli, Dewali Pendari, Hinagana
3	Bhiwapur	Nakshi, Ghatumri,
4	Kuhi	Ambhora, Pawani, Umri, Maloda ,
5	Mouda	Mouda, Mathani
6	Parseoni	Tamsawadi, Doreli, Junikamptee, Kanhan, Mahuli ,
7	Kamleshwar	Ghapewada, Goghali,
8	Saoner	Khairidhalgaon, Kochhi, Manegaon, Pipala, Valani, Bhidbina
9	Katol	Wandali, Kacharisawanga
10	Narkhed	Thugaon, Madna , JalalKheda , Pethismailpur, Khalangodni, Thaturwada, Kharasi, Mewad, Gangaladhoh
11	Kamptee	Bina, Yerkhada

### 1.14 Swimmers in Nagpur District

Sr No	Swimmers Name	Address	Mobile No.
1	Sandip Khare	Tajne Lay Out, Zingabai Takli, Godhani Road , Nagpur	9020414085 8857010975
2	Abhay Giripunje	111, Loksewa Nagar, Near Mokhare College , Bhamti Nagpur	9421777875
3	Dinesh Hattimare	Wana Dongri, Hingna Road, Nagpur	9021198557
4	Akshay Ganar	Matipura Sirspeth, Reshimbag Chowk, Nagpur	9823133184
5	Sagar Bopulkar	Somwari Quarter, Sakkardra Chowk, Nagpur	8857913865
6	Sandesh Mohite	Somwari Quarter, Sakkardra Chowk, Nagpur	9372822883
7	Atul Tabhane	Hill Top Pandharabodi, Ambazari, Nagpur	9960795978
8	Swapnil Pawde	Pratap Nagar, Nagpur	9975049584
9	Swapnil Khare	Tajne Lay Out, Zingabai Takli, Godhani Road ,	8862070273

		<i>Nagpur</i>	
10	<i>Siddharth Khare</i>	<i>Sirspeth Swiper Colony, Nagpur</i>	<i>9371107796</i>
11	<i>Milind Mutkule</i>	<i>225, Wathoda Lay Out, Gopalkrishna Nagar, Nagpur</i>	<i>9637805498</i>
12	<i>Sachin Golhare</i>	<i>Ishwar Nagar, Nandanwan , Nagpur</i>	<i>9764333767</i>
13	<i>Rohit Khare</i>	<i>585, Nehru Nagar Nandanwan, Main Road, Nagpur</i>	<i>7721007482</i>
14	<i>Pravin Rohad</i>	<i>Somwari Quarter, Sakkardara Chowk, Nagpur</i>	<i>9604626167</i>
15	<i>Pankaj Gaydhane</i>	<i>Deshpande Layout, Nagpur</i>	<i>9767691382</i>
16	<i>Rahul Khare</i>	<i>Nehru Nagar Nandanwan, Main Road, Nagpur</i>	<i>9850271043</i>
17	<i>Krishna Deulkar</i>	<i>Beldarnagar, Narsala Road, Nagpur</i>	<i>9689469841</i>
18	<i>Raju Sapate</i>	<i>Wathoda Lay Out, Gopalkrishna Nagar,</i>	<i>9823823259</i>

### 1.15 Fire Deptament Expert Swimmer List

<b>SN</b>	<b>WORKERS NAME</b>	<b>DESIGNATION</b>	<b>LOCATION</b>	<b>MO. NO.</b>
1	<i>Mr. Shekh Aklim Shekh Karim</i>	<i>Fire Man</i>	<i>Civil Lines</i>	<i>9423637160</i>
2	<i>Mr. Shankar Eknath Kamble</i>	<i>Fire Man</i>	<i>Narendra Nagar</i>	<i>9423634803</i>
3	<i>Mr. Amit Prabhakar Jichkar</i>	<i>Fire Man</i>	<i>Narendra Nagar</i>	
4	<i>Mr. Bharat Bhimrao Palwe</i>	<i>Fire Man</i>	<i>Sakkardara</i>	<i>9764113041</i>
5	<i>Mr. Ramesh Totaram Chawre</i>	<i>Fire Man</i>	<i>Lakadganj</i>	<i>9960284865</i>
6	<i>Mr. V. N. Thawkar</i>	<i>Fire Man</i>	<i>Sakkardara</i>	<i>9370909403</i>
7	<i>Mr. S. D. Jadhav</i>	<i>Fire Man</i>	<i>Sakkardara</i>	<i>9975792793</i>
8	<i>Mr. Raju Pawar</i>	<i>Fire Man</i>	<i>Lakdganj</i>	

9	Mr. K. R. Parwe	Fire Man	Ganjipeth	9822702019
10	Mr. Nitin Vaidya	Fire Man	Ganjipeth	9021159466
11	Mr. D. S. Bhokre	Fire Man	Sakkardara	9371681057
12	Mr. B.G. Barbate	Fire Man	Kalmna	9326924888
13	Mr. B. T. Marbate	Fire Man	Civil	9372322014
14	Mr. D. P. Neware	Fire Man	Sugat Nagar	9850237265
15	Mr. Rajesh R. Nayar	Cleaner	Civil	9970141981

### 1.16 Flood Control Centre Contact No.

SN	CONTROL NAME	CONTACT NO.
1	Maharashtra Ministry Flood Control Centre, Mumbai	022- 22793551,22854168,2202799 0 Fax 022-22023039,22855920
2	Department Officer, Flood Control Center, Nagpur Vivek Kargaokar Gopal Itankar	0712-2542518, 9421720517, 957997612
3	District Disaster Officer, Flood Control Centre Sunanda Padole	0712-2562668 9422357655
4	N.M.C., Flood Control Centre	0712-2567777,9923075048
5	Police Control Room (City) , Nagpur	0712- 2564333,2564334,25331222
6	Police Control Room (Rural), Nagpur	0712-2560200
7	Wardha	07152 243446, Fax 240533
8	Chandrapur	07172 252597 Fax 255400

9	Gadchiroli	07132 222017 Fax 222022
10	Bhandara	07184 252222 Fax 252312
11	Gondia	07182 230296 Fax 236145

**1.17. List of snake rescuers (Sarp Mitra) of Forest Department**

SN	Name	Mobile No	Address
1	Sri.Amit Pramod Wanjari	9665175882	Plot.No.831 New Mahalgi Nagar, Hudkeshwar Rd,Nagpur
2	Shrikant Uke	9860032121	Chandramani Nagar, Jaadu Mahal, Galli No.4/8 Nagpur
3	Gaurang Waikar	9970099910	Plot No.10 Navnirman Society,Pratap Nagar, Nagpur
4	Pankaj Badule	9665880878	433,Juna Bagadgang,Garoba Maidan, Nagpur
5	Kiran Baviskar	9890114511	Vaitnary College, T V Tower,Nagpur
6	Aniket Suruse	9552666605	New Narsala Road, Sudarsgan Nagar, Hudkeshwar Road, Nagpur
7	Laxmirao Keshavrao Mate	9325782504	26,Chaityenshwar Nagar , Kharbi Road, Wathola Ley Out, Nagpur
8	Abhinandan Tamaskar	8087229773	22,Ashish Apt. All India Reporter, Congress Nagar, Nagpur
9	Goli Maraskolhe	9096931818	Indora
10	Kunal Javeria	7385328987	120,Onkraness Apt. Saint Josef Convent,

			Mohan Nagar
11	Sahil Sharnagat	9579052999	47,Sidhashewari Nagar,Near Bhagwati Nagar, Manewada Ring Road,Nagpur
12	Paresh Waghmare	9373750580	Plot No.60,Indira Nagar,New Narsala Road,Hudkeshwar,Nagpur
13	Goldi	9890596616	Plot No.555,Old Ramdaspath, Near Hotel Tuli Emperial Nagpur
14	Amol Kote	8888344188	Plot No.712,Minimata Nagar,N.I.T. Ground, Bhandara Road, Nagpur
15	Atul Charhate	9970013592	Plot No.37,Smurti Nagar,Dattawadi, Surkar Kirana, Amrawati Road,Nagpur
16	Saurabh Prakash Katkulwar		23,Paradice Society, Sonegaon, Khamla, Nagpur
17	Shweta Dange		Somwaripeth,83/8,Raghuji Nagar, Nagpur
18	Pravin Katre	9766777656	Plot No.58,Prasad Society, New Sonegaon Khamla Road,Nagpur
19	Monu Singh	9422120248	Pardhi Nagar,Hingna Road, New Hanuman Nagar, Nagpur
20	Shrikant Ambarte	9226836199	Plot No.1,Luvkush Nagar,Manewada Ring Road, Nagpur
21	Jayant Khode	9422124097	Chandramani Nagar, Near Jaadu Mahal, Nagpur
22.	Manish Halde	94221750001	Plot No.16,Teka Naka,Nari Road,Bharat



### 1.18 Boat group Members

SN	Employee Name	POST	PLACE	MOBILE NO.
1	S.M.Dahalkar	Fire man	Civil	9422125740
2	B.T.Marbate	Fire man	Civil	9372322014
3	D.P.Neware	Fire man	Sugatnagar	9850237265
4	S.S.Kothe	Fire man	Civil	94224944507
5	B.S.Khandagale	Fire man	Civil	9922585425
6	D.B.Shamkule	Fire man	Civil	9421696822
7	Sudam Jadhav	Fire man	Sakkardara	9975792693
8	Bharat Palwe	Fire man	Sakkardara	9764113041
9	Ravindra Marskolhe	Fire man	Sugatnagar	9049571152
10	Nitin Vaidya	Fire man	Ganjipeth	9021159466
11	K.R.Parve	Fire man	Ganjipeth	9822702019
12	V.N.Thavkar	Fire man	Narendranagar	9370909403
13	D.S.Bhokre	Fire man	Narendranagar	9371681057
14	S.B.Atram	Fire man	Lakadganj	9326359719
15	G.G.Mesre	Fire man	Lakadganj	8007286772
16	D.P.Chauhan	Fire man	Lakadganj	8856023322
17	Y.D.Thakre	Fire man	Civil	9890229803
18	S.C.Shembekar	Fire man	Civil	9970059283

19	Shreeram Dhenge	Fire man	Civil	9370222938
REPARING & MAINTENANCE GROUP				
20	Shri.Raju Maliye	Driver cum Fitter	Civil	9763508886
21	Anil Balpande	Drier cum Fitter	Civil	9960391368
22	Ankush Kapse	Driver cum Fitter	Civil	9370960990





