GOVERNMENT OF KARNATAKA

DISTRICT DISASTER MANAGEMENT PLAN 2019-20

RAMANAGARA DISTRICT, RAMANAGARA

CHAPTER-1
DDMP INTRODUCTION

1.0 Introduction

Disaster management has been an evolving discipline particularly in India over last one decade. With increasing frequency and intensity of disasters and large number of people coming in their way, the subject needed a more systematic attention and a planned approach. Disaster management Act, 2005 provides mandate for development of comprehensive disaster management plan at national, state and district level. In particular, there is a need to have a comprehensive plan at district level, which is the cutting edge level for implementation of all policy guidelines and strategies.

There has also been a significant change in understanding of disaster management from Global to grassroots levels in last few years. Hyogo Framework for Action and later Disaster Management Act, 2005, brought a paradigm shift in disaster management from a **reactive relief based approach to a more proactive disaster risk reduction approach**. The evolving understanding of the subject of disaster management, lessons learnt from the past disasters and the mandate provided by Disaster Management Act, 2005 to DDMA's to develop comprehensive disaster management plan provides an excellent opportunity to develop an effective and pragmatic District Disaster Management Plan (DDMP) for Ramanagara.

1.1 Rationale for District Disaster Management Plan (DDMP)

Disaster causes sudden disruption to normal life of a society and causes damages to property and lives to such an extent that normal social and economic mechanisms in the society are disrupted and community will not be able to cope up with the situation without external aid. In most of the cases, response to disasters is arbitrary leading to overemphasis of some actions and absence of other actions, which could be critical. The objectives of any disaster management plan should be to localize a disaster and to the maximum extent possible contain it tominimize the impact on life, the environment and property. A formal plan for managing disasters is therefore necessary. This would include:

a. Pre-planning a proper sequence of response actions.
b. Allocation of responsibilities to the participating agencies.

c. Developing codes and standard operating procedures for various departments and relief agencies involved.
d. Inventory of existing facilities and resources.
e. Mechanisms for effective management of resources.
f. Co-ordination of all relief activities including those of NGOs to ensure a coordinated and effective response.
g. Co-ordination with the State response machinery for appropriate support.
h. Monitoring and evaluation of actions taken during relief and rehabilitation.

The district plan contains the objective of the plan, profile of the district, resource inventory equipment and human resource, preparedness and mitigation strategy and the standard operating procedures for the District Disaster Management Committee and the Disaster Management Plan.

The **objectives** of the District Disaster Management Plan are:

- To plan and implement **risk reduction activities** in the district.
- To have effective disaster preparedness, and effective emergency response for saving of lives.
- To provide relief and humanitarian assistance.
- To enable faster recovery through comprehensive reconstruction and rehabilitation.
- To conduct trainings and capacity building for effective prevention, mitigation and response for disasters.
- To undertake information, education and communication activities to create awareness among the communities and the public.
- To improve preparedness at the district level, through risk and vulnerability analysis , to disasters and to minimize the impact of disasters in terms of human, physical and material loss.
- To ascertain the status of existing resources and facilities available with the various agencies involved in the management of disasters in the district and make it an exercise in capability building of district administration. This enables the district to face a disaster in a more effective way and builds confidence across different segments of society. It will be a positive factor for long-term development of the district.

- To utilize different aspects of disaster mitigation for development planning as a tool for location and area specific planning for development in the district.
- To use scientific and technological advances in Remote Sensing, GIS etc. in preparation of this plan with a view to ensure their continuous use for development planning.
- To develop a framework for proper documentation of future disasters in the district, to have an update on critical information essential to a plan, to critically analyze and appraise responses and to recommend appropriate strategies.
- To evolve DDMP as an effective managerial tool within the overall policy framework of Government of Karnataka.

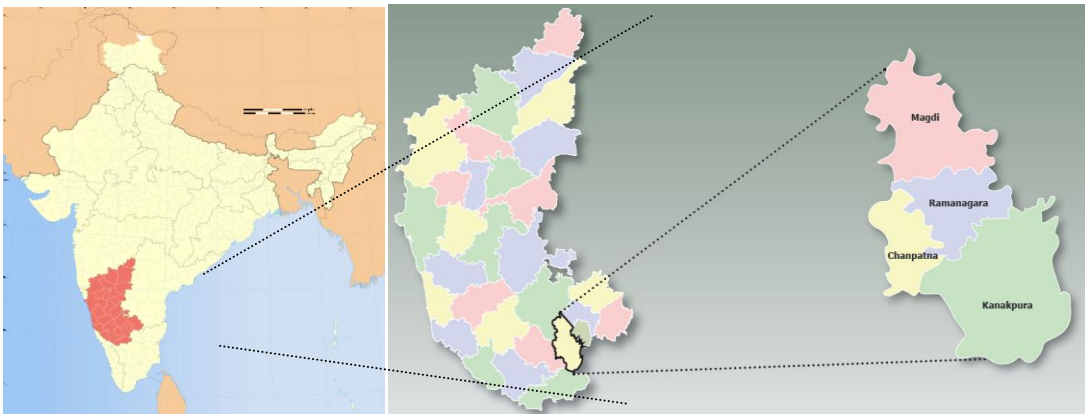
1.2 Policy Statement:

The underlying policy of the DDMP is to protect life, environment, property while ensuring mitigation of the disaster to the maximum extent possible, relief to those affected, and restoration of normalcy at the earliest.

Essentially, communities draw their support from the social institutions, administrative structure, and values and aspirations they cherish. Disasters may temporarily disorganize the social units and the administrative system and disrupt their lives built around these values and aspirations. A systematic effort to put back the social life on its normal course with necessary technology support and resources will contribute significantly to the resilience of the community and nation.

This policy forms the basis of the DDMP strategy. It aims at capacity building and prompt utilization of resources in a disaster situation through a partnership of the Government of Karnataka, NGOs, Private Initiatives and the community. In pursuance with this policy, DDMP addresses itself to strengthening the pre-disaster and post-disaster responses of various actors and stakeholders including the "victims" of the disaster.

CHAPTER-2
RAMANAGARA DISTRICT PROFILE



Karnataka, originally known as Mysore, is a state in India situated on the western edge of the Deccan plateau.Karnataka was formed on 1st November 1956, spreading over 1, 91,791sq meter and population is about 61,130,704 as per census 2011. Karnataka comprises of 30 districts including Ramanagara, known as Silk City of Karnataka for its silk production and has Asia's largest Cocoon market.

History: Ramanagara previously called by the name Close pet in memory of Mr. Closepet who was ruling this town during the period of British (1756-1813) and it has been renamed as Ramanagara during the period of KengalHanumanthaiah, Ex. Chief Minister, Govt. of Karnataka. Later the district was carved out of the erstwhile Bangalore Rural district on 23 August 2007 comprising of four taluks namely Channapatna, Kanakapura, Ramanagara and Magaditaluks of the undivided district covering total area of 3555 sqkm. There are 827 villages spreading over the four above said taluks.Ramanagara is situated at a distance of 50 Km from Bangalore city.

As mentioned above Ramanagarataluk is renowned for silk reeling. Channapatna also known as GombegalaOoru "town of toys" is known for world famous wooden toys. Magadi has a rich heritage of 'MagadiKempegowda'. The river Cauvery flows through Kanakapura Taluk and a tributary- Arkavathi river joins at a place called Sangam.

Geography: Ramanagara town, the headquarter of Ramanagara district, is approximately 50 km southwest of Bangalore. Ramanagara district is geographically located at 12° 54' to 13° 53' North latitude and 75° 04'and 76° 21' East longitude. It has an average elevation of 747 meters from the sea level. The total geographical area of Ramanagara district is 3576 Sq. Km. There are 827 villages spreading over the 4 taluks. Ramanagara has 699.46 Sq. Km. of

forest Area. It has an average *854* mm rain fall. However, the district receives normal rainfall it is drought prone due to poor percolation of rainwater.

Landscape and Tourisim: Ramanagara is famous for the huge rocky hill outcrops like Ramadevarabetta, Savandurga, Revanasideshwara hill, Handigundi. Etc. The region has several tall granitic hills, which are famous for many short rock climbs. It is home to some of the world's oldest granite outcrops. It was also in this region that the path-breaking Hindi movie Sholay was shot. Ramanagara is also the splendor for Karnataka tourism. Some of the attractions are Kanva Reservoir, RamadevaraBetta, JanapadaLoka or "Folk culture World", RevanasiddeshwaraBetta, Manchanabele Dam, KempeGowda Fort, and Savanadurga hill etc.

Ramadevarabetta Vulture Sanctuary

The vulture sanctuary was officially set up in 2012, but the long-billed, Egyptian and white-backed vultures have been roosting in the hills of Ramanagara for several decades. These are the three species found in Ramanagara out of the nine found in India. Alarmed at the drop in the vulture population over the years – an estimated 97% of the long billed and 99% of the Egyptian vultures have disappeared – environmentalists and bird watchers campaigned to have the area declared as a sanctuary. In 2012, around 346.41 hectares was earmarked as a protected area for the vultures. It is within this patch of the map that the proposed Sholay theme park is located.

Manchanabele Reservoir

This is around 18 km from Ramanagara and dam is built for the irrigation purpose. Now it also provide water to the magadi town. This dam is built across the river Arkavathi, the land which covered for irrigation under this project called "Thore saalu" because all the villages comes on the two sides of river arkavathi, in kannada "thore" means river and "saalu" means line.

Kanva Dam (Arkavati Dam)

Kanva dam is 15 km from Ramanagara. It is near kannamangala. The Kanva River is named after the sage kanva, this dam attracts tourists because of beautifulsurroundings.

Sangama

Sangama is a small village in kanakapura taluk in Ramanagara. It is located 59 km from Bangalore. Sangama is surrounded by ramanagara taluk towards north, Thally taluk toward east, channapatana taluk toward west, maddur taluk toward west. Near the sangama the two riversArkavathi and Kaveri merge. Daily thousands of tourists visitthis destination.

Mekedatu

Mekedatu is 4 km from sangama, mekedatu means goat's leap. The name comes from an incident, which is believed to have been witnessed by bersmen in that area a long time ago. It is said that a goat being chased by a tiger made a desperate attempt to save its life by leaping from one side from George and managed to cross over the raging river below, whereas the tiger did not attempt to replicate this feat, and abandoned the chase. It is believed that only divine goats could have marked their 'footprints' in such rocks. This destination attract more number of tourists, and also danger too.

Savanadurga hills

Situated 60 kms to the west of Bangalore, Savandurga, considered being one of the largest single rock formations in the whole of Asia. It comprises of two hills, Billigudda (white hill) and Karigudda (black hill) and has a temple situated at the foothill and a pond nearby. Most trekkers choose Billigudda due to its gentler slopes.Arkavathi River flows nearby and moves towards Manchanabele Dam. Savandurga hills make for a tranquil and picturesque trek and overlook a beautiful lotus pond. The weekend travellers frequent from Bangalore frequent it for trekking, camping and rock climbing.

Education: There are six engineering colleges, 14 ITIs, 18-degree colleges and 2 Polytechnics in the district. In terms of primary and secondary education, the district has close to 600 schools. With industrialization, more institutions with private and public investments are coming up in the region.

Connectivity:

The Ramanagara district is well connected with Road and railways.

a. **Roadways:**National Highway NH 206 (Connecting Tumkur and Honnavara) and National Highway NH 209 (Connecting Bangalore to Dindigul – Tamil Nadu) runs through the district, total of 93Kms of national highway runs through the district. About 278kms of State Highways runs through the district.
b. **Railways:** It has a railway connectivity to Bangalore, Mysore and other locations with 6 Railway Stations with 44kms of railway line in the District.
c. **Airport:** The nearest airport is Kempegowda International Airport, Bengaluru situated at a distance of 70Kms.

Port: Nearest port is Mangalore Port at a distance of 365Kms. Carrying capacity of 44 million tons of cargo. Bangalore Inland Container Depot - connecting to new Mangalore port.

District at a Glance:

Location	Ramanagara District, Karnataka, India
Latitude	12^{o} 24' and 13^{o} 09' N
Longitude	77^{o} 06' and 77^{o} 34' E
Area	355912 Hectares
Temperature	Max 34^{o}C - Min 16^{o}C
Rainfall	851 mm
Important Rivers	Arkavathi and Shimsha
Main Crops	Ragi, Paddy, Maize, Groundnut, Sunflower,
	Cardamom and Areca nut
Forest Area	699.46 Sq. Km
Road Length	2600 Kms.
No. Of Taluks	4
No. Of Hoblis	18
No. Of Gram Panchayats	127
No. Of Villages	823
No. of City Muncipal Council	3
No. of Town Muncipal Council	2
Agriculture Area	3710 Hectares

Description	2011 Census
Actual Population	**10,82,636**
Male	5,48,008
Female	5,34,628
Population Growth (with respect to 2001)	**5.05%**
Area in Sq. Km	3,516
Density/km2	308
Proportion to Karnataka Population	1.77%
Sex Ratio (per 1000)	**976**
Child Sex Ratio (0-6 age)	962
Average Literacy	**69.22**
Male Literacy	76.76
Female Literacy	61.50
Total Child Population (0-6)	**1,07,841**
Male Population (0-6)	54,963
Female Population (0-6)	52,878
Literates	**674,758**
Male literates	378,461
Female literates	296,297
Child Proportion (0-6)	**9.96%**
Boys Proportion (0-6)	10.03%
Girls Proportion (0-6)	9.89%
Horticulture Area	1,06,262.25 Hectares

TOTAL POPULATION SEX RATIO& DENSITY PROJECTED POPULATION

Taluk Name	Area (Sq. Kms)	As Per Population Census-2011					
		Urban		Rural		Total	Density of Population
		Male	Female	Male	Female		
Ramanagara	633	53484	51388	83647	79751	268270	377
Kanakapura	1591	27515	26506	150782	145260	350063	212
Chanapatana	543	*36099*	*35813*	*94191*	*95067*	261170	465
Magadi	809	18331	18217	84011	82677	203236	250
Total	**3576**	**135429**	**131924**	**412631**	**402755**	**1082739**	**290**

Taluk, GP, Village information and Municipalities:-

Taluk Name	Villages	VA Circles	Gram Panchayaths	Hoblies	Nada Kacharies	Municipalities
Ramanagara	**133**	**45**	**23**	**4**	**2**	**CMC**
Kanakapura	**259**	**81**	**43**	**6**	**2**	**CMC**
Chanapatana	**145**	**54**	**32**	**3**	**2**	**CMC**
Magadi	**286**	**62**	**32**	**5**	**2**	**TMC**
Total	**823**	**242**	**130**	**18**	**8**	

GEOLOGY OF THE DISTRICT

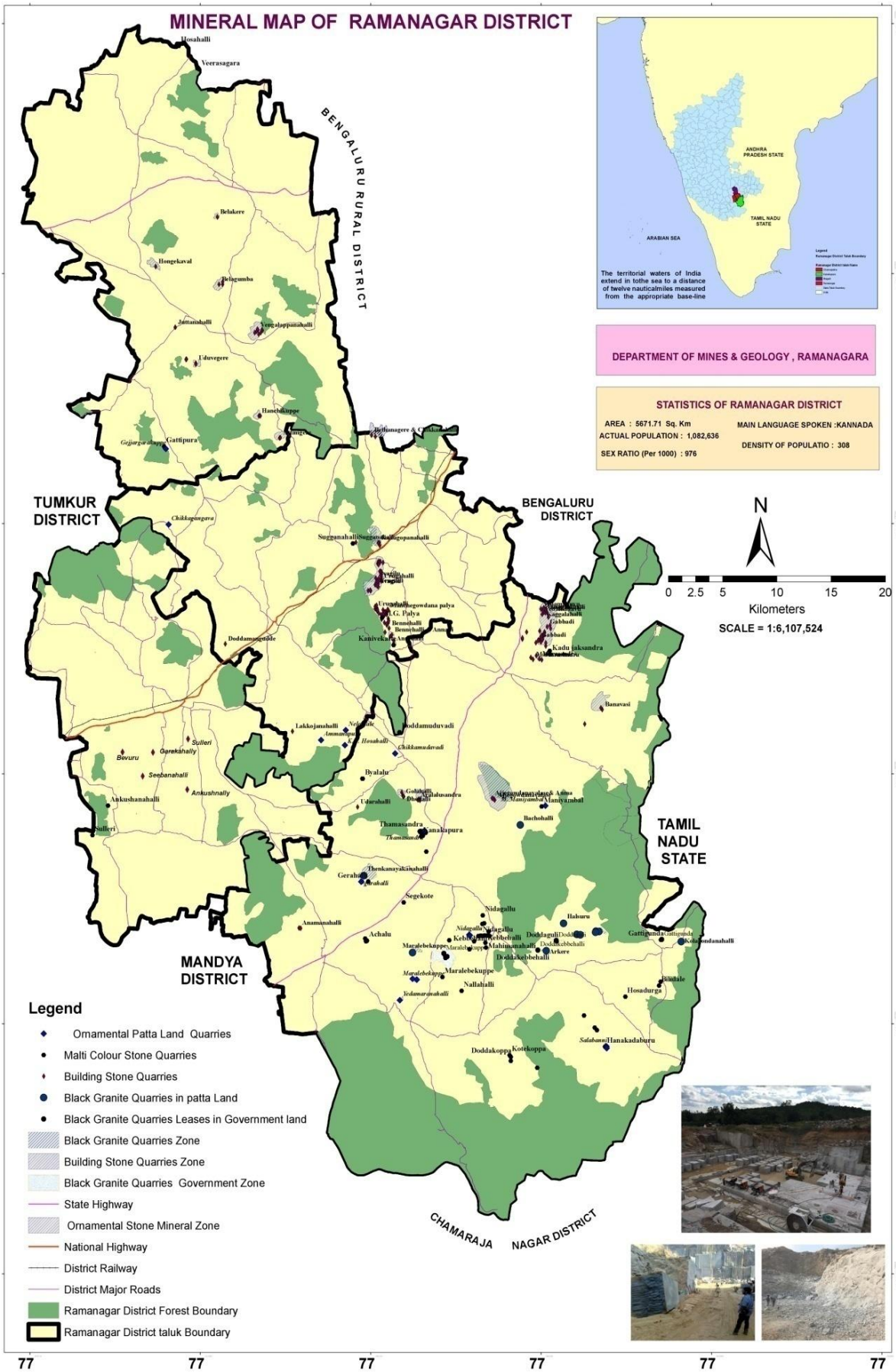
Ramanagara district forms part of the Deccan Plateau and is covered by peninsular gneiss, granites and basic dykes. The granites occur as intrusive in the gneissic complex and vary in colour, structure and texture. Nearly two thirds of the district forming the northern, eastern and southeastern parts of the district, is composed of gneisses and granitic gneisses. The strike of foliation is usually NNE-SSE. Pegmatite and quartz veins traverse them.

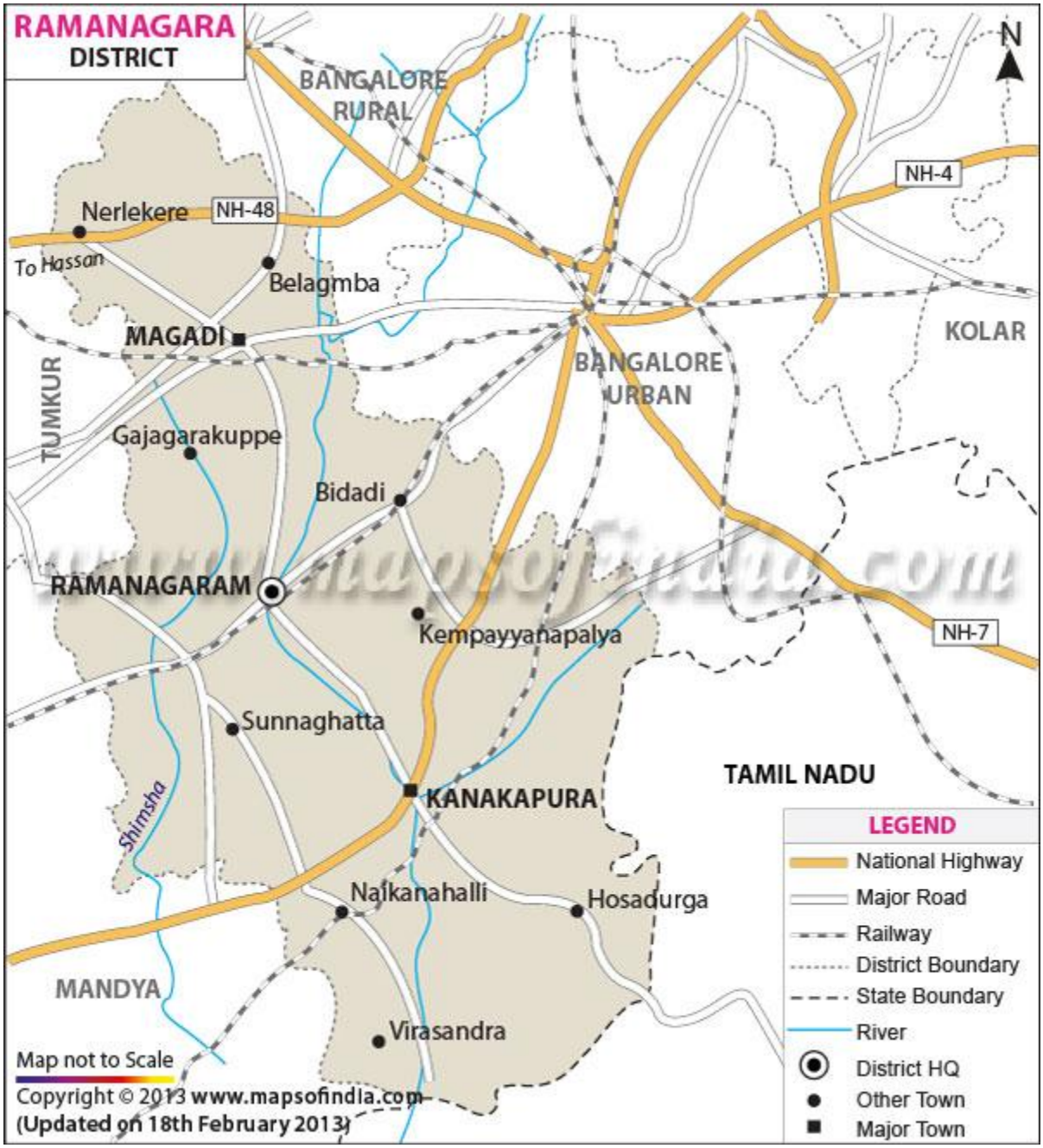
OVERVIEW OF QUARRYING ACTIVITY IN RAMANAGARA DISTRICT

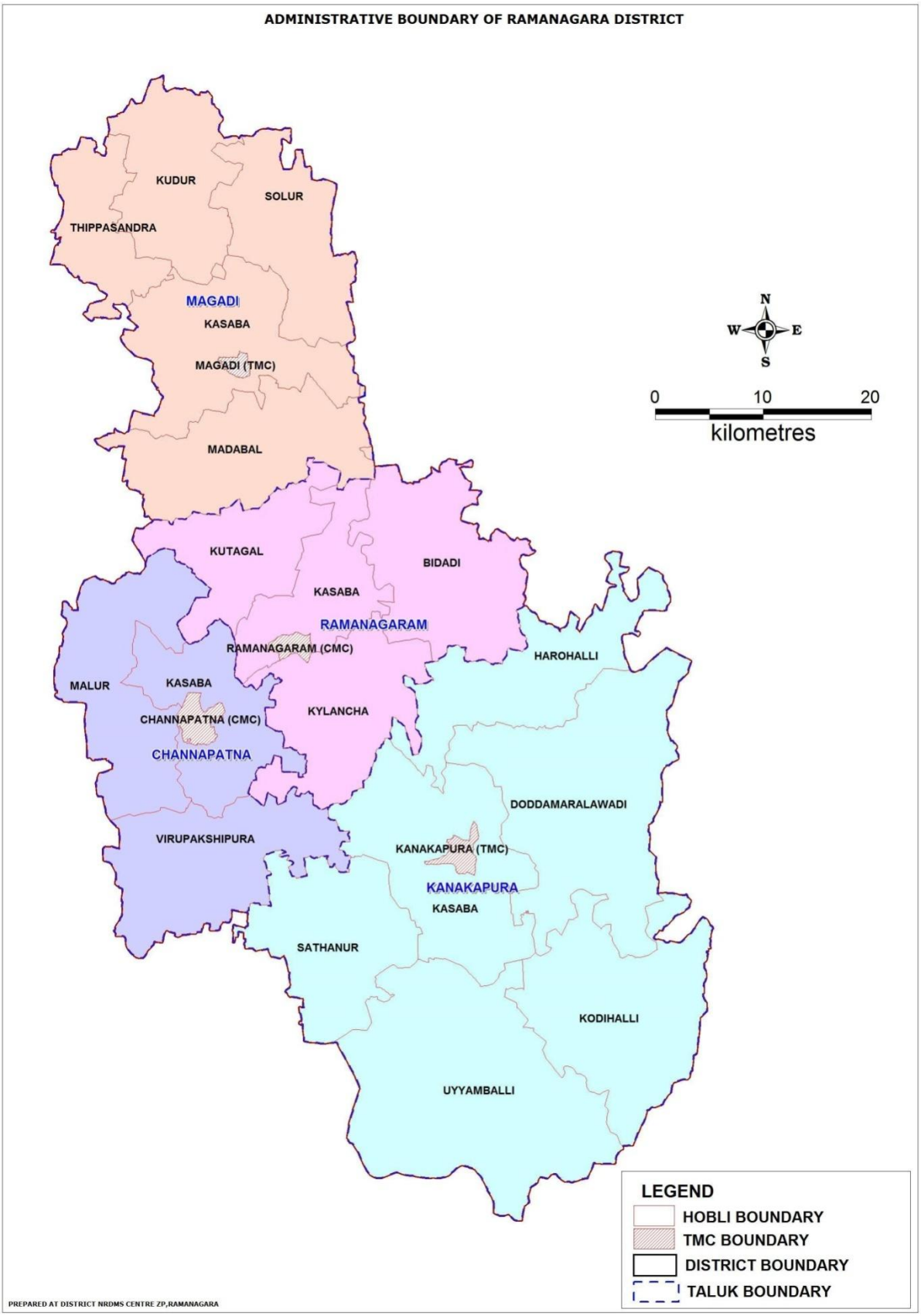
Quarrying activity in the Ramanagara district is as follows:

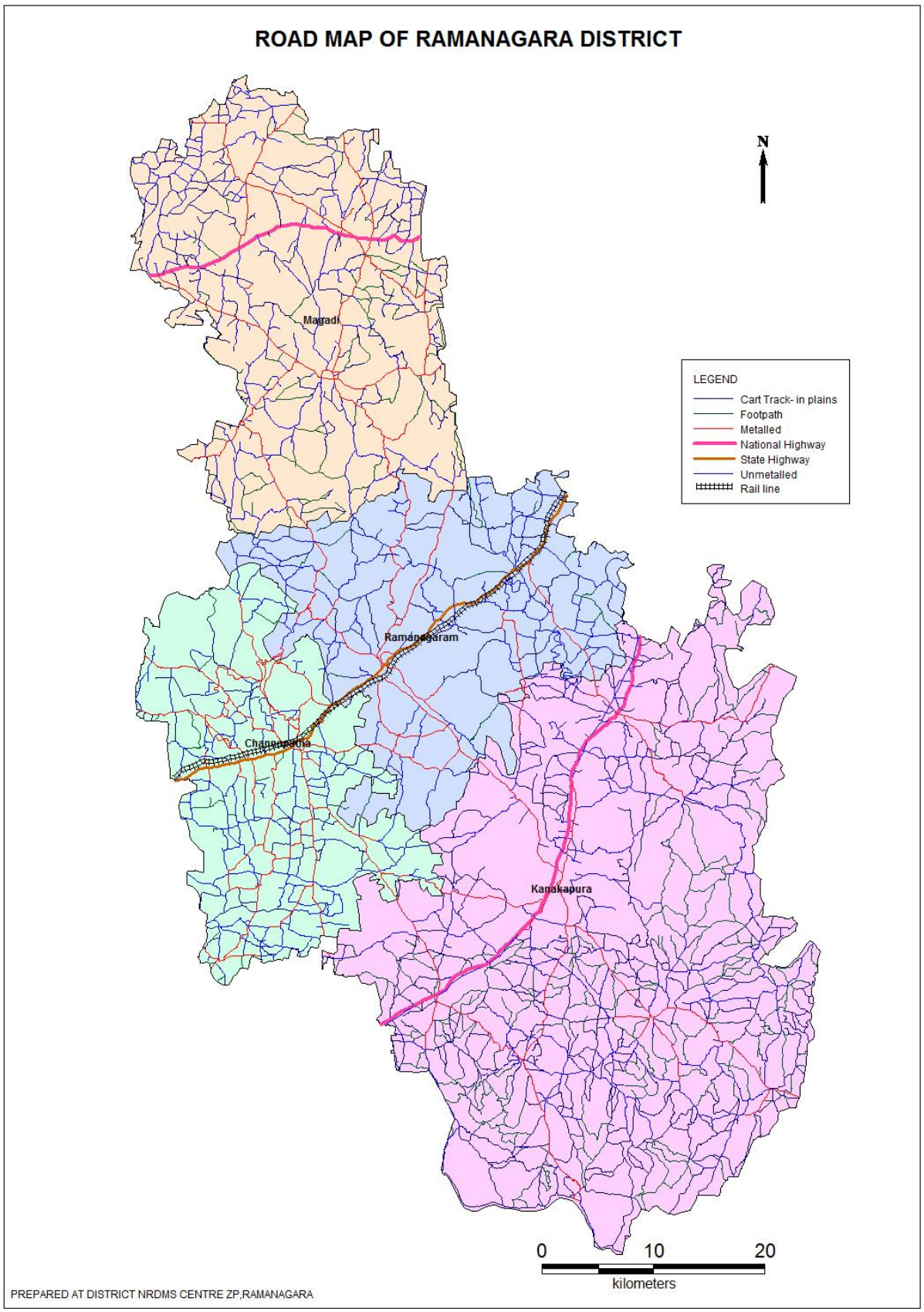
Sl.No.	Taluk	Building Stone	Ornamental Stone	Brick Earth	Crusher Units	M-Sand Units
1	Ramanagara	**38**	**02**	**-**	**29**	**08**
2	Kanakapura	**25**	**52**	**-**	**03**	**02**
3	Magadi	**19**	**04**	**02**	**10**	**02**
5	Channapatna	**-**	**02**	**-**	**-**	**-**
	Total	**82**	**60**	**02**	**42**	**12**

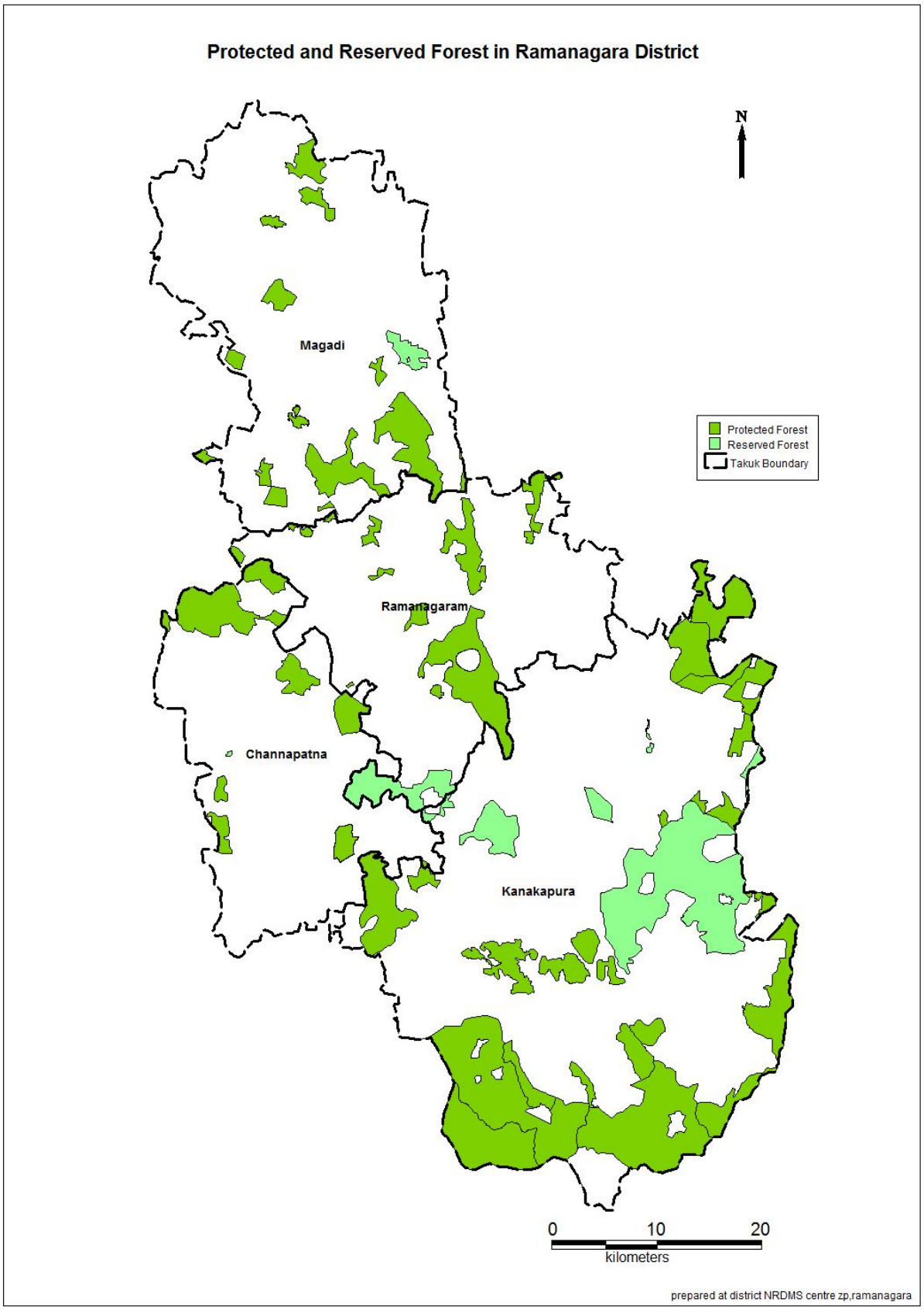
In this district specified and non-specified Minor Mineral leases like Multi color, Black granite (dolorite dyke), Building Stone and Brick Earth existed and operated Taluk wise in Kanakapura, Ramanagara, Channapatna and Magadi Taluk. No major mineral activity in the district (Map-2). As per Government Notification CI 116 MMN 2000 Dt: 13.11.2000 and CI 59 MMN 2001, Bangalore Dt: 09.03.2001 Arkavathi river bed and Kanva river bed sand mining has been banned hence no sand mining activity in the district.

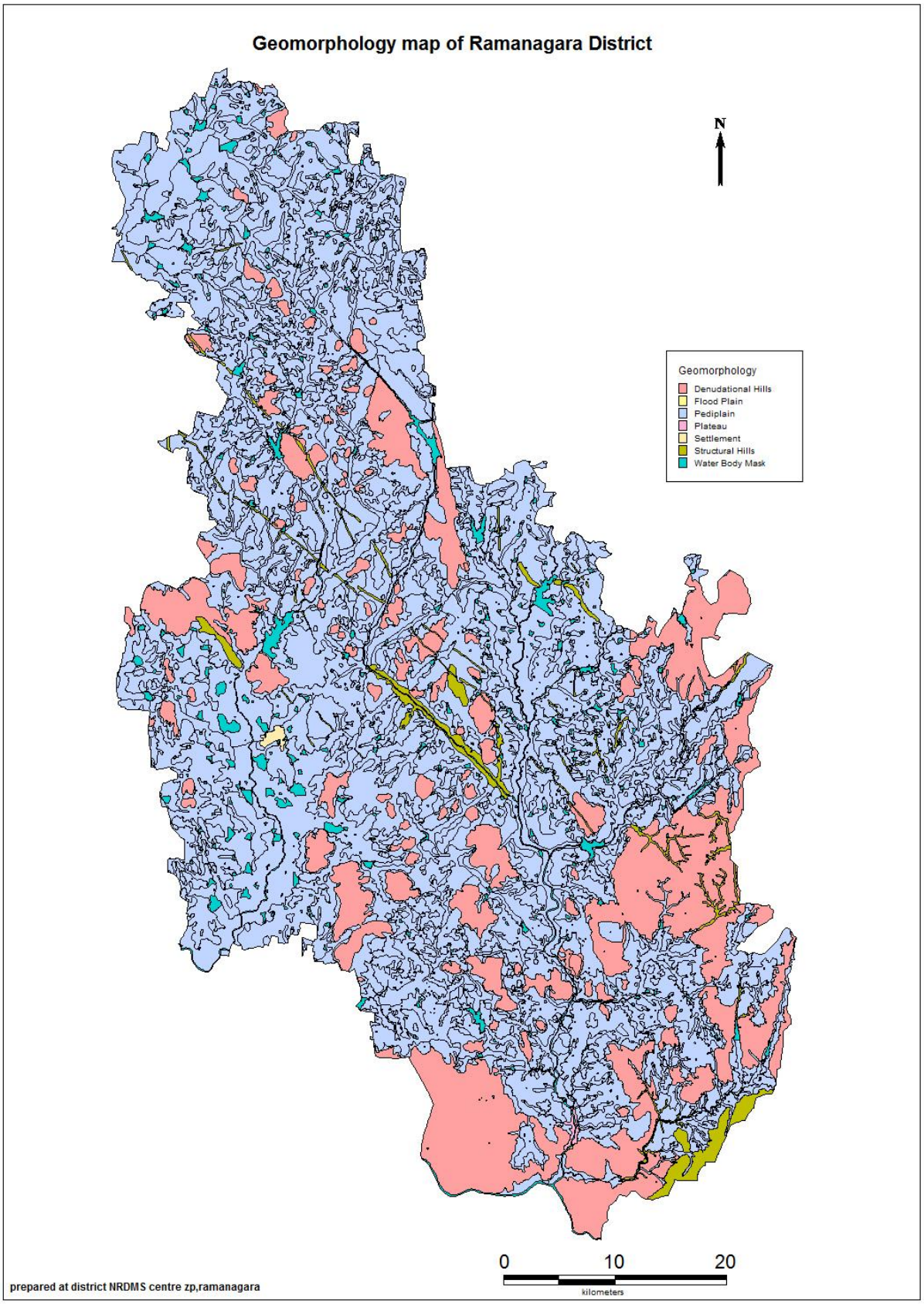

MINERAL MAP OF RAMANAGAR DISTRICT
BENGALURU RURAL DISTRICT
TUMKUR DISTRICT
BENGALURU DISTRICT
TAMIL NADU STATE
MANDYA DISTRICT
CHAMARAJA NAGAR DISTRICT
ANDHRA PRADESH STATE
TAMIL NADU STATE
ARABIAN SEA
The territorial waters of India extend in tothe sea to a distance of twelve nauticalmiles measured from the appropriate base-line
DEPARTMENT OF MINES & GEOLOGY , RAMANAGARA
STATISTICS OF RAMANAGAR DISTRICT
AREA : 5671.71 Sq. Km
MAIN LANGUAGE SPOKEN :KANNADA
ACTUAL POPULATION : 1,082,636
DENSITY OF POPULATIO : 308
SEX RATIO (Per 1000) : 976
N
0 2.5 5 10 15 20
Kilometers
SCALE = 1:6,107,524
Legend
Ornamental Patta Land Quarries
Malti Colour Stone Quarries
Building Stone Quarries
Black Granite Quarries in patta Land
Black Granite Quarries Leases in Government land
Black Granite Quarries Zone
Building Stone Quarries Zone
Black Granite Quarries Government Zone
State Highway
Ornamental Stone Mineral Zone
National Highway
District Railway
District Major Roads
Ramanagar District Forest Boundary
Ramanagar District taluk Boundary
13
12
12
12
12
12
77
77
77
77
77
77


RAMANAGARA
DISTRICT
BANGALORE RURAL
N
NH-4
Nerlekere
NH-48
To Hassan
Belagmba
MAGADI
KOLAR
BANGALORE URBAN
TUMKUR
Gajagarakuppe
Bidadi
RAMANAGARAM
Kempayyanapalya
NH-7
Sunnaghatta
TAMIL NADU
KANAKAPURA
Shimsha
LEGEND
National Highway
Major Road
Railway
District Boundary
State Boundary
River
District HQ
Other Town
Major Town
Naikanahalli
Hosadurga
MANDYA
Virasandra
Map not to Scale
Copyright © 2013 www.mapsofindia.com
(Updated on 18th February 2013)


ADMINISTRATIVE BOUNDARY OF RAMANAGARA DISTRICT
KUDUR
SOLUR
THIPPASANDRA
MAGADI
KASABA
MAGADI (TMC)
MADABAL
KUTAGAL
BIDADI
KASABA
RAMANAGARAM
RAMANAGARAM (CMC)
HAROHALLI
MALUR
KASABA
CHANNAPATNA (CMC)
KYLANCHA
CHANNAPATNA
DODDAMARALAWADI
VIRUPAKSHIPURA
KANAKAPURA (TMC)
KANAKAPURA
KASABA
SATHANUR
KODIHALLI
UYYAMBALLI
N
W
E
S
0
10
20
kilometres
LEGEND
HOBLI BOUNDARY
TMC BOUNDARY
DISTRICT BOUNDARY
TALUK BOUNDARY
PREPARED AT DISTRICT NRDMS CENTRE ZP,RAMANAGARA


ROAD MAP OF RAMANAGARA DISTRICT
N
Magadi
Ramanagaram
Channapatna
Kanakapura
LEGEND
Cart Track- in plains
Footpath
Metalled
National Highway
State Highway
Unmetalled
Rail line
0
10
20
kilometers
PREPARED AT DISTRICT NRDMS CENTRE ZP,RAMANAGARA

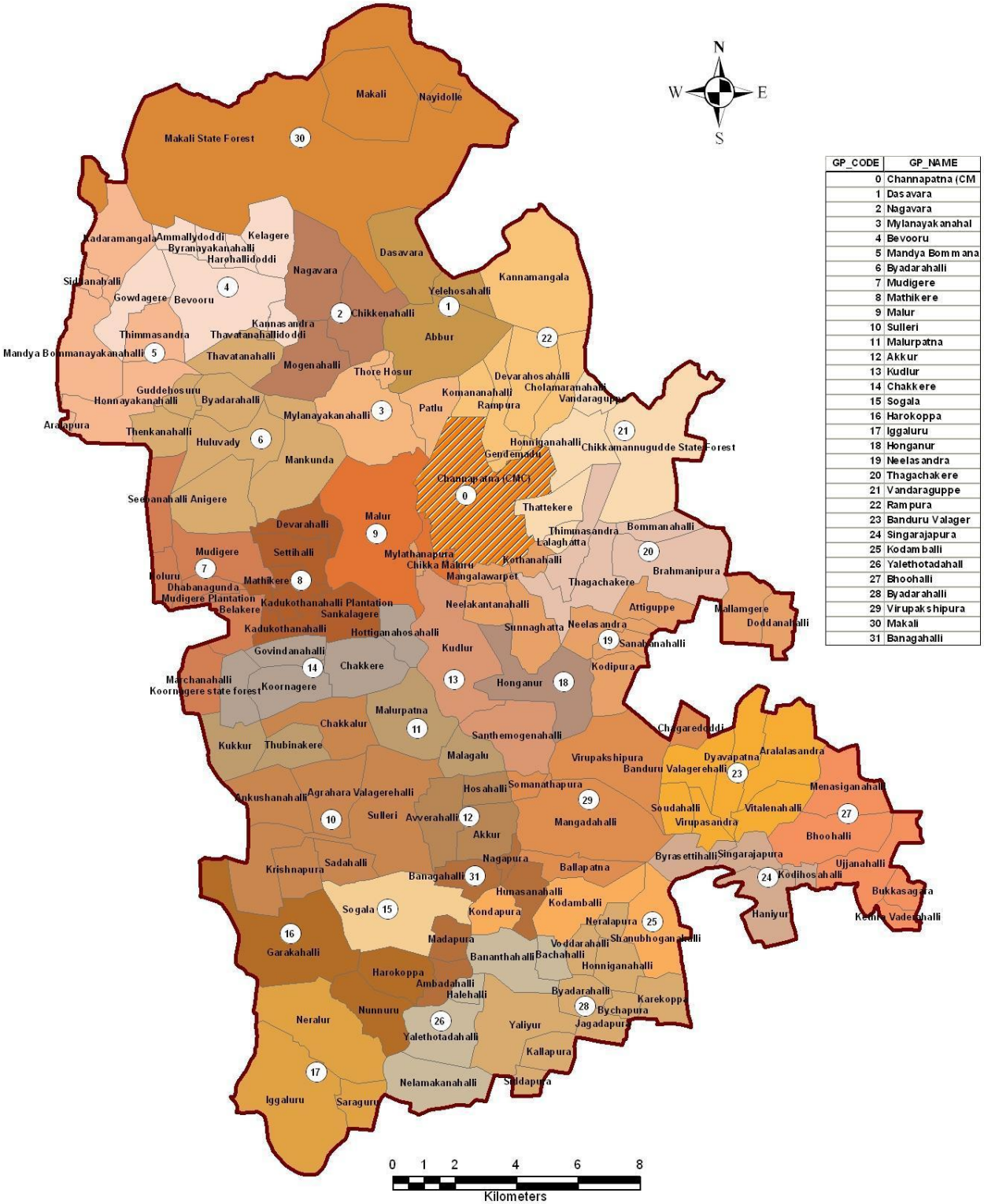

Protected and Reserved Forest in Ramanagara District
N
Magadi
Ramanagaram
Channapatna
Kanakapura
Protected Forest
Reserved Forest
Takuk Boundary
0
10
20
kilometers
prepared at district NRDMS centre zp,ramanagara


Geomorphology map of Ramanagara District
N
Geomorphology
Denudational Hills
Flood Plain
Pediplain
Plateau
Settlement
Structural Hills
Water Body Mask
0
10
20
kilometers
prepared at district NRDMS centre zp,ramanagara

GRAMAPANCHAYAT-RAMANAGARA TALUK

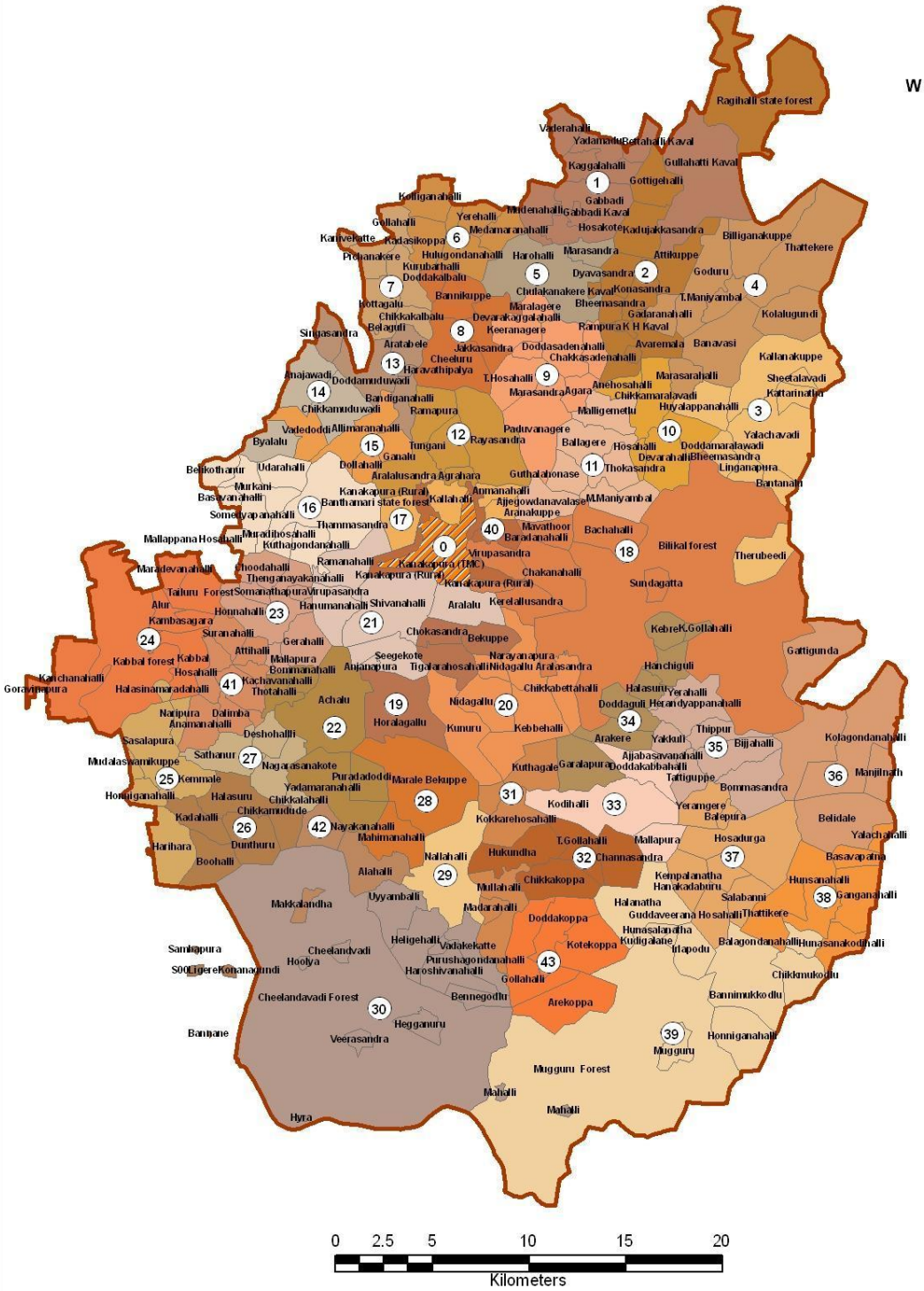
GP_CODE	GP_NAME
0	Ramanagaram (C
1	Bidadi
2	Byramangala
3	Kanchugaranahal
4	Ittamadu
5	Gopahalli
6	Manchanayakanah
7	Bannikuppe
8	Kenchanakuppe
9	Harisandra
10	Kothipura
11	Bolappanahalli
12	Sugganahalli
13	Mayaganahalli
14	Kutagal
15	Akikur
16	Shanubhoganahal
17	Jalamangala
18	Lakshmipura
19	Kylancha
20	Hunasanahalli
21	Vibhuthikere
22	Hulikeregunnur
23	Bannikuppe
24	Doddagangawadi

CHANNAPATNA TALUK



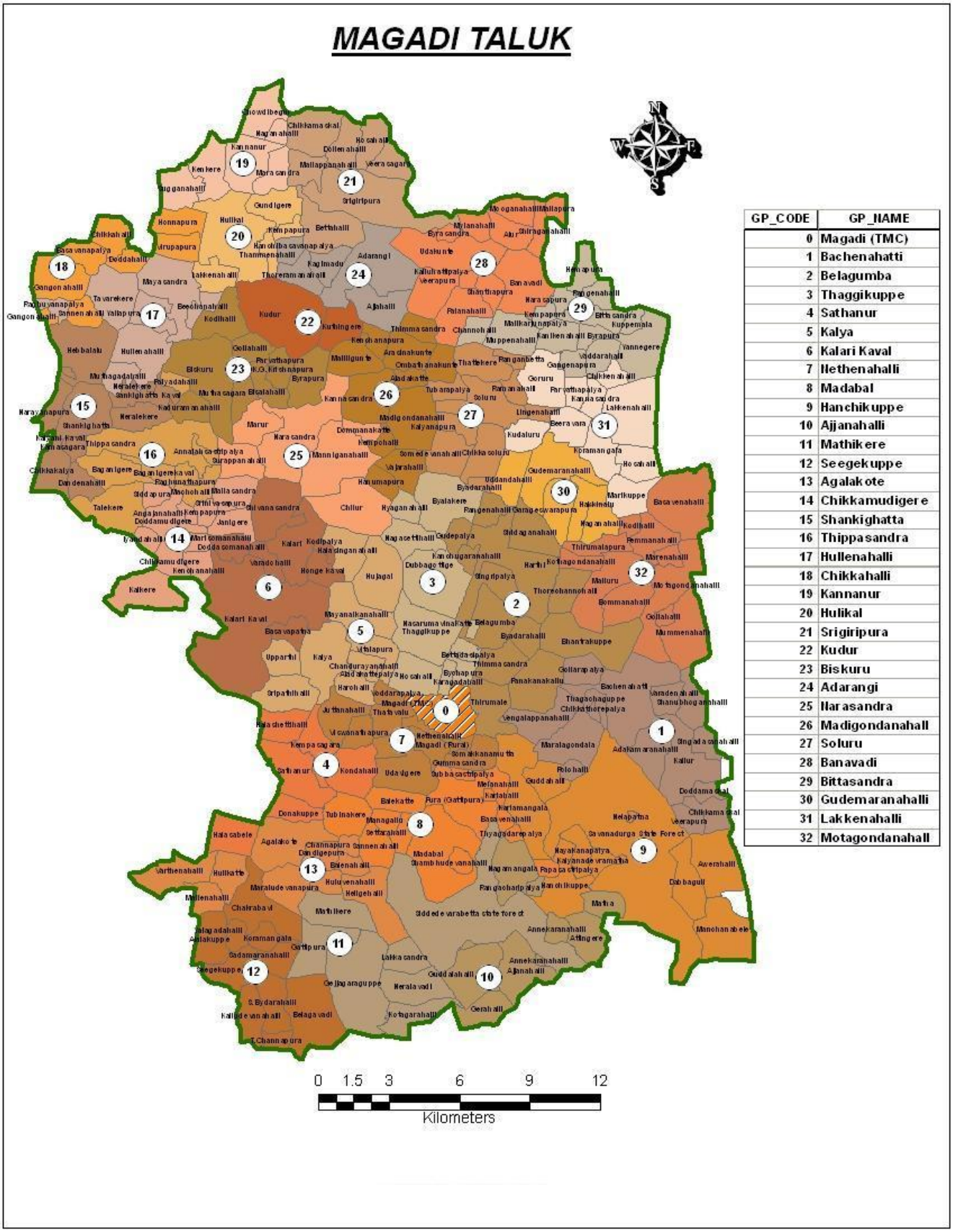
GP_CODE	GP_NAME
0	Channapatna (CM
1	Dasavara
2	Nagavara
3	Mylanayakanahal
4	Bevooru
5	Mandya Bommana
6	Byadarahalli
7	Mudigere
8	Mathikere
9	Malur
10	Sulleri
11	Malurpatna
12	Akkur
13	Kudlur
14	Chakkere
15	Sogala
16	Harokoppa
17	Iggaluru
18	Honganur
19	Neelasandra
20	Thagachakere
21	Vandaraguppe
22	Rampura
23	Banduru Valager
24	Singarajapura
25	Kodamballi
26	Yalethotadahall
27	Bhoohalli
28	Byadarahalli
29	Virupakshipura
30	Makali
31	Banagahalli

KANAKAPURA TALUK



GP_CODE	GP_NAME
0	Kanakapura (TMC
1	Kaggalahalli
2	Dyavasandra
3	Yalachavadi
4	Banavasi
5	Harohalli
6	Kolliganahalli
7	Kottagalu
8	Cheeluru
9	T.Hosahalli
10	Doddamaralawadi
11	Thokasandra
12	Tungani
13	Doddamuduwadi
14	Chikkamuduwadi
15	Allimaranahalli
16	Somedyapanahalli
17	Kallahalli
18	Chakanahalli
19	Bekuppe
20	Narayanapura
21	Shivanahalli
22	Achalu
23	Choodahalli
24	Kabbal
25	Honniganahalli
26	Kadahalli
27	Sathanur
28	Marale Bekuppe
29	Nallahalli
30	Uyyamballi
31	Mullahalli
32	Hukundha
33	Kodihalli
34	Arakere
35	Herandyappanaha
36	Kolagondanahall
37	Hosadurga
38	Hunsanahalli
39	Bannimukkodlu
40	Kanakapura (Rur
41	Kachavanahalli
42	Alahalli
43	Gollahalli

MAGADI TALUK



GP_CODE	GP_NAME
0	Magadi (TMC)
1	Bachenahatti
2	Belagumba
3	Thaggikuppe
4	Sathanur
5	Kalya
6	Kalari Kaval
7	Nethenahalli
8	Madabal
9	Hanchikuppe
10	Ajjanahalli
11	Mathikere
12	Seegekuppe
13	Agalakote
14	Chikkamudigere
15	Shankighatta
16	Thippasandra
17	Hullenahalli
18	Chikkahalli
19	Kannanur
20	Hulikal
21	Srigiripura
22	Kudur
23	Biskuru
24	Adarangi
25	Narasandra
26	Madigondanahalli
27	Soluru
28	Banavadi
29	Bittasandra
30	Gudemaranahalli
31	Lakkenahalli
32	Motagondanahalli

CHAPTER-3

HAZARD, RISK, VULNERABILITY, CAPACITY (HRVC) ANALYSIS

This chapter deals with potential hazards, which may have to be faced by the district, probable time of occurrence, vulnerability of the district to different disasters its analysis and analysis of the risk involved. This acts as a reference, upon which mitigative measures, rescue, restoration and rehabilitation plan etc. are planned successfully. Any error in HRV analysis will compound the problems / effects of a disaster. Therefore, a careful attempt has been made to achieve the realistic analysis of hazard, risk and vulnerability pertaining to Ramanagara District.

Risk has always been part of daily life for humans. Life without risk is neither possible nor conceivable. An understanding of risk has become necessary because of the new demands posed by the increasing number of disasters and the resulting complexities in the disaster risk management. One of the most important tools for effective disaster risk management is risk analysis.

During the last decade, risk analysis has emerged as an effective and comprehensive procedure to guide the overall societal response to, and management of disasters. Risk analysis is carried out to reduce

(a) Casualties from potential disasters

(b) Disruption to the economic and social activities and to mainstream

(c) The culture of safety in all activities undertaken by the governments.

It has become part of decision making in sectors such as health care, environment, physical infrastructure systems, etc.

History reveals that Ramanagara district is less prone to most of the natural disasters except drought. There are instances of many man-made disasters such as incidents of fire, road and rail accidents and communal riots.

3.1 Ramanagara Proneness to Different Disasters: -

Type of hazard	Time of occurrence	Potential impact	Vulnerable area
Drought(chronic)	Aug – May	Crop loss, scarcity of drinking water, fodder, etc. Depletion and contamination of ground water with fluoride and nitrates.	Entire Ramanagara district.
Earthquake	Any time	Loss of life and damage to dam, property, houses, buildings, etc.	Entire district.
Floods: There are two rivers Shimsha and Arkavathi rivers running across Ramanagara.	June – August or whenever there is a heavy downpour	Damage to infrastructure such as roads, houses, culverts and epidemic etc.	Along the lakebeds, slums and along encroached drains.
Heavy rainfall	June - August	Loss of crops.	Entire district.
Cyclonic indirect effect	June – Aug	Heavy rainfall, loss of crops	Entire district.
Fire accident: Ramanagara is a Major industrial hub many MAH industries are located across the district.	Any time of the year	Loss of life and property	Entire district.
Industrial disasters	Any time of the year	Loss of property and life	Areas where MAH is located
Road Accidents	Any time of the year	Injury and death	Entire district(NH and SH)
Train Accidents	Anytime of the year	Injury and death	Unmanned level crossing
Man-animal conflicts	October-May	Loss of crops, injury and death	Kanakapura, Magadi
Ground water contamination(high fluoride content) due to over-exploitation of ground water	Throughout the year	Skeletal and dental fluorosis, kidney damage	Whole of Ramanagara district
Biological disasters Biological disasters(epidemiclike plague, dengueetc;pest attacks; endemic animal diseases)	Any time of the year, predominantly in summer and rainy seasons.	Hospitalization, death, and economic loss.	Whole of Ramanagara district
Uncovered bore well/abandoned bore well	Any time of the year	Death/injury	Whole district
Communal Violence	Any time of the year(especially during festival season)	Injury, death, loss of business, and destruction of property.	Ramanagarataluq

3.2 OCCURRENCE OF DISASTERS IN THE PAST

Disasters	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Earthquake	-	-	-	-	-	-		-	-	-	-
Floods	-	-	-	-	-	-		-	-	-	-
Cyclones	-	-	-	-	-	-		-	-	-	-
Droughts	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Epidemics	-	-	-	-	-	-		-	-	-	-
Industrial accidents	-	-	-	-	-	-	-	-	-	-	-
Fire	-	-	-	-	-	-		-	-		
Road/rail accidents	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Boat capsize	-	-	-	-	-	-		-	-	-	-
Building collapse	-	-	-	-	-	-	-	-	-	-	-
Bomb blast	-	-	-	-	-	-	-	-	-	-	-
Pest attack	-	-	-	-	-	-	-	-	-	-	-
River bank erosion	-	-	-	-	-	-	-	-	-	-	-

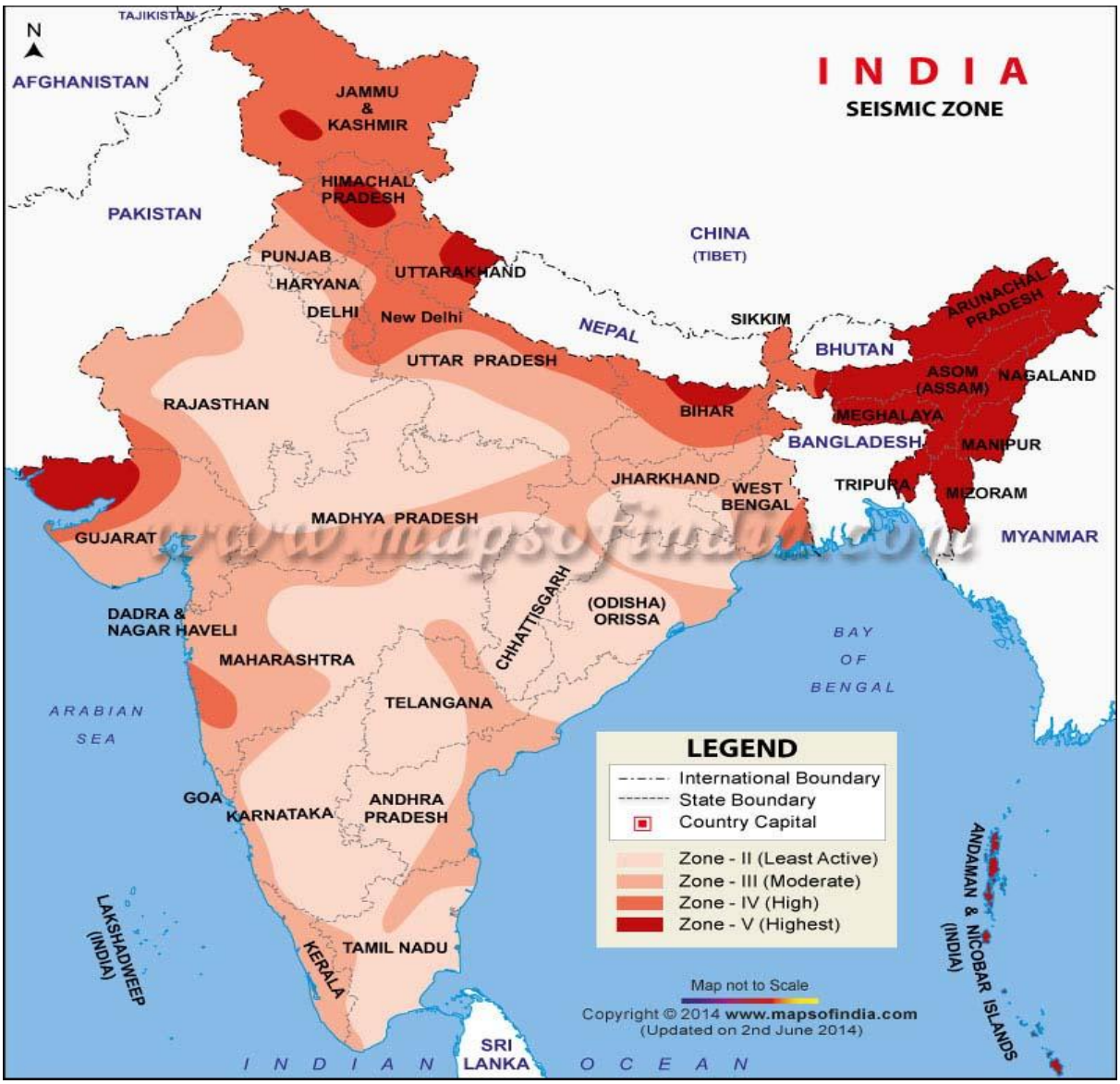
3.3 Seasonality of Hazards in Ramanagara district

Type of Hazard	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Drought		✓	✓	✓	✓					✓	✓	
Vector Borne diseases like Malaria, Dengue, and Chikungunya etc.						✓	✓	✓	✓	✓		
Water borne diseases like Acute Diarrheal Diseases, gastroenteritis etc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fire	√	√	√	√	√	√	√	√	√	√	√	√
Pest attacks			💣	💣	💣	💣	💣	💣	💣			
Accident	√	√	√	√	√	√	√	√	√	√	√	√
Earthquake	√	√	√	√	√	√	√	√	√	√	√	√

Seismic Zoning map:

The Geological Survey of India (GSI) first published the seismic zoning map of the country in the year 1935. With numerous modifications made afterwards, this map was initially based on the amount of damage suffered by the different regions of India because of earthquakes. Color coded in different shades of the color red, this map shows the four distinct seismic zones of India. Following are the varied seismic zones of the nation, which are prominently shown in the map:

- Zone - II: This is said to be the least active seismic zone.
- Zone - III: It is included in the moderate seismic zone.
- Zone - IV: This is considered the high seismic zone.
- Zone - V: It is the highest seismic zone.



Risk Analysis of Biological Disasters:

Ramanagara is known as land of Silk. There are more than 300,000cattle's and buffaloes in Ramanagara district. Pigs, goat, sheep, are also reared. Spread of epidemic like FMD, virus attack would lead to loss of business and livelihood. Foot and mouth disease is contagious disease, which affects the cloven-footed animals like cattle, buffaloes, sheep, goat, pig and wild animals like deer, bison and elephant. '0'- Zero type virus causes the disease outbreak in the state during the month of August to November 2013.

Acute respiratory tract infection/Influenza like Illness, acute diarrheal disease, dengue Chickungunia, bacillary dysentery, enteric fever, pneumonia are diseases prevalent in the district. There is also past history of outbreak of plague in Ramanagara district. Economically weaker section with poor sanitation facility with unsafe drinking water is vulnerable to disease mentioned above.

3.12. Risk Analysis of Unplanned Waste Disposal:

Municipal solid waste (MSW) normally termed as "garbage" or "trash" is an inevitable by-product of human activity. Population growth and economic development lead to enormous amounts of solid waste generation by the dwellers of the urban areas Urban MSW is usually generated from human settlements, small industries and commercial activities. An additional source of waste that finds its way to MSW is the waste from hospitals and clinics. When these wastes are mixed with MSW, they pose a threat for health and they may have long-term effect on environment.

The biodegradable portion dominates the bulk of Municipal Solid Waste. Generally, the biodegradable portion is mainly due to food and yard waste. With rising urbanization and change in lifestyle and food habits, the amount of municipal solid waste has been increasing rapidly and its composition changing. There are different categories of waste generated, each take their own time to degenerate.

Main Sources of Municipal Waste

- House hold waste
- Commercials:
- Street sweeping

- Hotels and restaurants
- Clinics and dispensaries
- Construction and demolition
- Horticulture
- Sludge

Open solid waste dump

Adverse Effect of open dump: An open dumping is defined as a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers. Open dumping can include solid waste disposal facilities or practices that pose a reasonable probability of adverse effects on health or the environment.

Health Effects

- The health risks associated with illegal dumping are significant. Areas used for open dumping may be easily accessible to people, especially children, who are vulnerable

to the physical (protruding nails or sharp edges) and chemical (harmful fluids or dust) hazards posed by wastes.

- Rodents, insects, and other vermin attracted to open dumpsites may also pose health risks. Dumpsites with scrap tires provide an ideal breeding ground for mosquitoes, which can multiply 100 times faster than normal in the warm stagnant water standing in scrap tire causing several illnesses.
- Poisoning and chemical burns resulting from contact with small amounts of hazardous, chemical waste mixed with general waste during collection & transportation.
- Burns and other injuries can occur resulting from occupational accidents and methane gas exposure at waste disposal sites.

Environment Impactof open dump:

- Air pollution: Dust generated from on-site vehicle movements and placement of waste and materials.
- Water Pollution: Runoff from open dumpsites containing chemicals may contaminate wells and surface water used as sources of drinking water open dumping canaffect proper drainage of runoff, making areas more susceptible to flooding when wastes block ravines, creeks, culverts, and drainage basins & contamination of groundwater resources and surface water from leachate emissions.
- Soil Contamination: Permanent or temporary loss of productive land.
- Global Warming and climate change: In most of the cities &towns, the municipal solid waste is being dumped & burnt in open spaces without understanding the adverse impacts on the environment. The waste in the dumping ground undergoes various anaerobic reactions produces offensive Green House gases such as CO2, CH4 etc. These gases are contributing potentially to Global Warming & Climate Change phenomenon.

- **Risk of Level Crossings and its Vulnerability:**

The Road Traffic crosses the Railway Track either on "Grade Separated Crossing" (Road and rail at different Levels) or at "Level Crossing" (Road and rail at same levels). The level crossings are made to facilitate the smooth running of traffic in a regulated manner governed by specific rules and conditions.

The primary causes of accidents at unmanned level crossings include haste of the driver to cross the level crossing before train arrives, mis-adventure to cross level crossings in the face of an approaching train, road vehicles being stalled at the locations, rash driving of un-licensed drivers etc. Accidents at level crossings happen primarily because the road users do not respect the **right of way of railways.**

It is observed that most of the time road vehicle driver's error in judgment of the speed of train leads to accident. It is a fact that human reaction time is 2.5 seconds which is just enough to coordinate the reflexes against speed of 60-70 kmph; however, most of the trains on Indian railways are plying at about 100-120 kmph for which the reaction time is inadequate. Road users continue to cross the tracks even if the train is visible and approaching causing leading to level crossing accidents. People walking along the railway track plugging their ears with earphone, listening to music, are oblivious of the approaching train are knocked over by the train. There is an increased trend of this off-late.

CHEMICAL AND INDUSTRIAL DISASTER:

Definition:

Major Accident or disaster: An incident involving loss of life inside or outside the site or ten or more injuries inside or one or more injuries outside or release of toxic chemical or explosion or fire or spillage of hazardous chemical resulting in on site or offsite emergencies or damage to equipment leading to stoppage of processes or adverse effects to the environment.

Chemical accident: Accident involving a fortuitous or sudden or unintended occurrence while handling any hazardous chemicals resulting in continuous, intermittent or repeated exposure to death, or injury to any person or damage to any property but does not include an accident by reason only of war or radio-activity

Chemical disasters in general may result from:

i) Fire.

ii) Explosion.

iii) Toxic release.

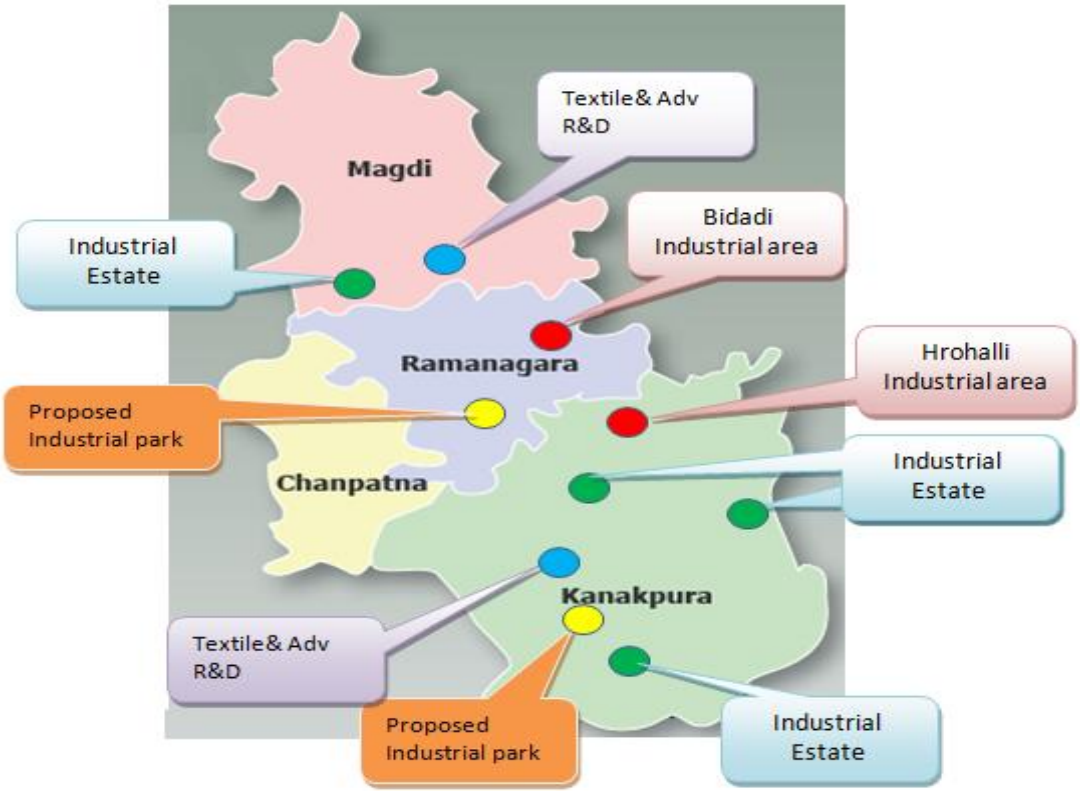
iv)Poisoning.

v) Combinations of the above

Ramanagara is having 2 Industrial Areas (total 5 phases) and 4 Industrial Estates inthe district. Two Industrial parks are proposed for Printing and Textiles.Suvarna Karnataka Development Corridor envisages the creation of an Automobile Zone and Media andEntertainment Zone. 2 SEZ in Advanced R&D and Textiles sector each with an investment of US$ 559 million (INR 2,683 crores) and US$ 25 million (INR 120 crores) each, are in the pipeline.

Industrialization: Ramanagara district is the house of many global Giant companies by which got global attraction for industrialization. There are about 26 large and medium industries & 1633 small-scale industries in the district. The focus sector of includes Sericulture Agriculture & Allied Sectors, Textile, Mechanical, Automobile& Chemicals .The major industries which contribute the overall growth of the districts are as follows:

- M/s Toyota Kirloskar Motor Pvt. Ltd
- M/s Toyota Kirloskar Auto Parts Pvt. Ltd.
- M/s Bharat petroleum Corporation Ltd.
- M/s A.O Smith Water Heating System India (P) Ltd.
- M/s Hindustan Coca Cola Beverages PVT LTD



Objectives, Extent & Scope of the Plan:

The objective of the present assignment is to prepare an area specific Off-site Emergency Plan for Ramanagara District, which can be practically implemented / activated at a short notice, to ensure minimal impact on life and property due to emergencies arising out of chemical accidents at one or more of the Major Accident Hazard (MAH) units or during transportation of hazardous chemicals in the area. It must be remembered that a plan is just the beginning of the emergency preparedness activity and certainly not the be all and end all of emergency management procedure. The plan is more of a guideline than a ready recipe for handling an emergency. The number of possible incidents leading to an emergency is numerous and the plan cannot possibly include all. However, all efforts have been made to cover all the worst-case scenarios arising out of Major Accident Hazard (MAH) installations and having potential off-site effects.

The plan should be regularly updated when there are changes occurring in the industrial setup, transportation aspects, key manpower, administrative changes, etc. A plan cannot possibly be static for all time to come. Regular drills, training of key persons, increasing safety awareness, etc. are extremely important areas that must be looked into for sound preparedness.

The main objectives of the Off Site Emergency Plan are:

- To provide resources and methods for effective control of emergencies arising out the leakage, explosion and fire due to hazardous materials.
- To prevent emergency turning into disaster.
- Synchronized action from all the coordinating agencies with least possible delay.
- To minimize damage to the property, people and the environment.
- Effective rescue operation and treatment of the causalities.
- To train the people and the concerned to act efficiently and with confidence in an emergency.
- To bring back normal situation in the least possible time.
- To provide authoritative information to the news media and government agencies.
- To avoid panic among the general public .No exploitation or exaggeration of the situation by any agency.

Scope:

- The scope of the assignment is to prepare an Off-site Emergency Plan as per the guidelines provided by the Ministry of Environment & Forests (MoEF) and as provided in Schedule 12 of the MSIHC Rules,1989 (Amended in 2000).

DEFINITIONS [AS PER EP ACT, MSIHC & CHEMICAL ACCIDENTS (EPPR) RULES]

Emergency: An emergency could be defined as an event that causes a temporary break in the normal life of an industry or community. Terms such as disaster, emergency, calamity, etc. are also used depending on particular context and the circumstances.

On Site Emergency (With in premises of Factory)

An Emergency (in factory) may be defined as one or more emergencies, which can-

- Affect one or several plants / departments.
- Cause serious injury to personnel.
- Result in extensive damage to property and / or loss of life.
- Cause disruption inside the Factory.

Off- Site Emergency (Major Emergency)

A major emergency in a works is one, which has the potential to cause serious injury or loss of life. It may cause extensivedamagetoproperty and serious disruption both inside and

outside the factory. It would normally require the assistance of outside emergency services to handle it effectively. Although number of different factors may cause the emergency, e.g. plant failure, human error, earthquake, vehicle crash or sabotage. It will normally manifest itself in three basic forms i.e. fire, explosion, or toxic release.

Details of Major Accident Hazard Industries

1. BHARAT PETROLEUM CORPORATION LIMITED, LPG Bottling Plant, Solur, MagadiTaluk

Address and Location: Bharat Petroleum Corporation Limited,Solur Village, MagadiTaluk, RamanagaraDistrict, 47kms from Bangalore City and 19kms from Bangalore –Pune Highway.

Brief about the Company:

On 24th January 1976, the Burma Shell Group of Companies was taken over by the Government of India to form Bharat Refineries Limited. On 1st August 1977, it was renamed Bharat Petroleum Corporation Limited.

The core strength of Bharat Petroleum Corporation Limited has always been the ardent pursuit of qualitative excellence for maximization of customer satisfaction. Thus Bharat Petroleum, the erstwhile Burma Shell, has today become one of the most formidable names in the petroleum industry.

Bharat Petroleum produces a diverse range of products, from petrochemicals and solvents to aircraft fuel and specialty lubricants and markets them through its wide network of Petrol Stations, Kerosene Dealers, LPG Distributors, Lube Shoppes, besides supplying fuel directly to hundreds of industries, and several international and domestic airlines.

BPCL is committed to attain the highest standard in health, safety environment and security performances and in pursuit of good governance of the same.

No. of persons working : The factory works on 3 shift basis

Sl No	Shift	Timing	Employees Permanent	Contractor workers	Drivers
1	General shift	8:30 am to 4:30 pm	35	65	105
2	1st Shift	6:30 am to 2:30 pm			
3	2nd Shift	2:30 pm to 10:30 pm			

Description of Hazardous storage / Handled:

Sl No	Name of the Product	Quantity	Type of storage	State	Hazard
1	LPG	3 X 300 MT	3 Tanks Mounded storage	Liquid	Fire / Explosion
		3 X 600 MT	3 Tanks Mounded storage		

Risk Assessment and types of Risks

Products handled are highly inflammable. The risk are fire and explosion

Credible accident scenarios from probable leak of LPG

- If LPG leaks,(either from a liquid or vapor line) and an immediate source of ignition is available then jet fire is assumed to occur.
- Alternatively, in the absence of immediate ignition, it is assumed that LPG will spread in the plant forming a pool. Evaporation from the pool will lead to a continuous dispersion of LPG vapour. The vapour cloud would then accumulate to a flammable concentration capable of ignition. In the event of ignition a vapour cloud can result in two possible consequences.

1) It will burn as a flash fire(a short duration, high intensity fire)

2) It can lead to a vapour cloud explosion (depending on the quantity of vapour and turbulence generated in the path of the cloud)

- Scenarios considered here include pipeline leak of vapour or spill of liquid from the inlet/ outlet lines or catastrophic failure of LPG tank lorry. The spilled amount will evaporate and form a continuous dispersion. Such leaks/spills will lead to the formation of flammable

vapor, which if ignited, can have severe effects, scenarios where spill of LPG can form vapour clouds were closely examined.

- The scenarios identified for the LPG unloading, storage and distribution operations are examined. Three major types of consequences may be expected under these circumstances, Viz.

1) Fireball

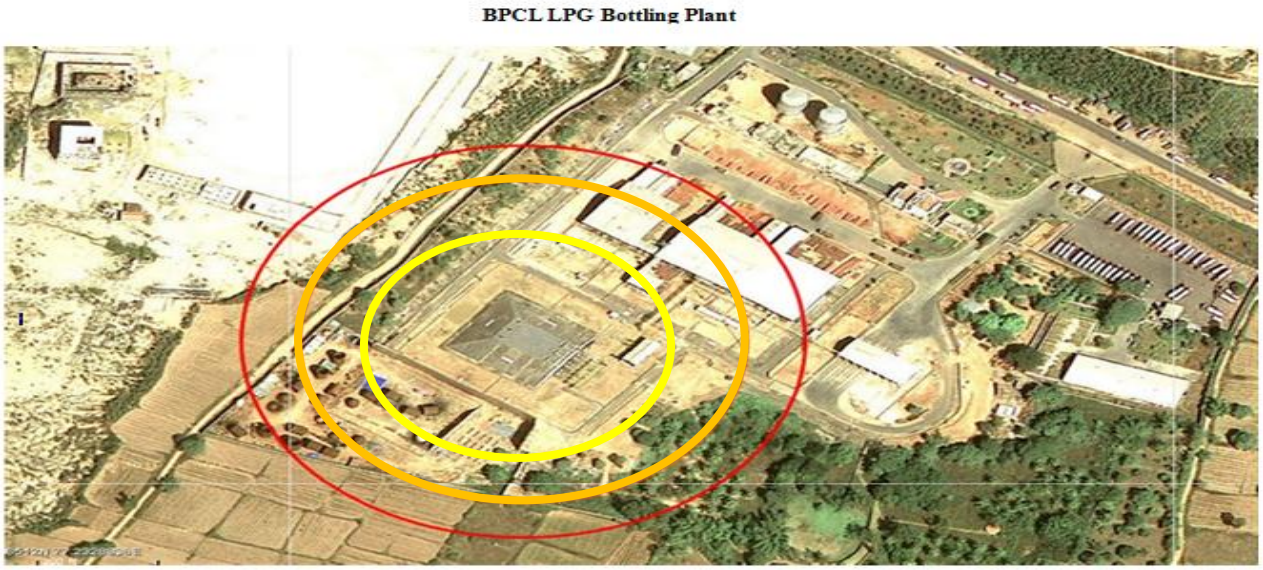
2) Flash fires

3)Vapour cloud explosion(VCE)

Its effect is most divesting due to flame contact and thermal radiation.

Please find below thermal Radiation flux chart along with damaged Contour of BPCL LPG storage and unloading area.

BPCL Plant layout with Damage contour



Sl No	Thermal Radiation flux KW/ Sq.m	Distance in Meters	Effect	Population affected due to Thermal Radiation
1	37.5	150 (Inner circle)	100% Lethality	6
2	12.5	300 (Middle Circle)	1% Lethality	12 + Outside the plant area
3	4.5	500 (Outer Circle)	First Degree Burns	25 + Outside the plant & connected to main Road.
			Total	**43 +**

Facilities Available at Plant:

Sl No	Facility	Availability
1	Water Tank, Capacity 5248 KL **(Capable of Fighting fire for 5Hrs)**	Yes
2	Water Replacement Resources	Yes
3	Fire Pumps	Yes
4	Fire Hydrant Points	Yes
5	Fire water Hoses	Yes
6	Explosivity Meter	Yes
7	D.G Set	Yes
8	Personal Protection (Safety Helmet, Rubber Hand Gloves, First Aid Box, Fire Suits, Water Jel Blanket, Stretcher with blanket, breathing apparatus)	Yes
9	Sprinkler System For LPG tanks	Yes
10	Electrical and Manual Siren	Yes
11	Fire Extinguishers (DCP, CO2, Water Type)	Yes
12	Fire Tender	Yes

Information of Important persons in the Factory:

1. Information of important persons in the Factory

Sl.No.	Name / Designation	Phone(Off)	Phone (Res)	Residential Address.
1.	S.Ramesh, Territory Manager (Occupier) e-mail : rameshs2373 @bharatpetroleum.in	080-22975456	9448282920	H.NO. 21 BLOCK 14, 4TH CROSS ROAD NAGARA BHAVI 2ND STAGE BANGALORE 560072
2	Sunny Joesph, Territory Co-ordinator. (Plant Manager) e-mail : josephs@bharatpetroleum.in	080 – 27757392 27757380	9448282918	H.NO.70D COSTA SQUARE, 3RD CROSS ST.THOMAS TOWN BANGALORE 560084

Nearby Township:

Sl No	Name of the Village / Town	Distance form BPCL LPG plant, Solur in Kilometers	Population (As per Censes 2011)
1	Gudemarnahalli	5.0	3701
2	Solur	1.5	32471
3	Nelmangala	19 kms	28697
4	Kunigal	25 kms	33273

Transport details available for Evacuation from BPCL :

Sl No	Transport Company	Fleet (No)	Contact Authorities Name and Mobile Numbers	Remarks
1	Vinayaka Enterprises	Cars – 2 Nos. Jeep – 1 No. Tempo Travel – 2Nos.	K.Ravindra, Manager Ops.(HSSE) 9483532129	Exclusive shift vehicle for BPCL

2. TOYOTA KIRLOSKAR MOTOR PVT. LTD (TKMPL), Bidadi

Address and Location:

Plot No : 1, KIADB Industrial Area, Bidadi,Ramanagara District , Pin: 562109, Phone Number : 08066292929

Location: TKMPL is located 34 Kilometers from Bangalore City Railway station via Bangalore – Mysore state Highway No. 17 and approximately 20 Kilometers from Ramanagara D.C Office.

Brief about the Company:

Toyota Kirloskar Motor Private Limited was established in the year of 1997 as joint venture between Toyota Motor Corporation and the Kirloskar Group, for the manufacture and sales of Toyota cars in India. TKM currently running two manufacturing plants in Bidadi, Ramanagara District spreading over 432 Acres of land and facility to produce 150000

vehicle per annum. Presently TKM produces 5 models of Toyota cars viz, Innova, Corolla, Fortuner,Camry,Etios&EtiosLiva. More over TKM deals with 4 imported models like Prado, Land Cruiser & Prius.

TKM believes in "Safety First Approach" along with its business philosophy of " Customer First". TKM's ideal SQPC (Safety, Quality, Production & Cost) concept comes in reality when was awarded as**Best Safe Industry @ 2010** in Large Scale Industry Category by Department of Factories, Boilers, Industrial Safety and Health, Government of Karnataka. In the same year, TKM received **Golden Peacock Environment Management** Award in Automobile Sector category. At the same time, TKM is continuously maintaining **ISO-14001** certification from last 11 years.

TKM Safety Activities: Eiji Toyoda the founder of Toyota believes that "Safe work is the door to all work , Let us pass through this door" . Following his philosophy TKM follows safety First approaches in all activities. TKM safety policy is

- Be the best company of safety and health
- Safety first, and make the work place free from accident
- Make work place free from health hazards

TKM's Global commitment is "Ensure Zero accident @ Toyota Or in its Contractor / Supplier / group companies".

Description of Hazardous materials stored / handled:

Sl No	Name of the Product	Quantity	Type of storage	State	Hazard
1	LPG	2 X 25=50 MT	2Tanks above ground and	Liquid	Fire / Explosion
		2 X 20=40 MT	2Tanks Mounted type		
2	HSD	50.5 KL	Under ground	Liquid	Fire / Explosion
		50 KL	Above ground tanks		
3	Paint	18.7 T	Barrels	Liquid	Fire / Explosion
4	Gasoline	42.5 KL	Under ground	Liquid	Fire / Explosion

TKM safety management stands in three base pillars like Man, Machine and Management which wrote TKM success stories to achieve "Zero Serious Accident" till date (2012). Many safety activity being carried out @ TKM to strengthen these base pillars of safety management.

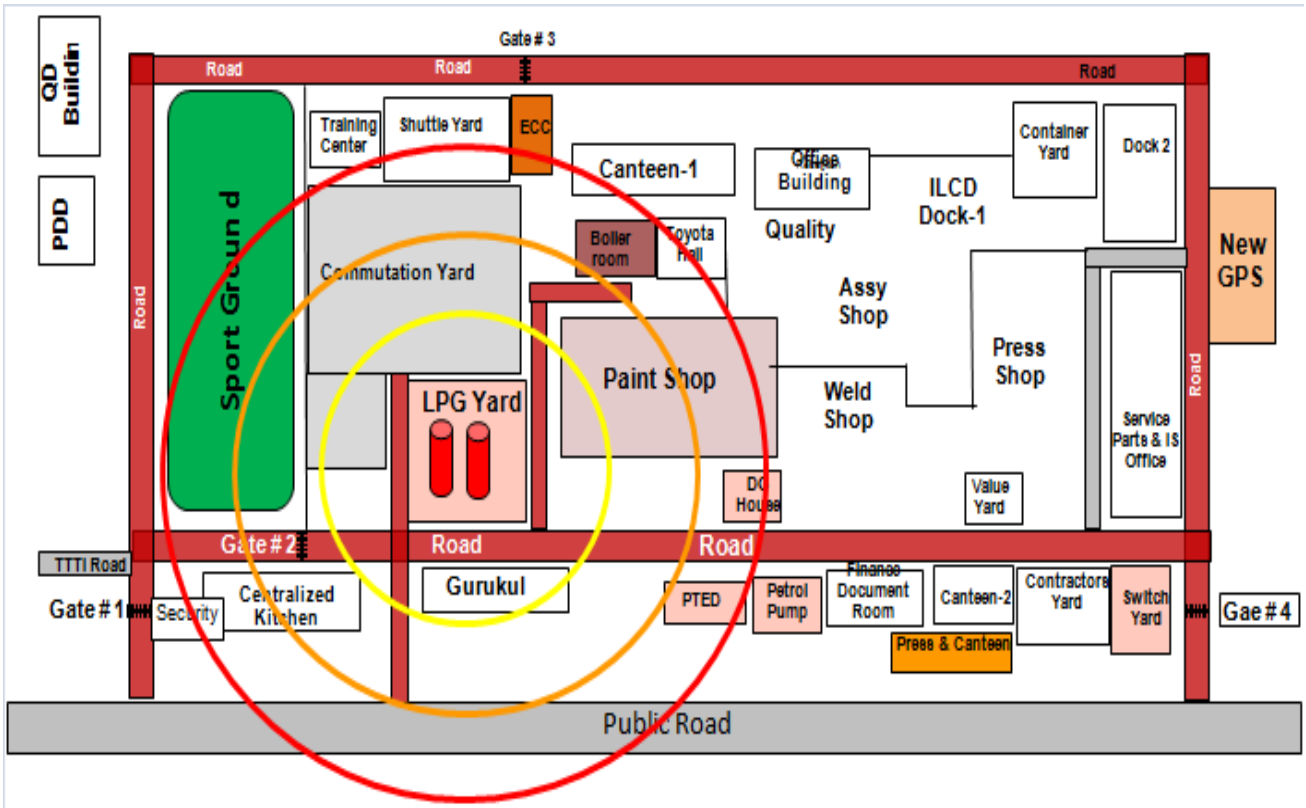
Risk Assessment and Type of Risks:

The product handled in TKM is highly inflammable and potential to explode. The risks are Fire and Explosion.

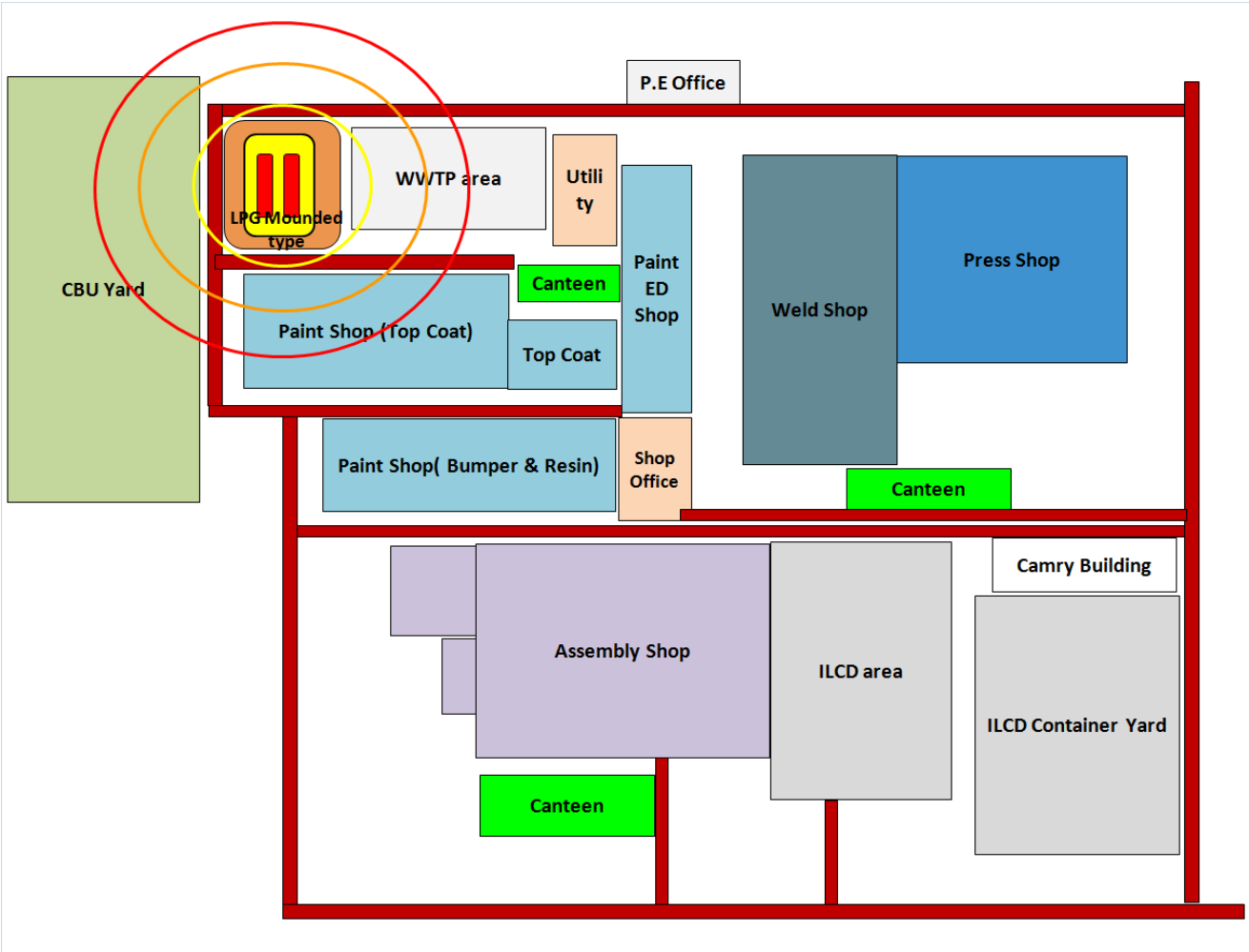
The risk analysis is based on the probable worst case scenario is due to fire and explosion that could occur in the plant. The worst case scenario (BLEVE-Boiling Liquid Expanding vapor Explosion) envisaged is the catastrophic failure of LPG bullets resulting in sudden loss of containment. It is due to injection of boiling superheated liquid that produces chain of reactions rupturing vessels causing rocket projection of bullet material. The released liquid flashes and atomized immediately, resulting in fireball. Its effect are most devastating due to flame contact and thermal radiation.

Find below thermal Radiation flux chart along with damaged Contour of TKML LPG storage and unloading area.

TKM Plant -1 LPG Yard Contour:



TKM Plant -2 LPG Yard Contour:



Sl No	Thermal Radiation flux KW / Sq.m	Distance in Meters	Effect	Population affected due to Thermal Radiation (Plant 1)	Population affected due to Thermal Radiation (Plant 2)
1	37.5	150 (Inner circle)	100% Lethality	50	10
2	12.5	300 (Middle Circle)	1% Lethality	865	80
3	4.5	500 (Outer Circle)	First Degree Burns	900 + Outside road area	300
			Total	**1815**	**390**

Facilities Available at Plant:

Sl No	Facility	Availability
1	Water Tank, Capacity 3559 KL(Capable of Fighting fire for 4Hrs)	Yes
2	Water Replacement Resources	Yes
3	Fire Pumps	Yes
4	Fire Hydrant Points	Yes
5	Fire water Hoses	Yes
6	Explosivity Meter	Yes
7	D.G Set	Yes
8	Personal Protection (Safety Helmet, Rubber Hand Gloves, First Aid Box, Fire Suits)	Yes
9	Sprinkler System For LPG tanks	Yes
10	Electrical	Yes
11	Fire Extinguishers (DCP, CO2, Water Type)	Yes
12	Fire Tender	Yes

Information of Important persons in the Factory:

Sl No	Name	Designation	Mobile No	Landline / Extension No	E-Mail I.D
1	Mr. Tomonaga	DMD, Plant Occupier	9740900004	080-66292302	tomonaga@toyota-kirloskar.co.in
2	Raju B Ketkale	V.P/ Plant Manager	9740900485	080-66292641	ketkale@toyota-kirloskar.co.in
2	Joseph SL Saldanha	G.M, PAD	9740900016	080-66292835	joesal@toyota-kirloskar.co.in
3	Mr.Vijay Kumar B.N	Safety Manager	9740900401	080-66292382	bnvijay@toyota-kirloskar.co.in
4	Mr.Kowshik Kupatira	Company Doctor	9686199348	080-66292200	Kowshik_kupatira@toyota-kirloskar.co.in
5	Mr.Mallikarjuna K Kappattanavar	Manager Security	9740900178	080-66292252	mallikarjuna@toyota-kirloskar.co.in

Nearby Township:

Sl No	Name of the Village / Town	Distance from TKM in Kilometers	Population (As per Censes 2011)
1	Bannikuppe	5.0	5223
2	Banandur	2.5	3667
3	Byramangala	4.8	2828
4	Heggadagere	4.0	1410
5	Ittamadu	4.5	1884
6	Menchanayakanahally	5.0	2263

Transport details available for Evacuation from TKM:

Sl No	Transport Company	Fleet (No of Busses and Trucks)	Contact Authorities Name and Mobile Numbers	Remarks
1	Sharma Transport	99	Ashok Dubey 9845162813	Exclusive vehicle for TKM
2	SRS Travels	96	Mani Kumar 9845188015	Exclusive vehicle for TKM
3	Megha Travels	98	Ravi 9008500346	Exclusive vehicle for TKM
4	AMB Travels	11	Gangaraj 9620222563	Exclusive vehicle for TKM

3.TOYOTA KIRLOSKAR AUTO PARTS PVT. LTD (TKAP)

Address and Location:

Plot No :21, KIADB Industrial Area, Bidadi, Ramanagara District , Pin: 562109, Phone Number : 080-27287141,272871436-50

Location: TKAP is located 34 Kilometers from Bangalore City Railway station via Bangalore – Mysore state Highway No. 17 and approximately 20 Kilometers from Ramanagara D.C Office.

Brief about the Company:

M/s. Toyota Kirloskar Auto Parts is an Auto Components Manufacturing unit located on a 50- acre campus in Bidadi Industrial Area, Ramanagram District.

The company started in 1999 under the name of M/s. Kirloskar Systems Limited (KSL), and later ventured with M/s. Toyota Motor Corporation and M/s. Toyota Industries Corporation to form M/s. Toyota Kirloskar Auto Parts Pvt. Ltd.

Currently, 3 production plants/ hangers are in operation viz. – 3 Units Plant for domestic market and Transmission Plant for International Market – occupying around 33,000 Sq. Mtrs of built up space. The plant consists of complete manufacturing facility capable of producing aggregate assemblies for automobiles namely: Front Axle, Rear Axle, Propeller Shaft of 85,000 units per year & Transmission Units of 1, 85,000 per year. The main manufacturing process in the facility is Machining, Welding, Heat Treatment, Painting, & Assembly to get the final finished aggregate. This will be supported by incoming parts logistic area, site utilities (Including HFO, Petrol, Engine Oil & LPG storage, DG Operations) and facilities building. The Engine plant manufactures automotive engines for Toyota Etios Petrol variant (1.5 liter& 1.2 liter) of which the 1.5 liter engine is exported. The engine plant has an installed capacity of 1,09,200 engines per year.

These 2 plants employ around 1,292 (including Contract members).

TKAP Safety Activities: Eiji Toyoda the founder of Toyota believes that "Safe work is the door to all work, Let us pass through this door" .Following his philosophy TKAP follows safety First approaches in all activities.

Description of Hazardous materials stored / handled:

Sl.	Raw Material	Quantity	Type of storage	State	Hazard
1	LPG	7 X 2=14 MT	Mounded bullet (2 bullets)	Liquid	Fire / Explosion
2	HFO	412 KL	Above Ground Tanks (4Nos)	Liquid	Fire / Explosion
3	HSD	31 KL	Above Ground Tanks (1Nos)	Liquid	Fire / Explosion
4	Gasoline	15 KL	Above Ground Tanks (1Nos)	Liquid	Fire / Explosion
5	Engine Oil	40 KL	Above Ground Tanks (1Nos)	Liquid	Fire / Explosion
6	Paint	200 Liters	Barrels	Liquid	Fire / Explosion
7	Thinner	200 Liters	Barrels	Liquid	Fire / Explosion

Risk Assessment and Type of Risks:

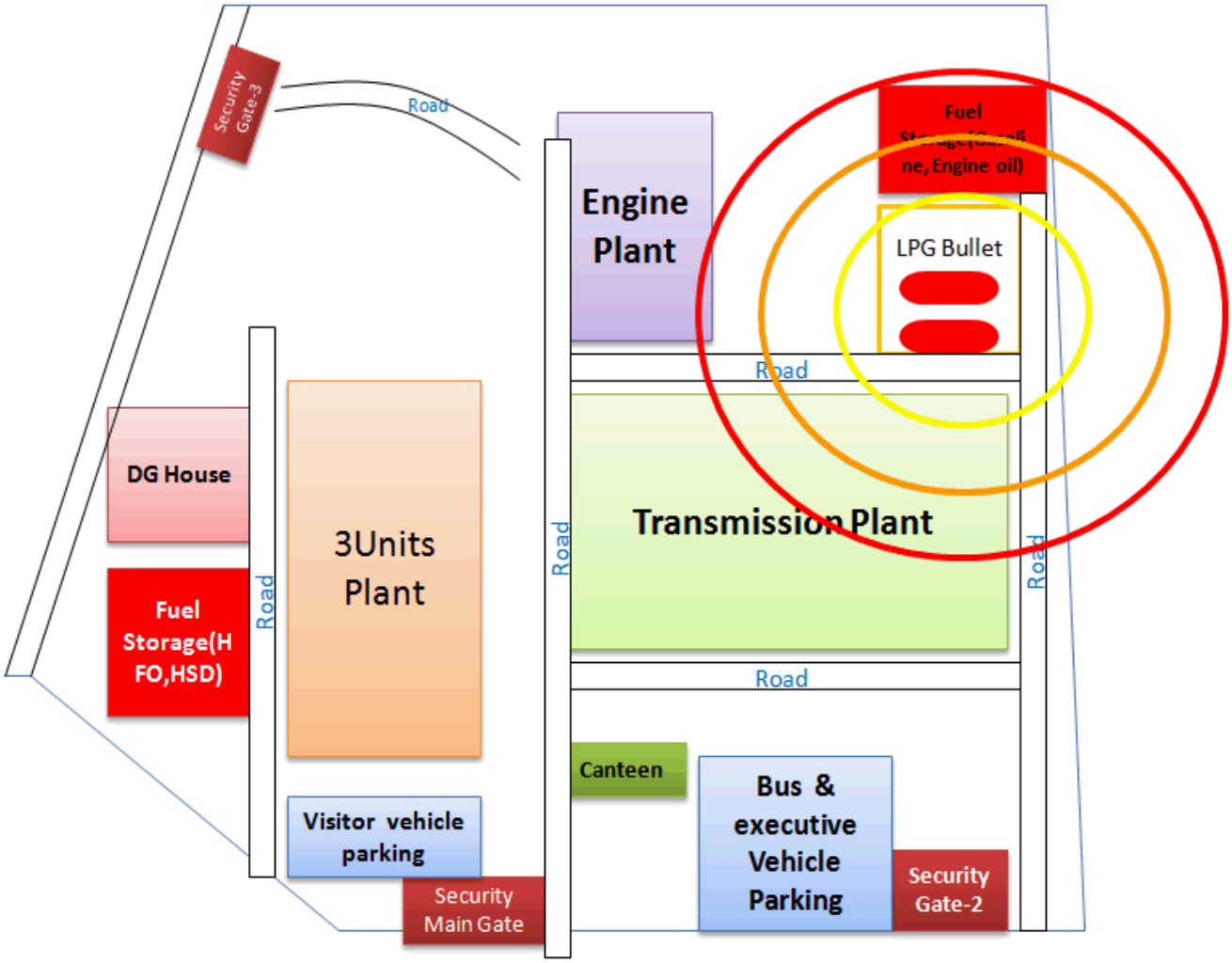
The product handled in TKAP is highly inflammable and potential to explode. The risks are Fire and Explosion.

The risk analysis is based on the probable worst case scenario is due to fire and explosion that could occur in the plant. The worst case scenario (BLEVE-Boiling Liquid Expanding vapor Explosion) envisaged is the catastrophic failure of LPG bullets / spheres resulting in sudden loss of containment. It is due to injection of boiling superheated liquid that produces chain of reactions rupturing vessels causing rocket projection of bullet / sphere material. The release liquid flashes and atomized immediately, resulting in fireball. Its effects are most devastating due to flame contact and thermal radiation.

Sl No	Thermal Radiation flux KW/ Sq.m	Distance in Meters	Effect	Population affected due to Thermal Radiation
1	37.5	150 (Inner circle)	100% Lethality	225
2	12.5	300 (Middle Circle)	1% Lethality	840
3	4.5	500 (Outer Circle)	First Degree Burns	2000 + Outside road area
			Total	**3065 +**

Find below thermal Radiation flux Charta long with damaged Contour of TKAPL LPG storage and unloading area.

TKAP - LPG Yard Contour:



Transport details available for Evacuation from TKAP:

Sl No	Transport Company	Fleet (No of Busses and Trucks)	Contact Authorities Name and Mobile Numbers	Remarks
1	Sharma Transport	16	Ashok Dubey 9845162813	Exclusive vehicle for TKAP
2	National Travels	24	Shabir 9844071866	Exclusive vehicle for TKAP

Facilities Available at Plant:

Sl No	Facility	Availability
1	Water Tank, Capacity 2060 KL **(Capable of Fighting fire for 4Hrs)**	Yes
2	Water Replacement Resources	Yes
3	Fire Pumps	Yes
4	Fire Hydrant Points	Yes
5	Fire water Hoses	Yes
7	D.G Set	Yes
8	Personal Protection (Safety Helmet, Rubber Hand Gloves, First Aid Box, Fire Suits)	Yes
9	Sprinkler System For LPG tanks	Yes
10	Electrical	Yes
11	Fire Extinguishers (DCP, CO2, Water Type)	Yes
12	Fire Tender	Yes

Nearby Township:

Sl No	Name of the Village / Town	Distance from TKM in Kilometers	Population (As per Censes 2011)
1	Bannikuppe	5.0	5223
2	Banandur	2.5	3667
3	Byramangala	4.8	2828
4	Heggadagere	4.0	1410
5	Ittamadu	4.5	1884
6	Menchanayakanahally	5.0	2263

Information of Important persons in the Factory:

Sl No	Name	Designation	Mobile No	Landline / Extension No	E-Mail I.D
1	Mr. K G Mohan	SVP & Director Occupier	9538800008	080-27287141	kgmohan@tkap.co.in
2	Mr. Vairamuthu	General Manager, Factory manager	9538800007	080-27287141	vairmuthu@tkap.co.in
3	Mr. Kanthasamy	Manager,Safety&Enviorment	9538805103	080-27287141	kanthas@tkap.co.in
4	Mr. Mangesh J	Deputy Manager,Safety officer	9538846771	080-27287141	mangeshsafety@tkap.co.in
5	Mr.Vijayanandham J	Safety Engineer	9538926501	080-27287141	vijayanandham_j@tkap.co.in
6	Mr. Pradeep C	Group Leader-Utilities	9538846856	080-27287141	cpradeep@tkap.co.in
7	Dr.Jaysoorya	Company Doctor	9538993698	080-27287141	Jaysoorya@tkap.co.in
8	Mr. S V Kumar	Security In charge	9538124866	080-27287141	svk@tkap.co.in

4. AO SMITH INDIA WATER HEATING PVT. LTD ,Kanakapura

Address and Location:

Plot No :300, Phase II,KIADB Industrial Area, Harohalli,Kanakapura, RamanagaraDistrict , Pin: 562112, Phone Number : 08028011200/250/251

Location: A O Smith is located 40 Kilometers from Bangalore City Railway station via Bangalore – Dindigal National Highway No. 209 and approximately 35 Kilometers from Ramanagara D.C Office.

Brief about the Company:

A O Smith India Water Heating Private Limited was established in the year of 2010 to carrying out the manufacture and sales of Residential Water Heaters in India. AOS currently running one manufacturing plant in Harohalli, Kanakapura,Ramanagara District spreading over 20 Acres of land and facility to produce 4,00,000 Water Heaters per annum.

- **A $2.1 billion company (2010 Turnover)**
- **Publicly traded as NYSE:AOS**
- **35 manufacturing plants worldwide**
- **Distribution in more than 60 countries worldwide**
- **Approximately 15,000 employees World wide**

Sl No	**Thermal Radiation flux KW/ Sq.m**	**Distance in Meters**	**Effect**	**Population affected due to Thermal Radiation**
1	37.5	150 (Inner circle)	100% Lethality	10
2	12.5	300 (Middle Circle)	1% Lethality	20
3	4.5	500 (Outer Circle)	First Degree Burns	50
			Total	**80**

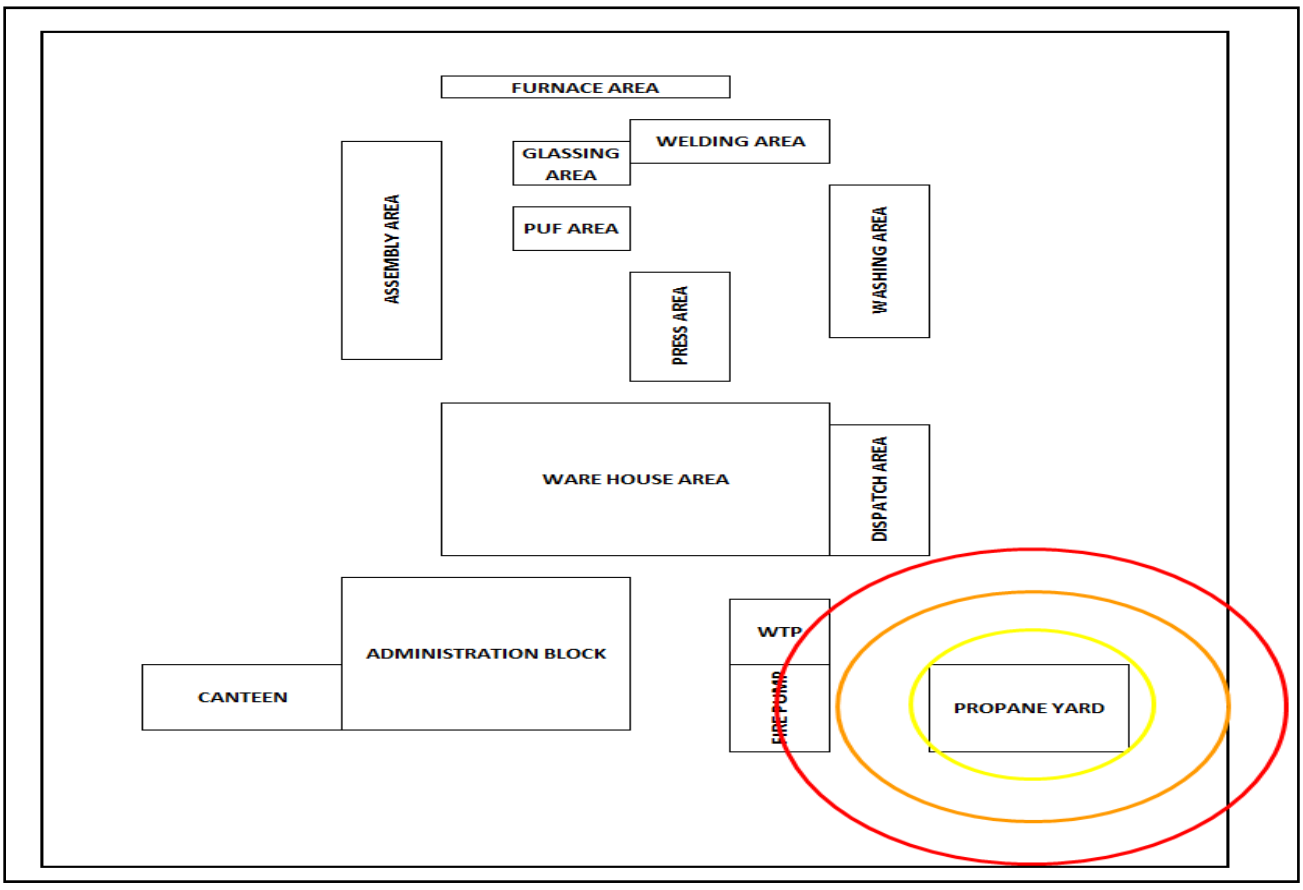
Description of Hazardous materials stored / handled:

Sl No	Name of the Product	Quantity	Type of storage	State	Hazard
1	Propane	2 X 10=20 MT	2Tanks Mounted type	Liquid	Fire / Explosion
2	HSD	40K L	Above ground tanks	Liquid	Fire / Explosion

Risk Assessment and Type of Risks:

The product handled in A O Smith is highly inflammable and potential to explode. The risks are Fire and Explosion.

The risk analysis is based on the probable worst case scenario is due to fire and explosion that could occur in the plant. The worst case scenario (BLEVE-Boiling Liquid Expanding vapor Explosion) envisaged is the catastrophic failure of LPG bullets resulting in sudden loss of containment. It is due to injection of boiling superheated liquid that produces chain of reactions rupturing vessels causing rocket projection of bullet / sphere material. The release liquid flashes and atomized immediately, resulting in fireball. Its effect are most divesting due to flame contact and thermal radiation.



Facilities Available at Plant:

Sl No	Facility	Availability
1	Water Tank, Capacity 900 KL **(Capable of Fighting fire for 2Hrs)**	Yes
2	Water Replacement Resources	Yes
3	Fire Pumps	Yes
4	Fire Hydrant Points	Yes
5	Fire water Hoses	Yes
6	D.G Set	Yes
7	Personal Protection (Safety Helmet, Rubber Hand Gloves, First Aid Box, Fire Suits)	Yes
8	Sprinkler System For LPG tanks	Yes
9	Electrical	Yes
10	Fire Extinguishers (DCP, CO2, Water Type)	Yes

Information of Important persons in the Factory:

Sl No	Name	Designation	Mobile No	Landline / Extension No	E-Mail I.D
1	Mr. TamalChaudhuri	MD, Plant Occupier	9845768712	080-28011300	tchaudhuri@hotwater.com
2	Mr. Kiran	Manufacturing Manager	9880411205	080-28011252	Kiran@hotwater.com
3	Mr.Shashi Kumar	HR Manager	9880144766	080-28011250	rshashi@hotwater.com
4	Mr.Bala subramanya H N	Sr. Safety Executive	9686670017	080-28011251	Hnbalasubramanya @hotwater.com
5	Mr.Manjunath H A	Sr. Maintenance Executive	9740115999	080-28011294	Manjunatha@hotwater.com

Nearby Township:

Sl No	Name of the Village / Town	Distance form A O Smith in Kilometers	Population (As per Censes 2011)
1	Bannikuppe	2.0	5223
2	Ganaludoddi	1.5	1936
3	Girenahalli	1.5	768
4	DevaraKaggalahalli	3.0	515
5	Harohalli	5.0	12665

Transport details available for Evacuation from A O Smith:

Sl No	Transport Company	Fleet (No of Busses and Trucks)	Contact Authorities Name and Mobile Numbers	Remarks
1	S R Travels	10	Nagaraju 9886695644	Exclusive vehicle for A O Smith

3.16.1 Important social schemes/acts which will make the community more resilient towards adversity of drought and other disasters.

- THE KARNATAKA GUARANTEE OF SERVICES TO CITIZENS Act, 2011(Sakala): A Bill has been passed by the Karnataka State Legislature to provide guarantee of services to citizens in the State of Karnataka within the stipulated time limit and for matters connected therewith and incidental thereto. This Act is called the Karnataka Guarantee of Services to Citizens Act, 2011. According to this Act, the designated officers who fails to provide citizen related services (services coming under the GSC Act) to the citizens within the stipulated time as mentioned in this Act shall be liable to pay the compensatory cost to the citizen in accordance with the provisions of this Act.

Services pertaining to disaster management under the ambit of Sakala Act.

1. Natural calamity relief claims for crop damage.

2. Natural calamity relief claims for house damage.
3. Natural calamity relief claims for animal loss.
4. Natural calamity relief claims for loss of life.

- **ANNA BHAGYA YOJANA:** The main objective of this program is to ensure "Hunger Free Karnataka". AsPer this project government will supply 7 kg of food grains(5Kg Rice+2kg Ragi/Wheat) @free of cost to each and individual member of Priority house hold(PHH)Card families across the state. PHH(BPL) cardholders will be eligible to receive subsidized food grains through a network of fair price shops running across the district. Anna BhagyaYojana will mitigate hunger and mal-nutrition to a certain extent in vulnerable population.
- **MUKHYA MANTRI ANILA BHGYA YOJANA** : The major goal of this Program is to ensure "Kerosene Free Karnataka" Under this Program PHH Kerosene Card holders are eligible to get LPG Connections @ Free of Cost. In the 1st Phase of this program 1920 PHH- Kerosene Card Holder families obtained LPG Connection.
- **Mahathma Gandhi National Rural Employment Guarantee Scheme(MGNREGS):** The primary objective of the act is to enhance livelihood security in rural areas by providing at least 100 days of guarantee wage employment in every financial year to every house hold whose adult members volunteer to do unskilled manual work. If the work is not provided within 15 days of the demand of work by the applicant, then un-employment allowance has to be paid. Works under the MGNREGS can be taken up on both community and private lands. Small and marginal farmers, SC/ST and Indira AwaasYojana beneficiaries are eligible for taking up works on their own lands. This scheme will financially empower vulnerable population during drought.

The vital installations such as transformers, telecommunication centers, wireless relay stations etc., have been provided with protection and security and the same will be intensified during disaster.

NDRF(National Disaster Response Force)

Objective:

- To maintain 24 hours National & State level mobilization centers round the year**.**
- To make available emergency relief teams at short notice for search and rescue operations.
- To develop effective strategies and procedures to save more lives andreduce loss of life and property.
- To promote activities aimed at search and rescue operations in disaster prone areas.

NDRF Charter: The DM Act 2005 **(SEC 44)**has made the statutory provisions for the constitution of the **National Disaster Response Force (NDRF)** for the **purpose of specialized response** to natural and man-made disasters.

AOR of 5thbattalionNDRFareMAHARASHTRA,GOA, AND 16 DISTRICTS OF KARNATAKA.

Each Battalion has 6 Coys (3 Teams each) : Total 18 teams.

Each Team comprises of 45 personnel.

A team of 50 personnel are stationed in Bangalore.

Capabilities of NDRF

- Earthquake and Collapsed Structure Response.
- Flood and Water Rescue.
- Cyclone, Landslide and other Natural Disasters.
- Medical First Aid.
- Chemical, Biological, Radiological and Nuclear emergencies (CBRN).
- Response to all Man Made Disasters.
- Train Accidents.

Rescue Operation by NDRF personnel

Equipments with NDRF

Victim Location Unit

3.15.5 Civil Defense:

Civil Defense is an Organization of the people who fight to mitigate the effect of disasters both man-made and natural disasters on civilian life. The organization strives to save life, to minimize damage to property, and restore normalcy as soon as possible. It consists of highly skilled professional who render their service without any monetary benefits. They are expanding their bases in most of the districts. Dr. P.S.R. Chethan is the Chief Warden of civil defense for Bangalore Region. Phone number is annexed with this plan.

3.15.6Disaster Management Support from ISRO

Department of Space (DOS) has embarked upon the Disaster Management Support (DMS) Program as a prime application activity, to reach the benefits of the aerospace technology for the resolves of disaster management in the country. Various centers of ISRO/DOS are involved in implementing different components of DMS Program, which is centrally coordinated by DMS Program office at ISRO HQ. The Decision Support Centre (DSC) established at National Remote Sensing Agency (NRSA) is the single window delivery point for aerial and space enabled inputs together with other important data layers for its use in

disaster management of pre-disaster, during-disaster and post-disaster phases. For online transfer of space enabled inputs to the State and Central government user departments, a VSAT based satellite communication network has been put in place. At present, DSC is addressing five natural disasters viz., Flood, Cyclone, Agricultural Drought, Forest Fire, Earthquake and Landslide. The operations are Disaster information collection, Data Acquisition, processing, and transfer to DSC, Data analysis, Output Generation & Dissemination to user via VSAT, FTP, Web page, E-mail etc.

On receiving information from the identified nodal forecasting organization or Ministry of Home Affairs (MHA),action for acquisition of space and airborne data is initiated. Depending upon the satellite pass, cameras are tilted and data is acquired and analyzed. First level information thus derived from space data is made available to MHA and Central & State user agencies. The information is monitored on a regular basis for damage assessment. DSC has provision to mobilize aircraft equipped with Synthetic Aperture Radar (SAR), Air-borne Laser Terrain Mapping unit (ALTM) and High Resolution Digital Camera for obtaining aerial data. DSC aims to build a comprehensive geo-spatial database for the disaster vulnerable regions in the country. Using the available geospatial data sets in centralized data server, DSC is capable to develop support tools for decision-making. Besides web hosting, satellite based connectivity with the National and State Emergency Operation Centers is established for fast dissemination of space-enabled services. DSC is working on preparation of maps showing hazard zones. DSC is working on space inputs for long-term disaster mitigation and rehabilitation. DSC provides support to the International Charter on Space and Major Disasters.Bhuvan portal developed by ISRO gives 2D and 3D images of disaster prone areas.

CHAPTER 4
MITIGATION PLAN

4.1. Drought Mitigation Plan:

4.1.1. Agriculture, Sericulture and Horticulture Structural and Non-structural Mitigation measures:

Agriculture Drought:-Agriculture Drought is defined as an occasion, when the rainfall is less than half of the normal rainfall in four consecutive weeks. Under such agricultural drought situations, farmers are advised to follow the following cultivation practices.

1. Ploughing across the slope.
2. Formation of small section bunds at an interval of 30 to 40 feet across the slope.
3. Opening of Dead furrows at an interval of 10 feet across the slope.
4. Application of more organic matter to the soil.
5. Line planting /sowing across the slope using seed drill.
6. Hardening the seeds before sowing.
7. Growing drought tolerant crops like Ragi, Same, Tur, Avare , cowpea, Horsegram, Castor, Niger etc.,
8. Selection of crop varieties suitable to the situation based on the month of sowing.
9. Staggered method of Nurseries/Planting.
10. Less water consuming crops like Ragi, Maize, Cowpea, Groundnut, Sunflower and vegetables etc., are to be grown in tank-fed areas instead of more water consuming crops like Paddy and sugarcane.

4.1.2 Contingent Cropping Plan:-

Due to delayed monsoon, the following contingent cropping pattern can be followed.

1. Growing short duration Ragi crop varieties like, GPU-48, ML-365 etc.,
2. Growing short duration pulse crops like, Cowpea(C-158, S-488) Horsegram and Avare (H-4) etc.
3. Growing minor millets like Same, Navane etc.
4. Growing drought tolerant Oil seed crops like castor and niger.
5. Growing fodder maize and jawar for fodder purpose.

4.1.3 Micro Irrigation: To enhance the water use efficiency of available irrigation water, Micro irrigation equipment like, Sprinkler sets and Drip sets are distributing to the farmers under subsidy for efficient use of irrigation water for different crops. Out of 3710 hectares of

irrigated Agricultural land area already 958 hectares of area has been brought under micro irrigation systems in the previous years. During the current year area of 2537 hectares will be covered under micro irrigation system.

4.1.4 Horticulture Drought Mitigation Measure(Non-Structural Measures):-

Ramanagara District is one of the important Horticulture district in the Karnataka. Approximately Horticulture crops are cultivated in an area of 1,06,262.25 hectare. Mango, banana, Papaya, Tomato, Potato, Rose and Marigold are the important crops grown in the district. Among the fruit crops Mango is the major crop & among the vegetable Tomato is the major crop grown in the district. This is due to an account of availability of good quality soil and excellent agro climatic condition. Ramanagara is a rainfed region but due to shortfall in rainfall farming community is dependent upon borewell irrigation.Since ground water is declining, dry land horticulture will get increased attention in future years.

- **Water efficiency improvement schemes implemented by the Department of Horticulture:** Micro irrigation scheme: It is implemented with the objective of better utilization of available water. 12000 ha area is covered under drip irrigation till current year, remaining area will be covered in the coming years. At present, 80% subsidy is given to encourage installation of drip irrigation in horticulture crops in the district. Adoption of improved methods of irrigation such as drip would not only save water, power, fertilizer consumption, weeding cost but also helps in controlling environmental degradation.
- **RashtriyaKrishiVikasaYojana- Precision farming in Banana and Vegetables**: An assistance of Rs. 45,000/acre will be given to the each beneficiary belonging to SC/ST categories to encourage the area expansion of Banana plantation and an assistance of Rs. 25,000/acre will be given to the each beneficiary belonging to SC/ST categories to encourage area expansion of vegetable cultivation.
- **Protected Cultivation**: In order to prevent farmers from incurring losses owning to adverse climatic conditions, the Horticulture Department in Ramanagara district is encouraging protected cultivation of vegetables and flowers under the National Horticulture Mission. This will prevent pest attacks and diseases.

a) **Green house:** An assistance of Rs. 4.675 lakhs /1000 Sq. m will be given to the each Beneficiary to establish high cost green house.

b) **Shade net house:** An assistance of Rs. 2.05 lakhs/1000 Sq. m will be given to the each Beneficiary to establish shade net house.

c) **Mulching:** An assistance of Rs. 10000/ha will be given to the each beneficiary for mulching of Horticulture crops (maximum of 2 ha / beneficiary will be given). Mulching helps in controlling weeds & it prevents the water evaporation from the soil.

4.1.5 Sericulture Drought Mitigation(structural) Measures

Depending upon water availability number of crops per annum is decided but owing to scanty rainfall during current year water table has reduced considerably and 70% borewells stopped functioning.

To manage drought remedial measures are enumerated below:

1) Installation of micro-irrigation system.
2) Trenching and mulching.

Mitigation/Prevention Strategies for Epidemics: District has a District Surveillance Officer who keeps track of communicable diseases in the district and advices DHO and Deputy Commissioner to take appropriate action. Stockages of medicines for communicable disease (prophylactic and curative) are maintained by DSO.

Epidemic Infrastructure at District Level:

District has strong epidemic infrastructure having:

Nodal Officer of District	:	District Collector.
Nodal Officer of Health	:	D.H.O.
Nodal Officer for Medical	:	District Surgeon.

At Taluka Level

Nodal Officer of Taluk	:	Tahashildar
For Panchayath	:	Taluka Development Officer
For Medical	:	Administrative Medical Officer
For Health	:	Taluka Health Officer

Prevention of water borne disease: Regular check of water quality is done. Water is chlorinated when required.

Prevention of Vector borne disease: During raining season, larval surveyis conducted. Larval control campaign using ASHA workers, paramedics are conducted in vulnerable areas. Awareness is created using IEC (information education communication) materials. Door to door campaign is also planned in extremely vulnerable areas.

Terracing and turfing of cyanide dumps in BGML area: Dust emanating from cyanide dumps are causing recurrent respiratory infections and allergy leading to asthma. Action has been initiated for terracing and turfing these dumps. Efforts are made to plant pongemia, neem and other creepers besides the grasses through horticulture and forestry departments. The turfing and planting on experimental basis have yielded good results.

Strict Adherence to COTPA Act:Ramanagara has emerged as the second best district in the State in enforcing the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act. With collective efforts from revenue, Police, Health and all the concerned officials, the district was able to achieve COTPA compliance target within a short span of time. A fine amount totalling Rs. 2.14 lakh was collected from those violating the provisions of the Act.

Most people know that smoking is bad for health. Smoking, more than any other factor, reduces people's life expectancy. Smoking is the prime cause of cancer, heart disease, emphysema and many other chronic diseases. **People who smoke regularly lose an average 16 years from their life expectancy compared to non-smokers** and half of all smokers who continue to smoke for most of their lives die of the habit.

In India around **900,000 people die from diseases caused by smoking every year**. For every thousand 20-year-old smokers it is estimated that while one will be murdered and six will die in motor accidents, **250 will die in middle age from smoking, and 250 will die in older age from smoking**.

Mitigation Measures Undertaken to Prevent Life line Building/Vital infrastruture Damage/Collapse:

Municipal authorities, Gram Panchayath, Town Panchayath Officials are asked to monitor life line buildings and undertake retrofitting work wherever possible. Authorities are asked to evacuate people unsafe dwelling and demolish the same if retrofitting is not possible. Important laws which regulates building construction:

- **The Karnataka Town Municipalities (Building) Model Bye-laws, 1981.**
- **National Building Code of India 2005 (NBC 2005):** The National Building Code of India (NBC), a comprehensive building Code, is a national instrument providing 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 be they 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.

4.11. Fire Mitigation Measures

Monitoring compliance of fire safety measures through issuing NOC for building and apartments. Conducting regular fire drills in vital locations and schools under capacity building measures.Upgrading technology and equipments. Karnataka Fire and Emergency Services has in its discretion recently introduced three fire safety measures apart from NBC 2005 code for high rise building taller than 60 meters which are:

1. Water curtains in the basement.
2. Smoke screens in lobbies, staircases and other common areas.
3. Chutes on every two floors from the terrace to the ground.

4.12. Mitigation measures to prevent fall of children into open/abandoned borewells:

Government of Karataka has issued comprehensive guidelines throughGovernment Order No.MlD 10 AJAA 2012, Bangalore, Dated: 31-12-2012, which is annexed in this plan for prevention of the fall into open, borewells. The district administration has closed all the open borewells in govt land. Private borewell owners are also instructed to close open borewell at the earliest failing which strict action will be initiated.

4.13. Road Accident Mitigation Measures:

1. The provisions of Motor Vehicles Act and other related legislation's and regulations are strictly enforced.
2. Adequate Highway and traffic Aid post will be created.
3. Speed monitoring equipment's and computerization of movement of vehicles with adequate checkpoints on the National Highway will be introduced.
4. Identify and designate routes and fixing the time for transportation of hazardous chemicals and other materials.
5. Prohibit the parking of vehicles on National Highway and State Highway.

6. Excavation on roads will be protected well particularly in the night with barricades fluorescent signs and red lights.
7. PWD and National Highway department are directed to remove bottlenecks on National and State Highway.
8. Arrangements will be made adequate embankments/reflector/proper signs on curves.
9. Overtaking in vehicles is regulated.
10. Frequently accidents occurring spots(Black spots)are identified and precautionary measures like speed bumps will be constructed scientifically.
11. Lanes will be marked for pedestrians/Cyclists.

Accident black spots of Ramanagara district are annexed with plan

4.14 Mitigation and Prevention measures for Railway accidents at Unmanned Level Crossing:

The problems of mobility and accident prevention at level crossings can best be addressed by joint efforts of all concerned - Central Government, State Government, Municipalities, NGOs, educational institutions and private operators etc. Indian Railways has taken my steps in this regard to prevent/mitigate accidents.

SAFETY INFORMATION MANAGEMENT SYSTEM (SIMS) A web based system for overall Safety Management of Indian Railway has been developed in which one of the modules is over level crossing. This Level Crossing Management System monitors the data of level crossing by assigning a unique to every level crossing. The Unique ID further correlates to all the developments like pattern of Traffic, signage, condition, up gradation works, accident details linked with satellite imagery.

Policy on level crossings: Indian Railways have framed multi-pronged policy to minimize the accidents and fatalities at level crossings which is summarized below.

Elimination of the existing level crossings: Railways have decided to progressively eliminate unmanned level crossings by various means:

- Road over bridge (ROB).
- Road under bridge (RUB).
- Merger or diversion: Railways have planned construction of Diversion Roads from Unmanned crossing to nearby Manned Xing or ROB/RUB to divert road vehicles for

safe passage and have permitted up to one km long Diversion Roads through Railway land or Railway Bridges.

Other preventive measures: Although the accidents at unmanned level crossings primarily and largely occurred due to negligence of road vehicle users is in clear violation of Section 131 of Motor Vehicle Act, Indian Railways have been taking steps to ensure additional safety at these locations. Some of these measures targeted at safety at unmanned and manned level crossing are as under:

EDUCATING THE PUBLIC: These primarily consist of educating the public en-mass so as to act as preventive measure. This is achieved by including chapters on safety at level crossings in the school syllabus of children.

SAFETY CAMPAIGNS: To educate road drivers about safety at unmanned level crossings, publicity campaigns are periodically launched through different media like quickies on TV, cinema slides, posters, radio, newspapers and street plays etc. Involvement of village Panchayats is also organized in railways' public awareness program.

SAFETY DRIVES and AMBUSH CHECKS: Joint Ambush Checks with civil authorities are conducted to nab errant road vehicle drivers under the provisions of the Motor Vehicles Act, 1988 and the Railways Act, 1989. Surprise checks and night inspections are regularly conducted to check the alertness of gatemen.

SIGNAGE: Proper signage along the track (Whistle Board) and road (Breaker & Stop Board) have been provided on approaches to level crossings so that road vehicle drivers become aware of the existence of a level crossing.

SPEED BREAKER: Speed breakers/rumble strips have been provided on approaches to level crossings so that road vehicle drivers are reminded to reduce their speed.

SPEED RESTRICTIONS: Where the visibility distance is inadequate, speed restrictions for trains are imposed to allow for longer time interval for road traffic to pass in the face of approaching trains.

COMMUNICATION: Telephones are also being provided at all manned level crossing gates.

4.15. Earthquakes Mitigation Measures:

Earthquakes strike without forewarning and generally any measurement on the Rector scale is usually a post-operative measure, prevention in respect of earthquakes is imperative.

The main hurdles as regards planning are structural planning of individual buildings, communication lines, electricity and water supply, health hazards and loss of life, property and employment.

Preventive steps are required in the following areas Public structures, Dams, Roads and maintenance of health and prevention of epidemic diseases.

Since, earthquakes are natural calamities dissemination of proper information, awareness, stocking of proper machinery and equipment are the prerequisites to tackle such a situation.

Before the Disaster

- Check for hazards in the home
- Identify safe places in each room
- Locate safe places outdoors
- Ensure all family members know how to respond after an earthquake
- Teach children when and how to call Emergency
- Have disaster supplies on
- Develop an emergency communications plan in case of separation during the earthquake

During the Disaster

- If indoors: Take cover under a piece of heavy furniture or against an inside wall and stay inside
- If outdoors: Move into the open, away from buildings, street lights, and utility wires and remain there until shaking stops
- If in a moving vehicle: Stop quickly, stay in vehicle, move to a clear area away from buildings, trees, overpasses, or utility wires

After the Disaster

- Be prepared for after shocks
- Help injured or trapped persons and give first aid where appropriate
- Listen to a battery operated radio for emergency information
- Stay out of damaged buildings and return home only when authorities say it is safe.

4.16. Mitigation Plan for the Forest fire:

In case of fire incidence, after receiving information, reaching the spot early is essential to tackling fire effectively. Hence, at strategic points jeeps equipped with firefightingequipment's and personnel will be available who will be patrolling along fixed routes. Upon receiving information from Fire Protection Camps/detection points, they will rush to the spot and help tackle the fire. Continuous patrolling in the area also helps in early

detection of fire and it also acts as deterrent against people's movement in forest areas. Past experience shows that this method has yielded good results.

1. Wherever village forest committees (VFC) have been constituted under the JFPM program, the concerned VFC shall be entrusted with the task of controlling fire in the forest area under its control. Provision shall be made to pay incentives to the VFCs for fire control.
2. In worse situations help and assistance of Fire department will also be sought.
3. Along with the conventional equipment's, modern firefightingequipment's and gear need to be provided to the department along with training to use them.

Fire Detection and Communication

Early detection of fire and communicating it to camps is key to minimizing the fire damage. Hence, for detection, elevated points are selected from where the fire can be detected easily. Few such elevated places are already there with watchtowers. In the above areas staff will be deployed round the clock to detect the fire. The staff will be provided with Walkie-Talkie/mobile to communicate with camps, patrolling squads & control room (DCF office). At these detection points three watchers will be deployed round the clock on 8 hours rotation for four months i.e. from February to May.

Cutting of Fire lines

Fire lines of 3 Meters width need to be cut along the D line i.e., Division Forest and Sanctuary boundary, especially along the boundary abetting villages. This will be in addition to 6 Meters. D line cut for marking the Forest/Sanctuary boundary. This is essential due to the reason that in most of the cases fire enters from these points.

Similarly, fire lines will be cut along Forest/Sanctuary roads and paths and in Tourism routes. There are good wooded areas abetting forest boundary in the divisions which also need to be tackled. These areas, if not protected, will act as entry points of fire and eventually affect the forests and wildlife of the area. Thus, it is proposed to cut fire lines along these areas also.

Monitoring and Reporting:

The preventive measures and preparedness need to be monitored well for effective implementation of the plan. This will be accomplished through frequent visits by senior

officers to the camps, detection points and reviewing the position. The fire lines, D Lines and view lines will have to be checked hundred present so that no weak links are left.

Communication network:

Speedy and efficient communication network plays vital role in detection and control of fire. For the purpose of effective communication, a CONTROL ROOM will be established which shall work round the clock. Likewise the range offices have been equipped with static sets to receive and communicate with camps. The control room shall monitor fire incidents on day to day basis and maintain the record.

Before the Disaster

- Learn and teach safe fire practices
- build fires away from nearby trees or bushes, always have a way to extinguish a fire, never leave a fire unattended
- Obtain local building codes and weed abatement ordinances for buildings near wooded areas
- Use fire-resistant materials when building, renovating or retrofitting structures
- Create a safety zone to separate home from combustible plants and vegetables
- Install electrical lines underground, if possible
- Prune all branches around residence to a height of 8-10 feet
- Keep trees adjacent to buildings free of dead or dying wood and moss
- Remove all dead limbs, needles, and debris from rain gutters
- Store combustible/flammable materials in approved safety containers and keep away from home
- Keep chimney clean
- Avoid open burning, especially during dry season Install smoke detectors on every level of your home
- Make evacuation plans from home and neighborhood and have back up plans
- Avoid using wooden shakes and shingles for roofing
- Use only thick, tempered safety glass in large windows and doors
- •Have disaster supplies on hand (flashlights, extra batteries, portable radios, first aid kits, emergency food and water, nonelectric can opener, essential medicines, cash and credit cards, and sturdy shoes)
- Develop an emergency communication plan in case of separation
- Ask an out-of-state relative to serve as the "family contact"

During the Disaster

- Crouch in a pond or river and cover head and upper body with wet clothing
- If a body of water is unavailable, look for shelter in a cleared area or among a bed of rocks and lie flat and cover body with wet clothing or soil.
- Listen to radio for emergency information
- Remove combustible items (outdoor furniture, umbrellas, tarp coverings, and firewood) from around the home
- Take down flammable drapes and curtains and close all Venetian blinds or noncombustible window coverings
- Close gas valves and turn off pilot light
- Place valuables that will not be damaged by water, in a pool or pond

After the Disaster

- Be cautious when reentering a burned wild land area - hot spots can flare up without warning
- Check the roof immediately and extinguish any sparks or embers and the attic for hidden burning sparks
- Re-check for smoke and sparks throughout the home for several hours afterward
- Breathe the air close to the ground through a wet cloth to avoid scorching lungs or

4.17 Mitigation Plan of Central Government

National Action Plan on Climate Change

On June 30, 2008, Govt. of India released India's first National Action Plan on Climate Change (NAPCC), outlining existing and future policies and programs addressing climate mitigation and adaptation.

Earthquakes

National Earthquake Risk Mitigation Project (NERMP): Understanding the importance of the management of such hazardous situations caused by the earthquake, the Government of India has taken a national initiative for launching a project of 'National Earthquake Risk Mitigation Project (NERMP). The proposed project aims at strengthening the structural and non-structural earthquake mitigation efforts and reducing the vulnerability in the high risk districts prone to earthquakes.

Drought

The Department of Agriculture & Cooperation, under the Ministry of Agriculture, Government of India released a manual for drought management in November, 2009. The manual suggests for looking beyond the traditional drought management through famine codes for dealing with situations of mass hunger and collective penury. It focuses on plans which take into account all capabilities of the state to address the impact of drought i.e., focus on mitigation measures, tapping newer technologies, enabling the systems adapt to the new legal framework and including improvement and area development program in drought mitigation.

Fire Accidents

The overall objective of the scheme is to strengthen fire and emergency services in the country and progressively transform it into Multi-Hazard Response Force capable of acting as first responder in all types of emergency situations.

Oil Industry related accidents

In the oil industry, the disaster management plan is maintained at the area level and covers a wide aspect (since their activities are likely to affect local people also). Oil companies have established their Crisis Management Plan at the company level and at the HQ level also with specialist to deal with fires and other identified hazards.

Chemical Disasters

The MoEF has taken the following measures towards developing a Regulatory Framework for Chemical Safety:

(i) The Environment (Protection) Act was enacted in 1986. Under the Act, two rules have been notified for ensuring chemical safety, namely,

(a) The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (MSIHC) amended in 1994 and 2000;

(b) The Chemical Accidents (Emergency, Planning, Preparedness, and Response) Rules, 1996 (EPPR) under the Environment (Protection) Act, 1986.

(ii) The Public Liability Insurance Act 1991, amended in 1992 and the Public Liability Insurance.

Prevention of Disasters in Mines

The various safeguards and preventive measures against coal mine fires are outlined in the Coal Mines Regulations, 1957 and related circulars, notifications and technical instructions.

Epidemics

National Vector Borne Diseases Control Program (NVBDCP) is the key program for prevention/control of outbreaks/epidemics of malaria, dengue, Chikungunya etc., vaccines administered to reduce the morbidity and mortality due to diseases like measles, diphtheria, pertussis, poliomyelitis etc.

14.16 Mainstreaming of Disaster Risk Reduction in Developmental Strategy

Prevention and mitigation contribute to lasting improvement in safety and should be integrated in the disaster management. The Government of India has adopted mitigation and prevention as essential components of their development strategy. The plan emphasizes the fact that development cannot be sustainable without mitigation being built into the developmental process.

CHAPTER-5

INSTITUTIONAL MECHANISM

The institutional structure for disaster management in India is in a state of transition. The new setup, following the implementation of the DM Act 2005, is evolving. The National Disaster Management Authority has been established at the center, and the SDMA at state and district authorities at district level are gradually being formalized. In addition to this, the National Crisis Management Committee, part of the earlier setup, also functions at the Centre. The nodal ministries, as identified for different disaster types of function under the overall guidance of the Ministry of Home Affairs (nodal ministry for disaster management). This makes the stakeholders interact at different levels within the disaster management framework.

There are two distinct features of the institutional structure for disaster management in India. Firstly, the structure is hierarchical and functions at four levels – centre, state, district 4and local. Secondly, it is a multi-stakeholder setup, i.e., the structure draws involvement of various relevant ministries, government departments and administrative bodies.

5.1 Disaster Management Act, 2005

This Act provides for the effective management of disaster and for matters connected therewith or incidental thereto. It provides institutional mechanisms for drawing up and monitoring the implementation of the disaster management. The Act also ensures measures by the various wings of the Government for prevention and mitigation of disasters and prompt response to any disaster situation.

The Act provides for setting up of a National Disaster Management Authority (NDMA) under the Chairmanship of the Prime Minister, State Disaster Management Authorities (SDMAs) under the Chairmanship of the Chief Ministers, District Disaster Management Authorities (DDMAs) under the Chairmanship of Collectors/District Magistrates/Deputy Commissioners. The Act further provides for the constitution of different Executive Committee at national and state levels. Under its aegis, the National Institute of Disaster Management (NIDM) for capacity building and National Disaster Response Force (NDRF) for response purpose have been set up. It also mandates the concerned Ministries and Departments to draw up their own plans in accordance with the National Plan. The Act further contains the provisions for financial mechanisms such as creation of funds for response, **National Disaster Mitigation Fund and similar funds** at the state and district

levels for the purpose of disaster management. The Act also provides specific roles to local bodies in disaster management.

5.2. National Level Institutions

National Disaster Management Authority (NDMA): The NDMA has been mandated with laying down policies on disaster management and guidelines which would be followed by different Ministries, Departments of the Government of India and State Government in taking measures for disaster risk reduction. It has also to laid down guidelines to be followed by the State Authorities in drawing up the State Plans and to take such measures for the management of disasters.

National Executive Committee (NEC): A National Executive Committee is constituted under Section 8 of DM Act, 2005 to assist the National Authority in the performance of its functions. NEC consists of Home Secretary as its Chairperson, ex-officio, with other Secretaries to the Government of India in the Ministries or Departments having administrative control of the agriculture, atomic energy, defense, drinking water supply, environment and forest, finance (expenditure), health, power, rural development science and technology, space, telecommunication, urban development, water resources.

National Institute of Disaster Management (NIDM): NIDM is a statutory organization under the Disaster Management Act, 2005. Section 42 of Chapter VII of the Disaster Management Act, 2005 entrusts the institute with numerous responsibilities, namely to develop training modules, undertake research and documentation in disaster management, organize training program, undertake and organize study courses, conferences, lectures and seminars to promote and institutionalize disaster management, undertake and provide for publication of journals, research papers and books.

National Disaster Response Force (NDRF): The National Disaster Response Force (NDRF) has been constituted under Section 44 of the DM Act, 2005 by up-gradation/conversion of eight standard battalions of Central Para Military Forces i.e. two battalions each from Border Security Force (BSF), Indo-Tibetan Border Police (ITBP), Central Industrial Security Force (CISF) and Central Reserve Police Force (CRPF) to build them up as a specialist force to respond to disaster or disaster like situations.

5.3. State level Institutions

The disaster management act, 2005 (NO53 / 2005) dated 23rd Dec 2005 received the ascent of the President, Government of India.

- Based on the provisions contained in the Disaster Management Act 2005, the Karnataka State has adopted the DM Act 2005 and as per the section 14(1) the state has established State Disaster Management Authority. The Chief Minister of Karnataka is the Ex-officio Chairperson of the Karnataka State Disaster Management Authority and 8 Cabinet Ministers are members to the Authority.
- As per the DM Act 2005, the State Government has constituted the District Disaster Authority in each of the district with Deputy Commissioners of the district as the chairperson of the authority and concern department as its members (including ZP).
- The State Executive Committee (SEC) is chaired by the Chief Secretary, Government of Karnataka and Principal Secretaries of Agriculture, Home, Rural Development and Panchayat Raj and Director General of Fire & Emergency Services (permanent invitee) are members of the SEC. SEC meets every quarter or whenever there is emergency situation to take stock of the situation and give necessary instructions to all stakeholders to address the situation. The Chief Secretary and SEC Chairperson is the Commander (Incident Command System) at the State level.
- Government has constituted the State Crisis Management Committee under the Chairmanship of Chief Secretary of Government of Karnataka and other stake holders as its members, vide G.O number RD 61 ETC 2007(P-1) dated 27-04-2010.
- The Administrative structure in the Government for Disaster Management is under the Revenue Department and is being headed by the Secretary to Government, Revenue Department (Disaster Management), the Deputy Secretary, Under Secretary and DM section with supporting staff.
- The KSDMA co-ordinates with all departments of the state to effectively implement the DM Act 2005. It has got responsibility to address Disaster Management issues and Disaster Risk Reduction programs.
- KSDMA has prepared Disaster Management Guidelines, Policies, Standard Operating Procedures for 11 key departments, State Disaster Management Plan and District Disaster Management Plan.

5.4. District level Institutions

District Disaster Management Authority (DDMA): Section 25 of the DM Act provides for constitution of DDMA for every district of a state. The District Magistrate/ District Collector/Deputy Commissioner heads the Authority as Chairperson besides an elected representative of the local authority as Co-Chairperson except in the tribal areas where the Chief Executive Member of the District Council of Autonomous District is designated as Co-chairperson. Further, in district, where ZilaParishadexist, its Chairperson shall be the Co-Chairperson of DDMA. Other members of this authority include the CEO of the District Authority, Superintendent of Police, Chief Medical Officer of the District and other two district level officers are designated by the state Government.

THE DISTRICT DISASTER MANAGEMENT AUTHORITY(DDMA), Ramanagara.

1. Deputy Commissioner, Ramanagara. **Chairman**
2. President ZillaPanchayath, Ramanagara **Co-Chairman**
3. Chief Executive Officer, ZP, Ramanagara Member
4. Superintendent Of Police, Ramanagara Member
5. District Health Officer, Ramanagara Member
6. Executive Engineer, ZP, Ramanagara Member
7. Joint Director, Agriculture DeptRamanagara Member
8. Addl. Deputy Commissioner, Ramanagara **Chief Executive Officer of DDMA**

Duties and responsibilities of key functionaries in the district

- The emergency responsibilities of key persons in the district are listed below. These duties and responsibilities are common to all types of major emergencies or disasters,(i.e., Natural or Manmade). The Emergency Organization Members will prepare, maintain and be guided by these during any major disaster in the district. Individuals assigned to these functions are expected to co-ordinate their actions with the Deputy Commissioner, who is the District Disaster Manager, will co-ordinate the overall action with all other agencies involved including the District Administration.
- It may be noted that depending on the type of emergency and also availability of staff and resources, functions of various agencies may vary. At times, each person may be required to assume additional responsibilities in addition to their normal duties. This would be the prerogative of Deputy Commissioner to assign the additional responsibilities to the members of the emergency organization.

- It may be necessary to develop agreements with neighboring districts or other organizations if resources are not available within the district for some of these functions

Following are the duties and responsibilities of the members of the Emergency Organization. These are general in nature and applicable to all types of emergencies.

Role of NGOs in Disaster Management: NDMA has framed on the role of NGOs in disaster preparedness, mitigation and response and spell out the institutional mechanism for improving the effectiveness of disaster management through effective coordination between NGOs and the government at different levels.

Hierarchical Structure of Authority and Committee

In this structure, National Disaster Management Authority is the authority for formulation of Policy and guidelines for all disaster management work in the country. The state authorities further lay down the guidelines for departments of the state and the districts falling in their respective jurisdictions. Similarly, district authorities direct the civil administration, departments and local authorities such as the municipalities, police department and civil administration. The State Executive Committees are responsible for execution of the tasks envisaged by the authorities.

National Plan on Disaster Management

An institutional mechanism for preparation of the National Plan has been put in place, which is under preparation in three parts namely:-

(i) National Response Plan,

(ii) National Mitigation Plan and

(iii) National Capacity Building Plan.

CHAPTER 6:

COMMUNICATION AND EARLY WARNING SYSTEM

6.1 Nodal agencies having mandate to issue warningbulletins

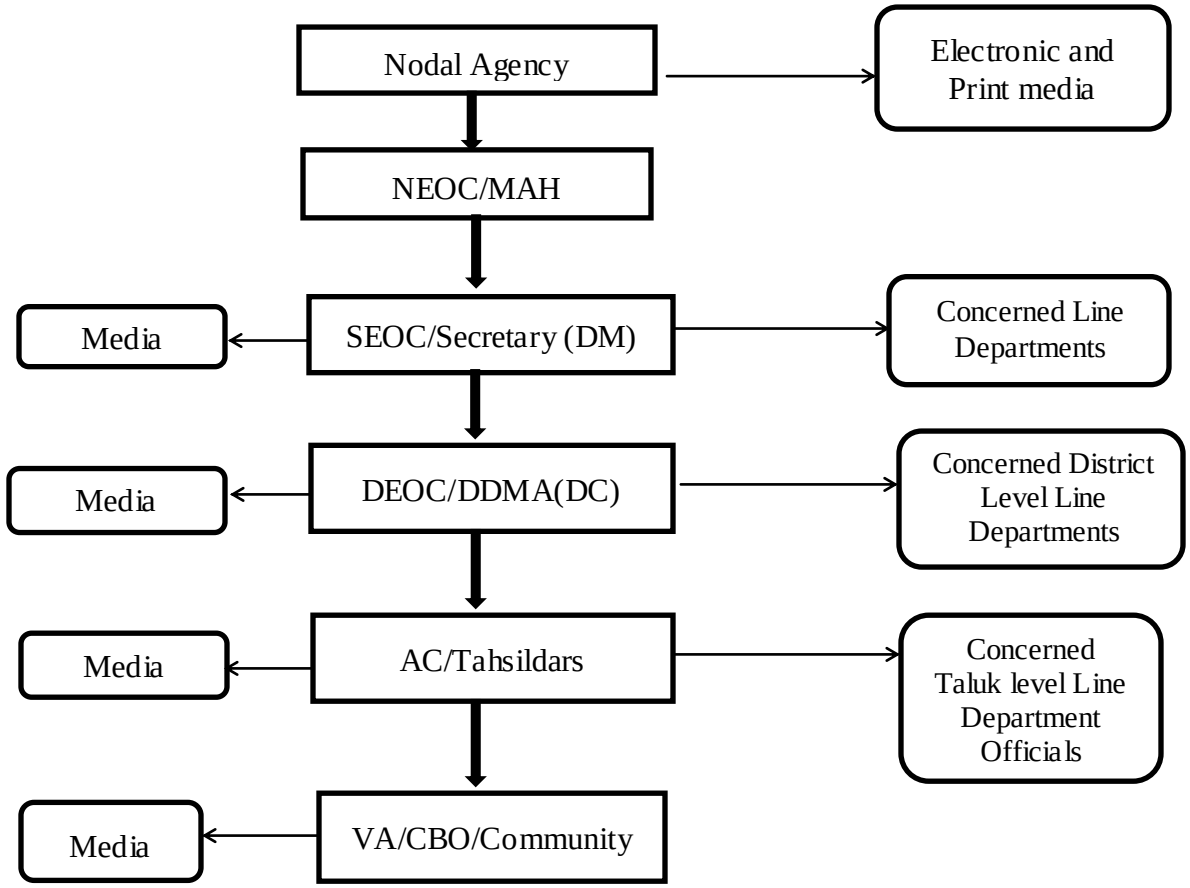
Type of Disaster	Nodal Agencies
Earthquake	IMD, KSNDMC (in Karnataka)
Floods	IMD, CWC, KSNDMC (in Karnataka)
Cyclone	IMD and KSNDMC (in Karnataka)
Drought	IMD and KSNDMC (in Karnataka)
Tsunami	Department of Ocean Development, IMD
Major Landslides	Geological Survey of India
Epidemics	Ministry of Health and Family Welfare
Chemical Disasters	Ministry of Environment and Forests, Department of Factories, Boilers, Industrial Safety and Health(State Government)
Industrial Accidents	Ministry of Labor, Ministry of Environment and Forests, Department of Factories, Boilers, Industrial Safety and Health(State Government)
Rail Accidents	Ministry of Railways
Air Accidents	Ministry of Civil Aviation
Mining Disasters	Department of Mines
Nuclear Accidents	Department of Atomic Energy
Fire	Ministry of Home Affairs(Fire and Emergency)
Avalanches	Snow and Avalanche Study Establishment
Head and Cold Waves	IMD and KSNDMC(in Karnataka)

These agencies keep track of developments in respect of specific hazards assigned to the mand inform the designated authorities/agencies at National, State and District levels about the impending disasters. All these agencies have guidelines for early warning of disasters. The warning or occurrence of disaster will be communicated to

1. Chief Secretary, Relief Commissioner, Emergency Operation Center.
2. Regional Commissioner.
3. Deputy Commissioner and all district level officials, Municipal Councils.
4. Officers of central government located within the district.

5. Guardian Minister of the district, MP, Mayor/ZP President, MPs, Local units of the Defense Services.

6.2. Information Dissemination flow chart where early warning signals are available

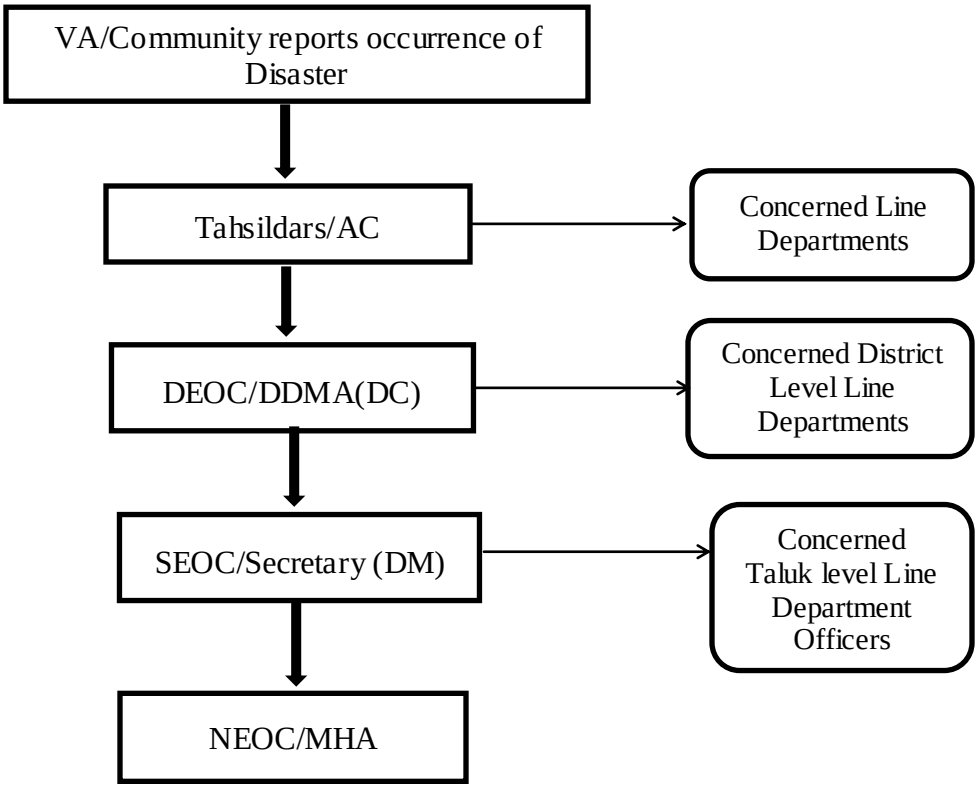


Receipt of Early Warning and Dissemination

NEOC, MHA and the SEOC receive early warning and assimilate and disseminate information in terms of issuing alerts when a disaster is likely to occur is imminent. The level so alert for each disaster type is given in the SOPs. On receipt of early warning, contingency measures are activated, these measures include

- Communication of early warning.
- Continuous situation assessment.
- Planning and implementing response.

Information dissemination flow chart in absence of early warning system



KSNDMCin Karnataka apart from the above nodal bodies Karnataka State Natural Disaster Monitoring Center (KSNDMC) issues alerts and early warning. Brief profile of KSNDMC as follows.

6.3. Karnataka State Natural Disaster Monitoring Center (KSNDMC)

KSNDMC is a state-of-art center natural disaster monitoring which is a registered society of Government of Karnataka with a mandate to achieve following objectives.

- Hazard mapping and vulnerability studies.
- Strengthening of information technology for Natural Disasters Management.
- Monitoring and impact assessment of natural hazards.
- Human Resource Development mainly by imparting training.
- Natural Disaster early warning system.

- Karnataka State has the distinction of being first in the country to establish Drought Monitoring Cell (DMC) in 1988 as an institutional mechanism to monitor the Drought.
- Activities broadened to also include monitoring other natural disasters and renamed as Karnataka State Natural Disaster Monitoring Centre (KSNDMC) in 2007.
- Executive Committee chaired by Principal Secretary, Dept., of IT, BT and S&T with Principal Secretary, Revenue as Vice Chairperson – Members from line depts., and scientific organizations.
- Governing Body headed by the Chief Secretary with Development Commissioner as Vice President – Members comprising line departments and Scientific organizations.
- The Master Control Facility of KSNDMC is established in 10 acres and at Major SandeepUnnikrishnan Road, Near Yelahanka-Attur Layout in Bangalore.
- The master control center is operational **24hrsx7daysx365days** providing information, reports, advisories to the community, Research Organizations and the Government.

- KSNDMC has been serving as a common platform to the various response players in the field of natural disaster management by providing timely proactive science and technology inputs.
- The Centre provides inputs to the farming community, agriculture and horticulture based sector, fisherman, transport sector, power and electricity sector, State and District level Disaster Management Authorities in Karnataka through state of the art natural hazards monitoring sensors, information and communication system.

Status of progress in installation of monitoring sensors and real time data base management:

- GPRS enabled and solar powered Telemetric Rain gauges are established and operational at 2565 stations in Karnataka.
- Telemetric Weather Monitoring Stations installed and operational at 747 stations in Karnataka.
- VSAT enabled and solar powered Permanent Seismic Monitoring stations installed and operational in the State.
- Development and calibration of Hobli level weather forecast mathematical model has been initiated in collaboration with CSIR – CMMACS, GoI.
- Information, reports, advisories being made available through mobile phones, e-mail and web portalto DC's, CEO's. HQA's, AC's, Tahsildars, JD's (Agriculture department), AD's (Agricultures department), Agriculture department Officers, SP's, RaithaSamparkaKendras, farmers facilitators under Bhoochethana Program, KrishiVigyanaKendras (KVKs), Universities, Civil Defense, Homeguards, Print and Electronic Media.
- An Interactive Help-Desk called **VarunaMitra** has been functioning 24x7x365 days to give advisories to farmers.

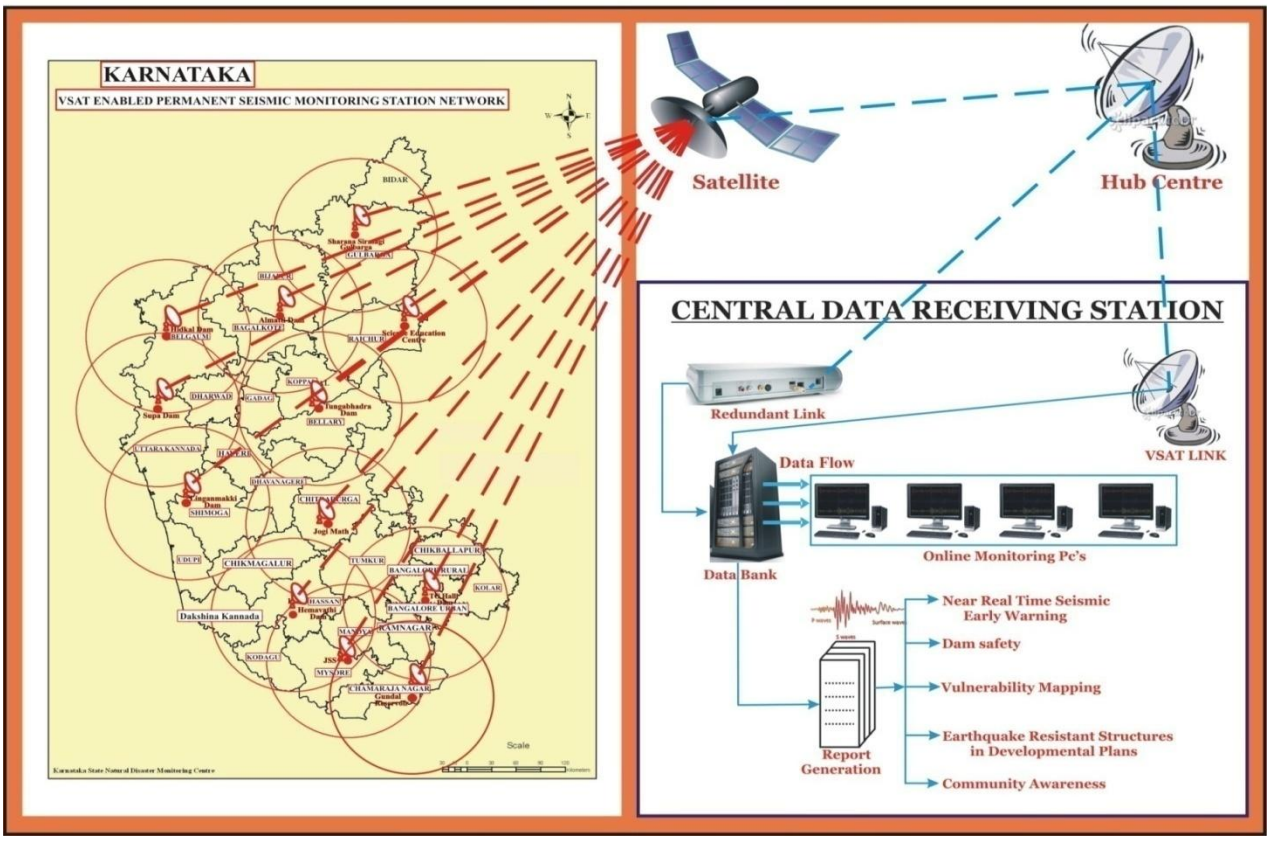
Master Control Centre (MCC): It is established centrally located MCC at Bangalore to receive and analyze data, received on near real time, from:

- ✓ Telemetric rain gauges.
- ✓ Satellite and GPRS linked weather stations.
- ✓ Doppler Weather Radar.
- ✓ Storm surge stations.
- ✓ Earth quake monitoring stations.

Permanent Seismic Monitoring Stations (PSMS)Network of Karnataka

A Typical Schematic Diagram of the VSAT Enabled Near Real Time Permanent Seismic Monitoring Station Network in KARNATAKA

KSNDMC



GPRS enabled Telemetric Rain Guage of KSNDMC

GPRS enabled Telemetric Weather Station Network of KSNDMC

KSNDMC provides Science and Technology based inputs and assistance proactively line-departments of Government of Karnataka:

- **The Department of Revenue, GoK:** This Centre renders support in identifying, mapping vulnerable areas, **providing alerts and early warning to the revenue functionaries up to Grampanchayath level**. The areas affected by Drought, Floods and other natural hazards are identified and mapped on day-to-day / event based. KSNDMC provides the services to the Revenue department on day-to-day basis and has been successful in integrating with the needs of Revenue Department.
- **The Department of Agriculture, GoK:** The KSNDMC participates in the Video-Conference conducted every week and provides information about Rainfall, Temperature, Relative Humidity and Moisture Stress along with weather forecast at Hobli-level. The inputs provided are enabling Agriculture Department to plan their activities and also to evolve contingency plans. The customized information is being provided to the functionaries of the department up to Grampanchayath level.
- **The Department of Water Resources, GoK:** The KSNDMC also provides information on anticipated flow in the major river systems in the state.
- **The Department of Rural Development &Panchayath Raj, GoK:** Providing information on the health of the rural drinking water supply by monitoring and assessing Bore-well and Overhead Tank storages. A pilot study has been taken up in MulbagalTaluk, Ramanagara District.

CHAPTER 7
DISASTER SPECIFIC MANAGEMENT AND RESPONSE PLAN

7.1. EARTHQUAKE MANAGEMENT

The recent devastation in Gujarat has been eye-opener as regards the magnitude of loss to human life and property. Hence, the District Administration has geared up the various Departments to effectively meet the challenge of an earthquake.

Since, earthquakes strike without forewarning and generally any measurement on the Richter scale is usually a postoperative measure, prevention in respect of earthquakes is imperative.

The main hurdles as regards planning are as follows:

- ❖ Structural planning of individual buildings.
- ❖ Communication lines.
- ❖ Electricity and water supply.
- ❖ Health hazards.
- ❖ Loss of life, property and employment.

Preventive steps are required in the following areas:

- ✓ Public structures.
- ✓ Dams.
- ✓ Roads.
- ✓ Maintenance of health and prevention of epidemic diseases.

2. Precautions to be taken during earthquake

1. Public to be educated to remain calm and not to panic.
2. Not to enter or exit from buildings when tremors are felt.
3. If indoors, take protection/shelter under a heavy object, which can sustain weight of heavy objects. Ex. A heavy desk, a study table, a strong cot etc.
4. Protect the head with covering such as books, pillows, blankets etc.

5. If outdoors to stay away from buildings, walls, tress, etc. as they are likely to collapse or get uprooted.
6. If driving, it is safe to stay inside the vehicle, as it is likely to provide protection from falling objects.

3. Action Plan During earthquakes

a. Inform the core committee members to swing into action.

b. Summon the fire brigade.

c. Inform Road Transport Authorities to stop movement of vehicle.

d. Mobilize volunteers, youth, sportsmen, social service workers, Ex-servicemen, Medical personal.

e. Make shift arrangements for temporary shelters to displaced persons.

f. Providing water and food to the affected.

4. Relief and Temporary Shelter for Earthquake Victims:

The first and foremost requirement consequent upon the earthquake would be an alternate shelter that is capable of withstanding the next tremor. District Administration has taken steps along with the public works department to ensure that any new constructions that are taken up are capable of withstanding quakes according to requirement. Wherever possible old and dilapidated buildings are subjected to inspection by the Public Works Department and necessary reinforcements provided. Road and Rail network to be kept watch to ensure that people do not panic and desert their dwellings.

Control rooms with wireless, transportation and adequate food supplies to be set up at places affected by tremors to keep in constant touch with the District Administration. First aid and medical facilities to be provided on war footing.

5. TASK FORCE FOR DISASTER MANAGEMENT DURING EARTHQUAKES

Assistant Commissioner

(to communicate with core committee, supervise and co-ordinate between Depts.)

AEE, PWD	Dy. SP/CPI	Tahasildar	Taluk Medical Officer	AEE, ZP	Animal Husbandry & Veterinary Services

To provide transport to evacuees and undertake repairs to roads and buildings.	To maintain law and order and provide free passage to evacuees	To provide food, drinking water and milk	To co-ordinate with PHCs and provide medical relief.	To provide clean drinking water	To provide fodder and veterinary services.

Recovery and Reconstruction Plan:

Municipal authorities, Gram Panchayath, Town Panchayath Officials were asked to keep an eye view of buildings and to take precaution care of such weak buildings, to keep up the bad drainage works repaired and to identify the risk oriented infrastructure. All the PWD, PRED officers were asked to be in the red alert.

7.2. Flood Management

Floods caused extensive damage to human, animal and plant life. Flood result in rendering many people homeless leading to devastation and total chaos to lack of communication and means of transportation.

Preventive steps:

Certain advance measures are taken to prevent extensive damages caused by floods.

- Embankments
- Flood ways and diversions of rivers.
- Protection of river banks.
- Community-cum-shelter buildings.

Emergency measures to be taken

It is imperative that rescue and evaluation operations are taken up by the district administration without any loss of time. People living in low-lying areas are forewarned to evacuate the place and are shifted to a safe environment. Relief centers are to be set up to provide adequate food, clothing, shelter and water to the persons shifted. For shifting people and animals rafts and boats are to be kept ready and services of ex-service men and sports persons who are good swimmers are employed for relief measures.

7.3. Drought Management

Since the District is prone to frequent droughts, emphasis is laid on monitoring the situation during droughts. Identification of drought-prone villages and taluks has been done and contingent plans have been worked out to meet any unforeseen situation. The following steps have been taken on a regular basis by the District Administration and Panchayat Offices to combat the menace of drought:

- Digging of bore wells.
- Providing hand pumps and motor pumps wherever required.
- Repair of existing hand pumps and motor pumps.
- Digging of wells.
- De-silting of wells, tank beds.
- Providing pipelines for supply of water.
- Providing water to problems areas through water tankers and other means.
- Providing water storage facilities at all block levels.

Since water contamination and water borne diseases can cause health hazards precautions are taken to ensure that drinking water is properly purified before consumption. The District Health officials and the ZP Department monitor supply of drinking water and ensure that there is no scope for water contamination.

Providing Food and Fodder During Drought:

Since drought has a cyclic effect there is a drain on resources such as food, water, employment, etc., as there is inadequate soil moisture there is shortage of food and fodder.

The focus during drought would be on the following vital areas:

- Water conservation.
- Supply of essential commodities.
- Employment generation.
- Early warning systems.
- Health care.
- Water supply to remote areas by tankers etc.

- Emphasis on the poorer classes of society.
- Priority to drinking water over irrigation.
- Training to NGO's Volunteers and youth.

The following Action Plan has been formulated by the District Administration to deal with the situation of drought.

Contingency plan prepared in co-ordination with the Water Supply Department, ZP, TP, Municipal Corporations, Irrigation Department and Health Department to ensure availability of adequate quantity of drinking water.

Food: Department of Food and Civil Supplies is in readiness to face any situation of drought and has maintained stock register of availability of food grains.

Health: Department of Health has trained personnel on its rolls to deal with situation of drought and forms an important organ of the Core Committee.

Fodder: An adequate step taken to ensure that fodder for cattle is stored in case of impending drought.

Veterinary Facilities: Veterinary Department has been instructed to store adequate stock of medicines to save lives of cattle and livestock.

TASK FORCE FOR DISASTER MANAGEMENT DURING DROUGHT

Assistant Commissioner

(to communicate with core committee, supervise and co-ordinate between departments)

AEE, PWD	AEE, ZP	Tahasildar	Taluk Medical Officer	AEE, MI	Animal Husbandry & Veterinary Services
To provide employment to the needy victims	To provide drinking water to affected areas	To provide food, drinking water and milk	To co-ordinate with PHCs and provide medical relief and set up medical camps if necessary	To generate employment to the needy victims	To provide fodder and veterinary services for livestock.

7.4 BIOLOGICAL DISASTERS AND EPIDEMICS MANAGEMENT

Disasters caused by living organisms such as bacteria, virus, fungus, etc. are termed as biological disasters. These organisms may cause epidemics.

Since, epidemics are major health hazards it is necessary to have trained persons to handle disasters of such nature. Proper training in first aid, hygiene and treatment is essential to deal with biological disasters.

To effectively treat cases of epidemics public awareness and education, before and after the epidemic, is vital.

Studies have related that the following are major problems faced before and during the outbreak of epidemics.

Inadequate medical and health facilities.

- Inadequate supply of pure water.
- Lack of medical and health assistance.
- Absence of effective control of common diseases.
- Unsanitary conditions.
- Malnutrition.

2. STEPS FOR EFFECTIVELY TACKLING BIOLOGICAL DISASTERS

- Setting up emergency health service.
- Preparing a contingency plan.
- Training of personnel to deal with such emergencies.
- Awareness camps for epidemic prone areas.

Local health authorities have been instructed to be in preparedness with medicines and other infrastructure to deal effectively with outbreak of any epidemic in the district.

3. TASK FORCE FOR DISASTER MANAGEMENT DURING BIOLOGICAL DISASTERS AND EPIDEMICS

Assistant commissioner

(to communicate with core committee, supervise and co-ordinate between Departments)

AEE, PWD	Tahasildar	Taluk Medical Officer	Animal Husbandry & Veterinary Services
To provide temporary accommodation to the affected persons where necessary	To provide food, drinking water and milk and supervise medical facilities	To co-ordinate with PHCs and provide medical relief and set up medical camps, if necessary	To provide fodder and veterinary services for live stock

FOOD POISONING: -

Food poisoning is a phenomenon where a large number of people could get affected after consuming contaminated food. This happens mostly during religious and social functions during which food is prepared in make shift kitchen on mass scale. This calls for immediate action by the district administration to provide medical attention, identify the source of poisoning and take corrective actions.

CATTLE DISEASE: -

In the event of an outbreak of cattle diseases like foot and mouth disease, large population of cattle can get affected. Such emergencies will require help of veterinary doctors and possible disposal of large quantity of milk, milk products and meat.

7.5 ACCIDENT RELATED DISASTERS

ROAD ACCIDENT:

Road Accident is a major killer and takes place without warning. Rate on road accidents, are ported indicate that 70% of road accidents, areas from drivers negligence. Some other reasons are poor road condition, heavy traffic; poor vehicle maintenance possible impacts of accident of individuals are loss of life, Trauma Care & burns.

Since accidents general result in injuries, burns or loss of life providing emergency medical facilities is of utmost importance. Relief teams comprising medical personnel and transport

authorities have to be rushed to the spot provide first aid and shifting the injured to the nearest hospital.

Upon arrival at the accident spot the team should immediately provide first aid to the victims and look for persons trapped inside the vehicle. Assistance of the local police should be sought to disperse any crowds that may hinder effective relief measures. If the magnitude of the accident is high help of local NGOs and volunteers may be taken.

In case of major building collapse the major role is to be played by the Fire Department with the assistance of the Police and Health Authorities.

Shifting victims to the nearby hospital should be done after providing necessary first aid. Necessary equipment to remove debris should be kept readily available to save victims who may be buried inside. Volunteers and NGOs must be trained properly to handle such so that emergency relief is carried on smoothly.

Fire disasters occur mainly due to carelessness or mischief by miscreants. Preventive measures such as avoiding storage of large quantities of combustible materials in one place, firefighting equipment in petrol filling stations, textile, plastic, paper and wood industries should be insisted upon during inspection by the concerned authorities.

Personnel of the fire brigade are well equipped to handle any fire hazards and regular drills and training sessions are held.

7.6 Forest fire

disaster management plan for the forest areas of Ramanagara district

Fire plays a very critical role in the habitat management. One of the main factors that have accelerated the degradation of forest cover is the occurrence of fire which has almost become an annual feature. The glaziers, firewood and MFP collectors and tourists tend to set fire deliberately or by accident. Smugglers and poachers also set fire to the forest to divert the attention of field staff. Due to the forest fire the natural regeneration is lost and the forests are deprived of rich humus. Wild animals particularly herbivores and reptiles are the worst sufferers for want of green foliage's while innumerable soil fauna will be destroyed , which play a very important role in maintaining the ecological balance by decomposing and releasing energy from dead plant and animals. Hence preventive and fire control measures have been given much importance in the habitat development.

Forests are very valuable in this district and form a major portion of the area .

Total Area of Forest.

Ramanagara Division - 20,620 hector

Probable causes for forests fires.

The forest areas are susceptible for fire in the months of January to end of June i.e. the summer season. Considerable damage takes place every year due to the ground fire that occurs in the forests. The leaves which fall on the ground is the fuel for fire. Also the grass dries because of sunlight & becomes fuel to the fire. Also dried bamboos in the forests act as fuel to the fire. Plantation which are raised are also susceptible to the fire and at the initial stages if there is fire then the plantation itself fail and causes heavy loss. In the high forests the regeneration is severely affected. The humus is also burns & causes losses of Carbon & fertility of soil, there is also resultant compaction of soil and consequent poor porosity. Further forest regeneration is also affected. The fire also affects the former and the young regeneration of the forest and destroys. Medicinal plants and rare herbs. Normally the fire occurs intentionally by the villagers for the purpose of getting fresh grass for the purpose of grazing. There are accidental fires due to negligence of the nearby villagers & Poachers. The fires are controlled immediately by fire watchers & staff with the assistance of villagers.

Existing practice to tackle the forest fires are as follows :-

Prior to the fire season the fire lines of 3.2 m. width are created to stop the fire from entering from one block to another, these fire lines are created near roads, around plantations, along forest boundaries, D'lines and strips within forest areas.

Forest camps are established at sensitive points and forest staffs stay round the clock & rush to the spot in groups as soon as they get the fire occurrence information over wireless and extinguish the fire.

7.7 Emergency Response Procedure - Industrial Disasters Fire / Explosion

Leakage of LPG from storages or tankers and subsequent fire / explosion can cause widespread damage. Emergency response action for tackling LPG leaks is given below.

- Leaks from LPG storages, tankers, LPG pump glands, pipes flanges or pipeline ruptures or from vent emissions due to cargo tank over-pressure or relief valve failure will initiate a vapour cloud. Therefore, in case of release of large quantity of flammable vapour, immediate effort should be directed to eliminate source of

ignition. In such event, eliminate all sources of ignition i.e. open flames, welding, cutting, operation etc.

- If possible, isolate the vessel involved in the incident.
- Direct or disperse the vapour cloud away from such sources by means of fixed and/or mobile water sprays or by water fog arrangement.
- If ignition does occur, there are chances of flash back to the source of leak. Leaks from pipelines are likely to be under pressure and these, if ignited, will give rise to a jet flame.
- In such a case it may be safer to allow the fire to burn out while protecting surroundings by copious cooling water rather than to extinguish the fire and risk a further vapour cloud which may result in explosion or flash back on encountering ignition source again.
- Spillage of POL products in the industry will generally be contained in dyke resulting in confined pool. Leakages from road/rail tankers will result into unconfined pool. Emergency response actions for tackling such leaks are given below.
- A liquid spillage on land from tank or pipeline ruptures may be in large quantities and will generally be contained in bunded areas or culverts. The ignition of the ensuing vapour cloud would then result in a pool fire.
- If possible, isolate the vessel involved in the incident.
- Firefighting operation should be carried from upwind direction.

Toxic gas release

The major hazard of the MAH units is the toxic gas release. The hazardous material stored in these industries is chlorine.

Table 5.1: Physiological effects on human beings at various concentrations of chlorine

Sl No.	Effects	Concentration in ppm
1.	Least amount required to produce slight symptoms after several hours‟ exposure	1.0
2.	Least detectable odor	3.5
3.	Max. amount that can be inhaled for one hour without serious disturbances	3.0
4.	Noxiousness, impossible to breathe	5.0
5.	Least amount causing irritation of throat	15.1
6.	Least amount coughing	30.2
7.	Amount dangerous for 30 min. to one hour exposure	40-60
8.	Lethal dose	1000

First-aid and Medical management of chlorine exposures

1. General Information

Chlorine is a greenish yellow color, pungent odor gas.

1. It is stored in liquid form

2. It is a toxic chemical and corrosive

3. It is mainly local irritant to lungs, eyes, skin

4. Systematic involvement is rare and occurs in severe exposures

Threshold limits

TLV – 0.5 ppm (TLV – Threshold Limit Value)

STEL – 1 ppm (STEL – Short Term Exposure Limit)

2. Route of entry

a. Respiratory – through inhalation

b. Skin – through contact

c. Eyes – through contact

3. Signs and Symptoms

A. Liquid Chlorine

Skin Contact: Causes irritation with discomfort or rash. High exposure cause skin burns or ulceration.

Eye contact: Eye irritation with discomfort, tearing or blurring of vision. Higher exposure may cause eye corrosion with corneal or conjunctival ulceration.

B. Chlorine Gas

Acute exposure

Mild Cases

i) Irritation and watering of eyes

ii) Headache, feeling of suffocation and breathlessness

iii) Painful dry and harsh bouts of cough. Burning in chest and upper abdomen

Severe Cases

i) Restlessness, anxiety, drowsiness or altered consciousness

ii) Rapid irregular pulse, cyanosis, moist hand and feet

iii) Difficult to breathe, painful cough, wheezing or asthma like reaction

iv) Rhonchi or basal crepitations

Extreme Cases

i) Slow and thready pulse, fall of BP

ii) Intense cyanosis, congestion of lungs (Pulmonary edema)

iii) Unconsciousness

Chronic Exposure

i) Prolonged exposure to 5 ppm – disease of bronchi and predisposition of tuberculosis

ii) Concentration of 0.8 – 1 ppm causes permanent although moderate reduction in pulmonary function

iii) Tooth enamel damage

Ingestion: Experiences nausea, vomiting, colicky pain and distension of abdomen in cases of swallowing of gas on exposure.

4. First-aid and relief measures

Chlorine Inhalation:

a. If breathing is ceased

Commence artificial respiration

Administer oxygen as soon as possible

b. If breath is not ceased

Place the patient in comfortable position + at rest

Administer oxygen as soon as possible

Liquid Chlorine:

a. Skin contact

Flush the contaminated skin with plenty of water for 15 minutes.

Do not attempt chemical neutralization

Refer to doctor if irritation persists

b. Eye contact

Flush eyes with water for 15 minutes

Hold eyelids apart to ensure complete irrigation of all eye and lid tissues

Medical Relief

Mild cases: Give the following

a. Cough syrup – 2 teaspoon

b. Erasma + Strepsil tablets + Prednisolone + Lasixsos

c. Hot tea or water to drink

d. Keep patient under rest and observe for pulmonary edema

e. Pulmicort / Salbutamol inhalers

For severe cases (who are conscious)

a. Oxygen inhalation

b. Inj. Deriphylline

c. Inj. Decadron

d. Tab Lasix or Inj. Lasix

e. Administer antibiotics if necessary

For unconscious: Give the following

a. Oxygen under pressure

b. Artificial respiration SOS

c. IV fluids (if acidosis with Sodium bicarbonate)

d. Inj. Decadron

e. Inj. Deriphylline

f. Inj. Lasix

Refer the patient to the hospital if necessary

5. Self-help tips

The following useful tips will help in continuing the effects of Chlorine

a) Take shallow breaths. Don't run or panic

b) Proceed quickly against the wind direction to open areas

c) Move to higher planes e.g. on to a hill

d) If in multi-storied houses move to higher floors

e) Cover the face (mainly eyes and nose) by a wet handkerchief or piece of cloth to reduce the irritation due to chlorine

f) If mildly affected, consume tea/sugar/jiggery/pan/toffee etc. which will reduce the irritation in the throat

g) In case of severe effects, get in touch with the rescuers/doctor for further treatment

Actions/precautions to be taken by the public in emergency

a) Wet a piece of cloth with water and cover the nose and mouth

b) Come out and lock the house

c) Check for the wind direction with the help of cloth or sand

d) Don't get panicky. Walk briskly in a direction perpendicular to the wind direction, or use any other mode of transport. After moving about a furlong, look for symptoms of gas and proceed further only if necessary.

e) To the extent possible take the animals along with you in a direction perpendicular to the wind direction and if this is not possible set them free before leaving the house premises.

f) Communicate to your neighbors about the occurrence of emergency. The public can go back to their respective houses after the "All clear signal" is given by the competent authority or "All clear coded siren" from the factory. "All clear coded siren" from the factory will be a continuous blowing for 3minutes.

Stampede

In case of a stampede many people especially the children and aged get trampled and may get badly injured which may even result in death if first-aid / medical attention is not provided immediately. Like in any emergency planning, the affected persons should be given immediate medical attention. Various precautionary measures should be taken to prevent any stampede wherever there is assembly of large crowd.

Following are various such measures for the consideration of the district administration.

a) Identify and list the events wherein a large group of people gathers at one place.

b) Survey the gathering site for confinement i.e. inside temple, auditorium, building, structure etc.

c) Study the layout and identify stampede prone pockets i.e. staircases, entry / exit point, narrow lobby etc.

d) Estimate size of population going to gather. If the site area is not adequate to control an expected number of people, do not allow them to gather at first place. This can be achieved by informing people well in advance, staggering the visitors by issuing passes / identity cards.

e) Study the layout and maintain adequate space between two clusters of people.

f) Build temporary watchtowers for monitoring.

g) Ascertain adequate ventilation in the area.

h) Ascertain uninterrupted power supply in the area. Make arrangement for standby power supply. As far as possible allow event to be conducted in day time.

i) Inform people by Public address System and Close circuit TV to avoid any misunderstanding, rumor, panic situation.

j) Post adequate staff to control mob.

k) Segregation of male and female / children in the mob.

l) Adequate arrangement for drinking water, food etc. As far as possible provide such facilities on mobile van, trolley instead of fixed counter/ stall.

CHAPTER-8

RECOVERY AND RECONSTRUCTION PLAN

Rehabilitation and reconstruction comes under recovery phase immediately after relief and rescue operation of the disaster. This post disaster phase continues until the life of the affected people comes to normal. This phase mainly covers damage assessment, disposal of debris, disbursement of assistance for houses, formulation of assistance packages, monitoring and review, cases of non-starters, rejected cases, non-occupancy of houses, relocation, town planning and development plans, awareness and capacity building, housing insurance, grievance redressal and social rehabilitation etc.

Post Disaster Reconstruction and Rehabilitation

Post disaster reconstruction and rehabilitation should pay attention to the following activities for speedy recovery in disaster hit areas. The contribution of both government as well as affected people is significant to deal with all the issues properly.

- Damage assessment
- Disposal of debris
- Disbursement of assistance for houses
- Formulation of assistance packages
- Monitoring and review
- Cases of non-starters, rejected cases, non-occupancy of houses
- Relocation
- Town planning and development plans
- Reconstruction as Housing Replacement Policy
- Awareness and capacity building
- Housing insurance
- Grievance redressal

Administrative Relief

The district is the primary level with requisite resources to respond to any natural calamity, through the issue of essential commodities, group assistance to the affected people, damage assessment and administrating appropriate rehabilitation and restoration measures.
The district level relief committee consisting of official and non-official members including the local legislators and the members of parliament review the relief measures.
A district is sub-divided into sub-divisions and tahsils or talukas. The head of a sub-division is called the Sub-Division Officer (SDO) while the head of a Tahsil is known as a Tehsildar.
When a disaster is apprehended, the entire machinery of the district, including the officers of technical and other departments, swings into action and maintains almost continuous contact with each village in the disaster threatened area.

Reconstruction of Houses Damaged / Destroyed

Houses should be reconstructed in the disaster hit areas according to the following instructions:

- Owner Driven Reconstruction
- Public Private Partnership Program (PPPP)
- Under the PPPP the houses are reconstructed by the NGOs for the beneficiaries to be registered in the joint names of the husband and wife.
- All the houses should be insured.
- Financial, technical and material assistance provided by the government.
- The designs for seismic reconstruction of houses provided by the government.
- The material assistance provided through material banks at subsidized rates.
- Design of 20 model houses provided to the public to choose from with an option to have one's own design.

Military Assistance

If the district administration feels that the situation is beyond its control then immediate military assistance could be sought for carrying out the relief operations.

Medical Care

Specialized Medical Care may be required to help the affected population. Preventive medicine may have to be taken to prevent outbreak of diseases.

Epidemics

In the relief camps set up for the affected population, there is a likelihood of epidemics from a number of sources. The strategy should be to subdue such sources and immunize the population against them. The public health centers, health departments can practice vaccination drives, public awareness to drink boiled water, use chlorine tablets to purify the water sources.

Corpse Disposal

Disposal of dead bodies is to be carried out as a part of the operation to prevent outbreak of epidemics. Minimum official requirements should be maintained as it is a very sensitive issue.

The following points may be considered by the concerned authorities at the time of corpse disposal:-

1. Mass photographs of corpses,
2. Consent of the relatives or hand over to them
3. Make a panchnama of concerned localities.

Actions	Responsibility
Establish village / ward level committee for identification of dead bodies	AC / ULB
Prepare a record of details of the bodies retrieved in the Dead Body Inventory Record Register, allocate individual Identification Number, photograph, and prepare Dead Body Identification Form	Tehsildar / AC
Identification of the dead bodies and handing over to the next of kin	Village level / ward level committee
Transport unidentified dead bodies to the nearest hospital or mortuary at district / sub division / block level	AC/

Make public announcement for establishing identity	AC/
Handover the identified dead bodies to the next of kin	AC/ /Tehsildar
In case of unidentified dead bodies – prepare inventory, allocate individual identification number, photograph, finger print, obtain DNA sample if possible and fill Dead Body Identification Form	AC/ /Tehsildar
Preserve the information recorded as forensic information	AC/ /Tehsildar
Undertake last rights of unclaimed / unidentified dead bodies as per established religious practices	AC/ /Tehsildar
Coordinate with NGOs and obtain their support	AC/ /Tehsildar
Preserve the bodies of foreign nationals (if any) by embalming or chemical methods and then placed in body bags or in coffins with proper labeling for handing over and transportation of such bodies to Ministry of Extern Affairs, or to the Consular offices of the concerned countries and other actors such as International Committee of the Red Cross	AC/ /Tehsildar

Carcass Disposal

Actions	Responsibility
Prepare a record of details of the animal carcasses retrieved	
Identify owners of the livestock and hand over the animal carcasses	

Photograph all unidentified animal carcasses preferably before transportation for disposal	
Transport unidentified or unclaimed animal carcasses to the designated site for disposal	Director Department of Animal Husbandry
Maintain a record of carcasses buried or handed over	AC/ /Tehsildar/
Follow suggested guidelines for burial of carcasses or composting	AC/Tehsildar/Animal Husbandry

Guidelines for Disposal of Animal Carcasses

Guidelines for Burial

- Burial shall be performed in the most remote area possible.
- Burial areas shall be located a minimum of 300 feet down gradient from wells, springs and other water sources.
- Burial shall not be made within 300 feet of streams or ponds, or in soils identified in the country soil survey as being frequently flooded.
- The bottom of the pit or trench should be minimum 4 to 6 feet above the water table.
- Pits or trenches shall approximately be 4 to 6 feet deep. They should have stable slopes not steeper than 1 foot vertical to 1 foot horizontal.
- Animal Carcasses shall be uniformly placed in the pit or trench so that they do not exceed a maximum thickness of 2 feet. The cover over and surrounding shall be a minimum of 3 feet. The cover shall be shaped so as to drain the runoff away from the pit or trench.
- The bottom of trenches left open shall be sloped to drain and shall have an outlet. All surface runoff shall be diverted from entering the trench.
- Burial areas shall be inspected regularly and any subsidence or cavities filled.

Guidelines for Composting

- Select site that is well drained, at least 300 feet from water sources, sinkholes, seasonal seeps or other landscape features that indicate hydrological sensitivity in the area.
- Lay 24-inch bed of bulky, absorbent organic material containing sizeable pieces 4 to 6 inches long. Wood chips or hay straw work well. Ensure the base is large enough to allow for 2-foot clearance around the carcass.
- Lay animal in the center of the bed. Lance the rumen to avoid bloating and possible explosion. Explosive release of gases can result in odor problems and it will blow the cover material off the compositing carcass.
- When disposing large amounts of blood or body fluid, make sure there is plenty of material to absorb the liquid. Make a depression so blood can be absorbed and then cover, if a blood spill occurs, scrape it up and put back in pile.
- Cover carcass with dry, high-carbon material, old silage, sawdust or dry stall bedding (some semi-solid manure will expedite the process). Make sure all residuals are well covered to keep odors down, generate heat or keep vermin or other unwanted animals out of the window.
- Let it sit for 4 to 6 months, then check to see if carcass is fully degraded.
- Reuse the composted material for carcass compost pile, or remove large bones and land apply.
- Site cleanliness is the most important aspect of composting; it deters scavengers, and helps control odors and keeps good neighborly relations.

Note: Animals that show signs of a neurological disease, animals that die under quarantine and those with anthrax should not be composted.

Salvage

A major effort is needed to salvage destroyed structure and property. Essential services like communications, roads, bridges, electricity would have to be repaired and restored for normalization of activities.

Outside Assistance

During disaster situations, considerable relief flows in from outside, thus there is an immediate need to co-ordinate the relief flows so that the maximum coverage is achieved and there is no duplication of work in the same area.

Special Relief

Along with compensation packages, essential items may have to be distributed to the affected population to provide for temporary sustenance.

Information

Information flow and review is essential part of the relief exercises. Constant monitoring is required to assess the extent of damage, which forms the basis of further relief to the affected areas.

Social Rehabilitation

Disabled persons

- Artificial limbs fitted to affected persons.
- Modern wheelchairs, supportive devices provided.

Children

- Orphaned children are fostered.
- Day centers set up
- Orphanages established.
- Child help lines established.

Paraplegics

- Pension scheme introduced for paraplegics.
- Physiotherapy under continuous supervision of doctors.

Old age people

- Aged persons given pensions.
- Old Age Homes established.

Women

- Pension sanctioned.
- Women's Livelihood Restoration Project started.
- Self-employment Schemes for Women.

CHAPTER - 9

RELIEF AND FINANCIAL AID

1) Definition of Relief and Rehabilitation Camp:-

Relief shelters and Rehabilitation camps shall be set up in order to accommodate people affected by a disaster. The camp shall be temporary in nature with basic necessities. People in the camp shall be encouraged to return to their respective accommodation once the normalcy is returned.

The State Government/District administration sometimes may not be able to implement all the basic guidelines recommended by NDMA from the day one of the disaster and therefore, the following method shall be followed:-

(a) First three days – Basic norms to the possible extent may be followed

(b) 4 to 10 days – Efforts should be made to follow most of the norms recommended by NDMA in this Guideline.

(c) 11 days and above – NDMA's prescribed norms shall be followed.

The factors like terrain, climatic conditions at the site of disaster etc. will also impact the requirement and ability of the administration and other stakeholders to deliver relief. These constraints should also be kept in view while prescribing minimum standards of relief.

2) Minimum Standards in respect of Shelter in relief camps:-

(a) State / UT / District administration shall take necessary steps to pre-identify locations / buildings like local schools, Anganwadi centers/community centers/marriage halls etc which can be used as Relief shelters where people can be accommodated in case of disaster in the area. In such centers, necessary facilities like sufficient number of toilets, water supply, generators with fuel for power back up during disasters shall be ensured.

(b) After a disaster, large covered space shall be required to accommodate the affected people. In order to avoid last minute arrangement and high cost, States/UTs can explore the option of advance MoUs with manufacturers / suppliers for supply of factory made fast track pre-fabricated shelters / tents / toilets / mobile toilets and urinals etc. which can be dismantled and taken back by the supplier after the closure of the camp. This arrangement shall avoid delay in setting up of camp and exorbitant billing of essential supplies.

(c) In the relief centers, 3.5 Sq.m. of covered area per person with basic lighting facilities shall be catered to accommodate the victims. In mountainous areas, minimum covered area

shall be relaxed due to lack of available flat land / built up area. Special care shall be taken for safety and privacy of inmates, especially for women, widows and children. Special arrangements should be made for differently-able persons, old and medically serious patients.

(d) Relief centers shall be temporary in nature and be closed as soon as normalcy returns in the area.

(e) Sufficient number of sites based on population density shall be identified as relief centers and earmarked well in advance at the time of planning and development of a metro/city/town.

3) Minimum Standards in respect of Food in relief camps:-

(a) Milk and other dairy products shall be provided for the children and lactating mothers. Every effort shall be taken in the given circumstances to ensure sufficient quantity of food is made available to the affected people (especially for aged people and children) staying in the relief shelters / camps.

(b) Sufficient steps shall be taken to ensure hygiene at community and camp kitchens. Date of manufacturing and date of expiry on the packaged food items shall be kept in view before distribution.

(c) It shall be ensured that men and women are supplied food with minimum calorie of 2,400 Kcal per day. In respect of children / infants, the food to be supplied would be 1,700 Kcal per day.

4) Minimum Standards in respect of Water in relief camps:-

(a) Sufficient quantity of water shall be provided in the relief camps for personal cleanliness and hand wash.

(b) It may be ensured that the minimum supply of 3 liters per person, per day of drinking water is made available in the relief camps. Further, the State / UT / District authorities shall adjust the minimum quantity of water etc. as per the geographic, demographic and social practices of the region. If other means for providing safe drinking water is not possible at-least double chlorination of water needs to be ensured.

(c) In order to ensure adequate water supply, the location of the source of water supply shall preferably be within the premises of relief shelter /camp. However, the maximum distance from the relief camp to the nearest water point shall not be more than 500 m, if tapped water supply is available.

5) Minimum Standards in respect of Sanitation in relief camps:-

(a)Number of toilets: 1 toilet for 30 persons may be arranged / built. Separate toilet and bath area be catered for women and children. At least 15 liters of water per person needs to be arranged for toilets / bathing purposes. Hand wash facility in toilets should be ensured. Steps may be taken for control of spread of diseases. Dignity kits for women shall be provided with sanitary napkins and disposable paper bags with proper labeling.

(b) Toilets shall not be more than 50 m away from the relief camps. Pit Latrines and Soak ways shall be at least 30 m from any ground water source and the bottom of any latrine has to be at least 1.5 m above the water level.

(c) Drainage or spillage from defecation system shall not run towards any surface water source or shallow ground water source.

6) Minimum Standards in respect of medical cover in relief camps:-

(a) Mobile medical teams shall visit relief camps to attend the affected people. Steps shall be taken to avoid spread of communicable diseases.

(b) If the relief camps are extended over a long time, then necessary arrangement may be made for psychosocial treatment.

(c) Helpline should be set up and contact number and details of which shall be displayed at the relief/shelters and adequately publicized to inform the people.

(d) For pregnant women, necessary basic arrangements shall be made by the local administration for safe delivery.

(e) Advance tie up / arrangement shall be made with the Govt / private hospitals so that necessary doctors / para-medical staff are available at short notice for relief camps to attend to the affected people. In respect of people who are affected and being referred to hospitals for treatment / operation etc., suitable transportation shall be arranged to reach to refer hospital.

(f) In order to manage mass casualty in a disaster, advance contingency plans for management of multiple casualties shall be developed.

7) Minimum Standards of Relief for Widows and Orphans:-

(a) In each camp, a separate register shall be maintained for entering the details of women who are widowed and for children who are orphaned due to the disaster. Their complete details shall be entered in the register, duly counter signed by the concerned officials and this register shall be kept as a permanent record with the District administration.

(b) Special care shall be given to widows and orphans who are separated from their families. For widows, certificate by the District Administration shall be issued stating that she lost her husband in the disaster and the same shall be issued **within 15 days of disaster.**

(c) As the widow / family shall be economically weak, the State administration shall provide a reasonable amount for the funeral rites of her husband and this payment shall be deducted from the subsequent financial compensation / relief that shall be paid by the Govt.

(d) Necessary financial compensation and other government assistance need to be arranged within 45 days of the disaster to the widow and to the orphaned children. In respect of orphaned children, similar certificate shall be issued and the children need to be taken care of properly and the funds that may be given to the children by the Govt. shall be duly deposited in a PSU Bank in a Joint A/C where the Collector / DC shall be the first account holder of the Bank account. Interest from the fund can be given to the child / guardian every month for his / her proper upkeep. Education for the child shall be ensured by the District / local administration.

(e) As far as ex gratia assistance on account of loss of life as also assistance on account of damage to houses and for restoration of means of livelihood, the norms provided by Govt of India (Ministry of Home Affairs) for assistance from SDRF should be the minimum standards of relief.

Illustrative list of activities identified as of an immediate nature.

1. **Drinking Water Supply :**

   I. Repair of damaged platforms of hand pumps/ring wells/ spring-tapped chambers/public stand posts, cisterns.

   II. Restoration of damaged stand posts including replacement of damaged pipe lengths with new pipe lengths, cleaning of clear water reservoir (to make it leak proof).

   III. Repair of damaged pumping machines, leaking overhead reservoirs and water pumps including damaged intake – structure, approach gantries/jetties.

2. **Roads**

a. Filling up of breaches and potholes, use of pipe for creating waterways, repair and stone pitching of embankments.
b. Repair of breached culverts. iii)Providing diversions to the damaged/washed out portions of bridges to restore immediate connectivity.
c. Temporary repair of approaches to bridges/ embankments of bridges., repair of damaged railing bridges, repair of causeways to restore immediate connectivity, granular sub base, over damaged stretch of roads to restore traffic.

3. **Irrigation :**

I. Immediate repair of damaged canal structures and earthen/masonry works of tanks and small reservoirs with the use of cement, sand bags and stones. ii)Repair of weak areas such as piping or rat holes in dam walls/ embankments.
II. Removal of vegetative material/building material/debris from canal and drainage system.
III. Repair of embankments of minor, medium and major irrigation projects.

4. **Health :**

Repair of damaged approach roads, buildings and electrical lines of PHCs/ community Health Centers.

5. **Community assets of Panchayat**

I. Repair of village internal roads.
II. Removal of debris from drainage/ sewerage lines.
III. Repair of internal water supply lines.
IV. Repair of street lights.
V. Temporary repair of primary schools, community halls, anganwadi, etc.

6. **Power:** Poles/ conductors and transformers upto 11 kv.

CHAPTER-10

CAPACITY BUILDING & TRAINING MEASURES

TRAINING

Requirement for Training

The functional responsibilities of various key personnel as well as functions in the emergency organization has been defined in the earlier chapters which describe the policies, procedures and roles before, during and after an emergency. They should be sufficient to cope with any unforeseen emergency.

One of the main features of the District Disaster Management Plan is the training to all the personnel identified in the emergency organization as well as bringing about awareness in the general public who may be affected by any disaster.

The following functional aspects have to be included in a training programme.

- Initial Notification
- Communication
- Public Alert and Warning
- Fire and Rescue Services
- Emergency Public Information
- Evacuation
- Protective Shelter
- Enforcement of Law and order (Police Services)
- Public Works and Resource Services
- Recovery / Re-entry

Detailed and user-friendly, checklist type instructions may be prepared for the various agencies / segments of the emergency response organization to execute the functions during the training program.

Emergency Response Training

Extensive planning will be effective only if people are properly trained in all aspects of the plan, the role in its implementation, and how the tasks are to be coordinated. The development and conduct of a training program for the emergency organization is vital to emergency preparedness. Emergency response teams and medical personnel must all be trained. Classroom type lectures, demonstrations, and participation in exercises that test the adequacy of the plan are essential to maintenance of a well-prepared team of emergency response personnel.

To minimize the extent of the training needed, the emergency organization position has been developed so as to keep the emergency duties parallel to the individual's day-to-day responsibilities wherever possible. Initially, the in charge of emergency services like the Fire Chief or Police Chief would be the head of the first responder organization. However, as the full emergency response organization is deployed, the responsibility and function of the Emergency Management Coordinator is transferred to the Deputy Commissioner of the district.

It is the responsibility of the district administration to identify the training needs of the various members of the emergency organization. It is best achieved by comparing the normal duty of the person and the duties he is expected to carry out during any emergency.

One weakness common to many training programs is the inadequate attention paid to personnel changes in the emergency organization through local transfers and new appointments and transfer of personnel. Training for volunteer emergency responders like Home guards and other social service organization also presents more difficulties than for paid full-time emergency workers, because of the time restrictions and lack of funds.

The goals of any training program are to ensure that participants obtain a thorough understanding of their plans and procedures, and develop the leadership and communication skills necessary for confident decision making during stressful situations.

A well-developed and coordinated training program is required. Co-ordination of training programs conducted by corporate, plant, local, and possibly State organization is recommended, to avoid costly duplication of effort. The frequency of emergency response personnel training greatly influences the capability to respond during a test or actual emergency.

The main elements of a good training program are:

- The development of training program goals.
- The identification of target (common) training groups
- The establishment of group-specific, task-oriented training objectives
- The preparation of student training manuals and visual aids.
- The preparation of individual lesson plans, including hands-on experience, if appropriate.
- The establishment of a training schedule.
- The evaluation and correction of the training program.

A good training program provides initial training for all tasks, it should provide periodic refresher training for those who have been given the initial training, and also should provide for the training of new personnel who may be inducted from time to time.

MOCK DRILLS

Provision for Mock Drills

By far the best training is received from participation in the enactment of mock accident scenarios during drills and exercises. These serve as positive training experiences and are also advantageous to public relations, once the appropriate level of training and readiness is achieved. Their purpose is to give people confidence that the contingency plan works, and to identify those areas of improvement that, once corrected, will ensure that properly implemented plans and procedures can adequately protect public health and safety.

There are two major considerations in the preparation and implementation of a successful drill to test the ability of all personnel and resources to respond to an emergency:

1) The formation of a competent, knowledgeable, and highly motivated planning and co-ordination exercise committee, and

2) The development of a scenario that induces drill participants - the "players" - to fully demonstrate their knowledge and capabilities, and that demonstrates the readiness level of emergency response facilities and equipment.

It is advisable to test small parts of the contingency plan frequently, through tabletop exercises and mini drills, in such important areas as notification and communication. Full-

scale field exercises once in two years involving various government agencies, industrial facilities and local responders are recommended.

Whether the exercise is a limited or full-scale test of the contingency plan, the development process is essentially the same, though the planning for (and expense of) a full field exercise is considerably greater. In particular, as a part of this process, one should:

• **Define the goals and objectives:**

a) The general objectives (overall, applicable to all).
b) The specific objectives - for each participating function/ group/ organization.

• **Identify the participants:**

a) The players - key and alternate(s) for each function
b) The moderators/controllers to keep the scenario going
c) Evaluators

• **Develop the scenario:**

a) Prepare a draft scenario abstract for comment/approval
b) Draft a full scenario, with specific activities to test objectives
c) Obtain required comments/ approval of the draft scenario
d) Finalize the scenario.

Maps of:

a) affected areas
b) evacuation routes
c) vulnerable zones

Data tables:

a) meteorological
b) release/activity levels
c) doses (if appropriate)
d) Emergency organization charts
e) Messages or questions to guide responses
f) Notification message forms

Exercise Description:

a. purpose
b. agenda
c. scope

d. methodology

e. player "ground rules"

Make logistic arrangements

- Establish date, time, duration (include time for the critique session).
- Arrange for the use of location facility and/or room(s) at a selected time.
- Invite participants
- Establish a readily observable identification scheme (arm bands, caps, jerseys, signs) for players, controllers, evaluators, and observers
- Prepare scenario packages and handouts
- Conduct the exercise and critique session
- Prepare a written critique - ensure that the identified improvement action items are entered into a tracking system.

The post-exercise critique session is ideally held immediately following the drill or exercise involving all participants. It provides feedback to those involved, while events and their response actions are fresh in their minds. A follow-up written evaluation, summarizing the carefully considered comments of the participants, is also important, since an exercise of the plan uncovers it deficiencies. These may be found, for example, in equipment (most important being the communications equipment), operating procedures, protocol, or interagency relationships. Often, they signify training program improvement areas. To correct the deficiencies, it is important to establish an Action Item Tracking System, wherein identified problem areas are defined, responsibility for and expected date of completion designated, and accomplishment noted. This is all a part of plan maintenance.

CHAPTER-11

STANDARD OPERATING PROCEDURE (SOPS) FOR OFFICERS

13.1 Introduction

The DM Act-2005 provided for systematic devolving of roles and responsibilities at every level up to the local authority. At the state level, the SDMA and the Department of Disaster Management are the apex bodies for policy, planning and management of natural and manmade disasters in the state. At the district, DDMA headed by the DC and line departments have been assigned the powers and functions for effective Disaster Management. The local bodies such as PRIs and ULBs are responsible for local level disaster management. However, provision for convergence in the matters of resources, coordination and response among various levels has been laid down. In this chapter the SOPs and Roles and responsibilities of various levels of functionaries are delineated.

Revenue Authorities

1) Activating DCR/EoC and Officers and Heads of Departments in the District
2) Setting up IRS and SoC
3) Activating of various NGOs/Voluntary Organizations for necessary materials.
4) Providing adequate compensation to loss of life and property.

To effectively manage the emergency without ambiguity, it is required to entrust individual responsibility and describe them in brief.

13.2 SOP FOR SECRETARY REVENUE (DISASTER MANAGEMENT)

The Secretary Revenue (DM) is the member secretary of the SEC (State Executive Council) and is overall in-charge of DM in the state. He/She works as a link between the DDMAs/ district administrations, Line Departments, the KSDMA, SEOC and other organizations responsible for DM. He/She has the responsibility for coordinating and monitoring the implementation of the National Policy, the National Plan and the State Plan as provided under section 22 of the Act. He/She shall give directions to the concerned department and district authority or other authority to take steps for rescue, evacuation, or providing immediate relief saving lives or property and direct to the departments make available resources for emergency response, rescue. He/She carries out the preparation of memoranda on loss and damage to be submitted to the GoI for claiming relief, compensation, and other support. He/She has to monitor the up-dation of DDMPs and ensure preparedness in all the districts.

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13.3 SOP FOR DEPUTY COMMISSIONER

The Deputy Commissioner is the chairperson of the DDMA and has all the powers and functions entrusted to him and the DDMA under Chapter-IV of the DM Act-2005. She/he shall function as Incident Commander for management of disasters in the district.The responsibility include initiating and maintaining co-ordination and co-operation with various agencies involved and provide prompt information, decisions and infrastructure facilities as requested. She/he should also mobilize, direct, and co-ordinate the emergency management staff during emergency.

Following are the main functions during any emergency

- Declaration of emergency after confirming the magnitude of the disaster with the consent of the state government.
- Activate the Emergency Control Room at Deputy Commissioner's office and make it functional.
- Co-ordinate and establish contact with all agencies involved in the emergency actions.
- Establish Incident Response System (IRS) by assigning designations and responsibilities as per the NDMA IRS guidelines.
- Establish DEOC in the DC office with modern communication facilities working 24/7
- Conduct regular DM meetings calling the DDMA members and key district level officers to assess the disaster risk, mitigation and preparedness.
- Ensure setting up of Local Emergency Control Room close to the scene of accident or at Taluk headquarters where the disaster has struck.
- Ensure actions have been initiated to contain the emergency.
- Have overall supervision of all the emergency relief operations.
- Initiate evacuation of people from affected area with the assistance of police, fire and other agencies.
- Depending on type of emergency, mobilize additional resources like heavy lifting gears line cranes, bulldozers for rescue and mitigation operation.
- Identify and Set-up safe shelters for evacuated people and ensure they are provided with food and medical attention as the need be.
- Monitor progress or disaster especially in case of natural disasters like cyclone or floods by getting information from various agencies involved and mobilize additional support to mitigate the effects of disaster.
- Keep the State Administration informed regarding the disaster and the steps taken to contain the same.
- Issue statement to the press (both print and electronic media) on the prevailing conditions and the steps being taken by the District Administration to mitigate effects of the disaster.
- Get mutual aid from neighboring districts, the Major Hazard Industries or seek the assistance of voluntary organization.
- If required, set-up mobile first aid centre or temporary health centers in the affected area or in the safe shelters.
- Visit the scene of the disaster to have first hand information about the rescue or mitigative operations that are being carried out.
- In case of floods, carry out aerial survey of the affected area to have preliminary estimates of the extent of damage caused.
- To co-ordinate with the state government through Principal Secretaries of Depts. mobilize the help of Army/Navy/Air force/NDRF or other agencies required.
- Call off emergency after confirming that all the actions have been taken to normalize the conditions and it is safe for people to re-enter the affected areas

ROLE OF THE DEPUTY COMMISSIONER BEFORE, DURING AND AFTER DISASTER

Phase	Activities	Other officials to be involved	Resources/ Equipments to be procured from
Pre-Disaster	Preparedness before the disaster	All district level officials	The Secretary, Dept. of Disaster Management.
During disaster	Reviewing and analyzing the calamity situation in the district over the next one year through a meeting at the district level involving all the departments of the district as well as sub division and GP levels and the locally active NGOs/CBOs	All ACs; All Tahsildars; All Panchayats(CEO, TPEO, PDOs etc)	Police/Fire/Fisheries/RTO/ Civil Defence.
	✓ Identifying disaster prone zones and strategies to stay prepared for the worst.	Field functionaries, District Information Officer.	Commandant/Co-Coordinator of NCC/NSS/NYKS
	✓ Ensure IEC through Emergency section/ Panchayats/NGOs/AW centers/Street plays/ workshops	District Fisheries Officer Leading NGO/CBOs	
	✓ Reviewing the DCR and making it functional as per SOP fixed by him (SOP to be prepared earlier)	NSS/NCC/NYKS/ Police	VHF from the Police/Mike set/ batteries/generators available in the district office from the private parties on requisition.
	✓ Making the DCR well equipped and depute senior officers from time to time to review the receipt of information and dissemination.	Fire, Civil Defence	
	✓ Calling a meeting of officers/NGOs/CBO co-ordination and discuss issue such as capacity assessment of different NGOs/CBOs and ask them to adopt certain vulnerable areas to avoid overlapping and duplicity.	All district level officials. All ACs/Tahsildars	
	✓ Preparing a checklist (containing the dos and don'ts) and pass that on to the NGOs/CBOs.	All Panchayats District Fisheries Officer Leading NGOs Police	Power boats/country boats/ vehicle/rope/rescue kits and trained resource personnel from SRC/SSC/Army/unit/Civil Defense/Hired from the private parties according to the requirement.
	✓ Ensuring/installing communication system to the inaccessible villages	Police Fire Brigade, Leading NGO, Panchayats, Field functionaries programme co-coordinators of	

	NSS/NCC.			
	✓ Checking stock of the public distribution system and arrangement of temporary godown. ✓ Checking the resources with other department such as Police, Fire and of NSS/NCC/NYKS.		ACs/Tahsildars, TPEO, DHO, CDPO, DDs, Panchayat Field functionaries Medical Officers, Police, KUWSDB, Municipality, RTO/ Leading NGO.	
	✓ Preparing a list of vehicles/ ambulance already deployed and/or to be deployed on hire during crisis.			
	✓ Keeping stock of road cleaning equipments and vehicles for relief operation.			
	✓ Assigning specific duties to different officers/ Sr. Officers at headquarters.			
	✓ Staying in constant touch with other line departments.			
	✓ Ensuring proper functioning of warning systems & communication systems.			
	✓ Ensuring mock drill of the rescue and relief teams		Home guards, Police.	
	✓ Preparing a map showing the location of temporary shelter camps with accessibility. ✓ Identifying shelter/temporary shelter in high elevated places and arrangement of tents etc. ✓ Identifying and mapping of disaster (of all kinds) prone areas Ensuring formation of village level Disaster Management Committee through Block Development Officers			
	Dissemination of warning: - ✓ Receiving warning from reliable sources and cross checking them for authenticity. ✓ Disseminating warning to District Level Officials/ Revenue/Field Functionaries/ PRIs and Co-ordination with the Revenue control room. ✓ Keeping the control room active round the clock. ✓ Disturbing duties to the district level officials, ACs Panchayats and Field functionaries.			
	✓ Arranging vehicles and public address systems for information dissemination.			
	✓ Establishing coordination with the NGOs/CBOs and the village communities and assigning them duties.			
	Asking the people in the vulnerable areas to move to the shelters and to move their domesticated animals to safer places and to cooperate with the volunteers and other officials engaged in similar activities.			
	Search, Rescue and Evacuation:- ✓ To coordinate with NGOs/ CBOs/Police for support. ✓ Arrangement & deployment of vehicles etc., for evacuation. Evacuating people from marooned areas and administer emergent relief			
	✓ Organizing trained taskforce members and deputing to be marooned and cut-off areas for evacuation. ✓ Deployment of police for maintaining discipline and peace keeping during evacuation. ✓ Mobilizing people to move to safe shelters. ✓ Deployment of police/Fire Brigade for search and rescue.			

	✓ Ensuring proper utilization of the rescue materials. ✓ Providing rescue kits at the affected areas.		
	Distribution of Relief Materials: - ✓ Keeping a record of the affected area and people so as to account for the relief materials needed. ✓ Procurement and transportation of relief materials to affected areas.		
	✓ Arrangement of free kitchen in the shelter camps & affected areas and assigning the responsibilities to officials for proper distribution.		
	✓ Coordinating with the NGOs/ CBOs. ✓ Encouraging other voluntary organizations from outside for rescue and relief operation. ✓ Distribution of basic medicines and disinfectants to prevent epidemic. ✓ Ensuring health care activities by the CDMO in the shelter camps & through mobile units/temporary health in regular intervals. ✓ Ensuring cattle health activities by the CDVO through Mobile units/ temporary health camps in the affected areas. ✓ Ensuring that there is enough storage of food and pure water in the shelters.		
	✓ Monitoring all the activities in the affected areas.		
Post disaster	**Short term measures: -** ✓ Formation of special task force with required equipments ✓ Assigning responsibilities for specific areas. ✓ Emergency cleaning of debris to enable reconnaissance.		
	✓ Cleaning fallen trees and branches from the roads to facilitate local relief work. ✓ Forming a work team carrying emergency tool kits. ✓ Deployment of towing vehicles, earth moving equipments, cranes. ✓ Construction of temporary roads. ✓ Keeping national and other highways clear from disaster effects.		
	✓ Assessment of damage. ✓ Temporary supply of flood drinking water and medicines to the shelters and affected areas.		
	✓ Arrangement for safe shelter for animals. ✓ Providing the lighting facilities for shelter places. ✓ Deployment of home guards and constables to maintain law and order. ✓ Providing temporary arrangements for income generation for the affected people. ✓ Drought resistance short duration paddy seeds to be made available to farmers.		
	✓ Encouraging NGOs/INGOs from outside to carry out restoration and reconstruction works. ✓ Ensuring crop insurance. ✓ Supervising all the activities.		
	Long Term Measures: - ✓ Immediate restoration of road communication, irrigation system, educational institutions, Government institutions, electrical installation, drinking water supply, construction of IAY houses for the BPL families and massive area plantation to maintain ecological balance.		
	✓ Meeting with district level officials/Officials at Headquarter and chalk out emergency plan with vulnerable areas and resource list. ✓ Co-ordination meeting NGOs/ PRIs and assignment of duties.		

	✓ Pre-positioning of staff in the likely cut off areas.		
	✓ Arrange food and other basic requirement for emergency response. ✓ Collect information from different areas and to act accordingly.		
	✓ Co-ordination meeting with officials at Headquarters by 12 hours intervals and 24 hours intervals with the field officials. ✓ Regular collection of situation report of the risk and vulnerable areas from the officers assign for the purpose.		
	✓ Provision for administering emergent relief and the other basic needs. ✓ Contact with SRC for supply of temporary shelter materials. ✓ Keeping in touch for supply of food articles procuring whole sellers. ✓ Deputation of volunteers to different probable affected areas.		
	✓ Helping the evacuees for returning to their houses. ✓ Immediate arrangement of free kitchen in the cut off and inaccessible areas. ✓ Relief distribution. ✓ Monitoring of relief distribution. ✓ Provision of drinking water.		
	✓ Provision of medical facilities. ✓ Repair/restoration of roads. ✓ Transportation of relief and human resources.		

13.4 SOP FOR SUPERINTENDENT OF POLICE (SP)

After receiving instructions from the Deputy Commissioner, the Superintendent of Police will rush to the ECR and establish contact with the local police station. He would then direct implementation of the action plan through the police station nearest to the scene of the disaster.

ROLES AND RESPONSIBILITIES OF THE SP

Phase	Activities	Other officials to be involved	Resources/ equipments to be procured from
Pre-Disaster	**Preparedness and warning dissemination of warning: -** ✓ Reception of warning from the DCR. ✓ Communication establishment with district and sub-division/ GP control rooms and departments offices within the division. ✓ Alerting the team force for deployment at the time of calamity. ✓ To issue directive to police field functionaries to co-operate with revenue personnel in management of relief operation	Home guard/Police forces, AC/ Tahsildars, SIs	VHF, other improved telecommunication systems.
During disaster	**Rescue and Evacuation: -** ✓ Clearance of roads and other means of transportation. ✓ Traffic management and patrolling of all highways and other access roads to disaster sites. ✓ Making sure that discipline is maintained. ✓ Assistance to district authorities for taking necessary action against hoarders, black marketers and those found manipulating relief materials ✓ Co-ordination with fire personnel.	Home guard/Police forces, AC/ Tahsildars, Sis NCC, NSS, trained volunteers local youth, NGOs/CBOs	VHF, other improved telecommunication systems. Rescue kits, vehicles equipments for clearance of roads and other related stuffs.

	✓ Provision of security in transit camps/feeding centers/relief camps/cattle camps/co-operative food stores and distribution centers. ✓ Safe guarding of belongings of evacuees. **Distribution of Relief: -** ✓ Maintaining laws and order at the shelters and the relief camps. ✓ Co-ordination with military service personnel in the area. ✓ Deploying officers/police personnel to record death cases. ✓ Assisting the community in organizing emergency transport. ✓ Assisting the District Officials/NGOs in distribution of relief materials. ✓ Providing escorts in transit of relief materials to the relief camps/affected areas.		
Post disaster	**Short term measures: -** ✓ FIR of the disasters, the damages and the death cases. ✓ Assisting in collection of damage statistics of private properties. ✓ Maintaining law and order. **Long term measures: -** ✓ Close co-ordination with district administration and local/external NGOs in reconstruction and rehabilitation process. ✓ Assisting the district authority whenever the need arises. ✓ Periodical visits to the affected areas to ensure law and order		Vehicle communication systems.

13.5 SOP FOR DISTRICT HEALTH OFFICER (DHO)

1) District Health Officer (DHO) will be overall in charge of health and medical services to be rendered at the site of emergency or at various rescue shelters, affected places, hospitals, pathology laboratories, etc.
2) On receiving the information from DC, he will contact all Hospital Superintendents, Drug Controller, Blood Banks for mobilization of required ambulances/Doctors/Nurses/Medicines/lifesaving drugs, blood etc.
3) Rush to the site, assess the extent of severity and establish adequate (Temporary Medical Centre). Ensure hygienic conditions at the rescue shelters cum rallying posts, temporary medical centers. Take appropriate action in shifting affected persons to proper hospitals and provide appropriate treatment.
4) Arrange for removal of dead bodies, if any, after post-mortem and disposal of the same.
5) Render advice on precautionary measures to be taken by public in affected sites/villages, rescue shelter cum rallying posts to prevent the outbreak of epidemic diseases.
6) If necessary, he should undergo training to handle the wireless apparatus for effective communications.

7) **ROLE AND RESPONSIBILITIES OF THE DISTRICT HEALTH OFFICER (DHO)**

Phase	Activities	Other officials to be involved	Resources/ equipment's to be procured from
Pre-Disaster	**Preparedness and warning dissemination: -** ✓ Stock piling of life saving drugs/ ORS packets/Halogen tablets on receipt of warning from the Collector/DCR. ✓ Transmission of messages to all PHCs to stock medicines and keep the medical staff ready. ✓ Disease surveillance and transmission of reports to the higher authorities on a daily basis. ✓ Vaccination. ✓ To obtain and transmit information on natural calamities from the DCR. ✓ Ensuring distribution of areas of operation among the mobile team. ✓ Pre distribution of basic medicines to the people who are likely to be affected. ✓ Shifting the patients who are in critical situation to the district hospital. ✓ Awareness messages to stop the outbreak of epidemics. ✓ Conducting mock drills.	DHO, Medical Officers of PHCs/ ICDS, CDPOs NGOs, CBOs, private practitioner in the locality/ first aid trainers.	Medicines required medical equipment's, First aid kits, ambulances, public address systems, mobile vans, tents.
During disaster	**Rescue and Evacuation: -** ✓ Constitute mobile teams and visit the worst affected areas. ✓ Disinfection of drinking water sources. ✓ Opening of site operation camps. ✓ Regular health check-up at shelter camp & affected areas. ✓ Assigning responsibilities to the medical officers for close monitoring of health camps.	DHO, Medical officers of PHCs, ICDS, CDPOs, NGOs, CBOs, private practitioner in the locality, first aid trainers Rescue team, volunteers at the shelters, police, fire officers, trained volunteers.	Medicines, required medical equipment's, first aid kits, ambulances, ambulances, public address systems, mobile vans, tents
Post disaster	**Restoration and rehabilitation: -** ✓ Organization of health camps.	DHO, Medical	Medicines, required

	✓ Deploying mobile fully equipped and manned medical vans. ✓ Close monitoring of health camps. ✓ Ensuring adequate quantities of medicine/disinfectants. ✓ Making sure that there is no outbreak of water borne diseases/malnutrition. ✓ Co-ordination with the District Rehabilitation Committees, other line departments, NGOs/ICDS projects, village Committee, PHD, RWSS, etc.	officers of PHCs, ICDS, CDPOs, NGOs, CBOs, private practitioner in the locality, first aid trainers Rescue team, volunteers at the shelters, police, fire officers, trained volunteers.	medical equipment's, first aid kits, ambulances, ambulances, public address systems, mobile vans, tents

13.6 SOP FOR ASSISTANT COMMISSIONER

He will be the overall in charge of Rescue shelter/Rallying post and parking yards.

1) He will ensure adequate food and clothing in co-ordination with Dy. Director, Food and Civil Supplies, Voluntary Organizations, Individual Persons as deemed necessary in his option.
2) He will also ensure proper medical aid (first aid as well as shifting of affected persons to hospitals, etc.) in co-ordination with District Health Officer and District Drug Controller.
3) He will ensure adequate security and safety in co-ordination with SP (Law & Order), and Dy. SP as the case may be.

In addition to these responsibilities, the AC will assist the DC and others in all other matters as the case may be. The concerned Assistant Commissioner is the Disaster Manager and he would rush to the Local Emergency Control Room (LECR) which is set up at the taluk headquarter of the affected taluk. He would function as the link between the affected area and the District Disaster Manager based at the main ECR located in the Deputy Commissioner office.

Following are the main functions during any emergency: -

- Set up the LECR at the concerned Taluk headquarters or at a safe place close to the scene of the disaster.
- Depending on the nature of emergency, co-ordinate with the various agencies at local level.
- Initiate the rescue operation with the help of local police, fire or other voluntary organisations and mutual aid members.
- Have close interaction with the Site Controller to ensure proper actions have been taken.
- Visit the affected area to gain first-hand information of various steps being taken to mitigate the effects of the disaster.
- Keep the main Emergency Control Room at district headquarters informed about the developments on a regular basis and request for additional help by way of resources or specialized manpower or equipment.

13.7 SOP FOR TAHSILDAR

He will look after all the facilities required at rescue shelter/rallying post like food, clothing, medical aid, water, electricity, sanitation and other basic necessities in co-ordination with respective Government Agencies as well as voluntary organizations.

1) He will manage and arrange for any other requirements on need basic at that point of time in co-ordination with respective government authorities.
2) He will alert all his sub ordinates and utilize their services to manage the rescue shelter/rallying post.
3) His actions will be in concurrence from AC/DC.

The Site Controller would be at the scene of the disaster or accident and would be reporting to the Disaster Manager located in the Local Emergency Control Room. He is the person who is dealing with the disaster directly in association with the various other emergency services. He would be in direct contact with the Disaster Manager based at the Local Emergency Control Room (LECR). His responsibilities vary widely depending on the type of emergency. It could be a natural disaster like flood the effects are wide spread where rescue work would be of main concern. It could be a road accident involving a tanker carrying hazardous chemical where quick action has to be taken to arrest the leakage, if any, followed by evacuation of people if required.

Following are the main functions during any emergency

- Take measures to mitigate the emergency in association with various emergency services like fire and police
- Keep in constant touch with the Local Emergency Control Room at taluk headquarters with available means of communication and keep Disaster Manager informed about the developments on regular basis.
- Request for additional help like specialized manpower or equipment to effectively handle the emergency.
- Rescue and evacuate the people from affected area and shift them to safe shelters.
- Ensure setting up of safe shelters with basic amenities for food sanitation.
- Mobilize medical professional with the help of ECR or LECR and ensure the affected persons are given medical attentions.
- Arrange to shift the injured or sick to specialized hospitals if need be.

13.8 SOP FOR DEPUTY SUPERINTENDED OF POLICE

The Dy. SP of the sub-division where the disaster has struck would get in touch with the nearest police station and ensure the police team is rushed to the scene of the emergency. His main function would be to act as link between scene of the accident and the Emergency Control Room

- On receiving information from the Emergency Control Room, he would rush to the site, assess the situation, obtain first-hand information, take control of the overall situation.
- Alert district administration to mobilize Reserve Police personnel for deployment for traffic regulations, supervision of evacuation and security duties.
- Alert area District Commandant of Home guards to mobilize home guards, as necessary (and keep the SP informed).
- Arrange for necessary transportation vehicles for rescue operation in consultation with RTO.
- Arrange for necessary ambulances and other medical facilities for the affected persons in co-ordination with various government and non-governmental agencies.

- Arrange for removal of the dead bodies, identifications and proper preservation.
- Prepare list of missing persons and take immediate steps to trace them.
- Communicate the information to other agencies through police control room.
- Keep in constant touch with ECR to ascertain latest status and intimate police personnel with up to date information regarding response actions and further instructions.
- Arrange for relief to policemen handling the emergency situation.

13.9 SOP FOR CIRCLE INSPECTOR (LAW AND ORDER)

1) The office will be overall in charge of the functions of Police Department in case of offsite emergency. He will receive the communication and instructions from DC/SP from time to time.
2) On receiving the information about the emergency from DC/SP, the officer will rush to the incident spot and oversee law and order, organize for additional requirement of men and Home Guards if required.
3) Receive information from the site in charge and divisional fire officer or his deputy available at site for appropriate and necessary rescue operation.
4) Arrange for necessary transportation of vehicles in co-ordination with RTO and in charge of parking yard for evacuation of people as well as critical cases.
5) Ensure that adequate numbers of vehicle are provided, fitted with public address system and wireless to the convoy team.
6) Arrange for necessary ambulance/medical facilities in co-ordination with District Health Officer/Deputy Director, Animal Husbandry for evacuation of people and livestock respectively.
7) In confirmation with DC/SP, arrange for removal of dead bodies (if any) and will pass on the information to the relatives of the decease and will ensure disposal of dead bodies after conducting postmortem in co-ordination with DHO.
8) Arrange for maintaining law and order at the site of emergency, rescue shelter parking yards, main roads leading to emergency site, etc., pass on the information to the DC/SP about actions on various fields.

The Circle Inspector of the concerned area would also rush to the scene of the accident and direct the various operations like maintaining law and order, barricading and diversion of traffic away from the scene of accident. His main functions would include

- Maintain direct contact with the local police station through the police mobile van.
- Keep monitoring the progress of various rescue measures being undertaken.
- Ensure police personnel are given updated information for announcement during the emergency.
- Mobilize government and private buses through RTO for evacuation.
- Ensure that the bus/vehicle drivers are properly instructed regarding areas to be visited and routes to be taken during evacuation.
- Ensure security duty personnel are at their posts and that only authorized personnel/vehicles are allowed to enter the emergency/affected area with proper identity cards.

Police Inspector will assume the charge of DSP in the absence of the DSP till such time the superior officer arrives at the place of accident and takes control then onwards, he will continue to receive the orders from the superior officers and act accordingly

13.10 SOP FOR INSPECTOR (TRAFFIC)

1) The SP(Traffic) will be the overall in charge of traffic management who is assisted by Dy. SP(Traffic) in case of offsite emergency.
2) Receive the communication of offsite emergency from CEC and disseminate the information to all the functionaries and mobilize required force and put them into action for managing various traffic points, routes, etc.
3) For each industry, separate routes are identified as normal route and emergency route.
4) Mobilize necessary police personnel/vehicles to man and control traffic on various roads identified as safe routes and also take measures to divert normal traffic away from the emergency routes identified.
5) Ensure available of adequate number of vehicles fitted with public address system/wireless etc. and directly supervise manning of routes and parking yards.
6) Initiate action to ensure adequate number of skilled drivers in consultation with RTO, KSRTC, Home guards and Truckers Association etc.
7) The SP will initiate action on his own only under exceptional circumstances; However, his action shall be communicated to his superiors and should be confirmed with CEC.
8) Any other action as deemed necessary based on the circumstances.

Depending on the type of disaster, the traffic police would take control of the traffic movement in the district. During a natural disaster like cyclone or floods the roads may be cut off for a longer period and hence traffic police play a very important role in handling any such emergencies. Their duties would include

- Stop traffic approaching the affected area and advise the crew regarding the impending danger.
- Ensure tankers containing hazardous chemicals are parked in safe places.
- Check for alternate routes and divert the traffic in a controlled manner to prevent congestion in diversions.
- Keep close liaison with other police agencies and assist in crowd control around the affected area.
- Make way for emergency and relief vehicles on priority basis.
- Monitor the condition of the blocked road and resume normal traffic only when the affected area is declared safe.

13.11 SOP FOR DY. DIRECTOR OF FACTORIES

Factory Inspectorate plays an important role during any industrial and transportation disaster in which there is large-scale release of hazardous chemicals. In case of such disaster, the Dy. Chief Inspector of Factories or Sr. Inspector of Factories would position themselves in the ECR and help the District Administration by providing expert advice for minimizing the effect of such a disaster.

Main functions: -

- Ensure the on-site emergency management plan of the affected industry (in case of an industrial disaster) has been activated and the mitigative measures are taken to safeguard the people present in the premises.
- Visit the site of accident to ensure proper measures are taken to control the situation.
- Speed up help from mutual aid members, if required to contain the emergency.
- Mobilize the technical experts for advice if required.
- Inspect the area along with the tech. Co-coordinators and report to Deputy Commissioner for giving all clear signals.

13.12 SOP FOR THE REGIONAL FIRE OFFICER

He will place himself in the main Emergency Control Centre and maintain continuous contact on VHF with the Station Officer at the site. Depending on the need, the Regional Fire Officer will place himself at the site and maintain contact with the Deputy Commissioner in the Main Emergency Control Centre.

The Station Officer/ Sub-Officer/Asst. Sub-Officer of the fire station closest to the scene of disaster will direct fire-fighting operations at the site and keep the Regional fire officer/station officer informed of the developments at the site.

Main functions: -

- Initiate rescue and firefighting operation with available means. Ensure that all fire fighters use proper personnel protective equipment while fighting a fire or controlling gas leak.
- Help the District Administration in evacuation of people from affected zones using escape routes decided in advance depending on the wind direction.
- Continuously evaluate the situation and decide the necessity to call in additional Fire Engines from neighboring taluks/district.
- Mobilize the services of the home guards for fire-fighting through the police.
- He will advise the Deputy Commissioner on the extent of evacuation necessary.
- Preserve valuable evidences, which may be useful for investigation later on.
- Ensure availability of water and make arrangement for private water tanker carriers.
- When the emergency is over, carry out joint inspection of affected areas along with site controller and Technical experts to ensure the emergency is under control.
- Send the message of "SAFE" to DC/SP etc. to enable him to officially call off the emergency.

Take any other appropriate actions as deemed necessary in control of emergency.

13.13 SOP FOR FIRE STATION OFFICER

The Fire Station can cater to the immediate need of the plant, but certainly not adequate to manage the emergency assumed in this document. Therefore,

1) On receipt of fire call, rush to the site of incident with all crewmembers and equipment and start fighting the fire.
2) Immediately send distress call to all other fire stations for additional reinforcement. Contacts the Divisional Fire Officer and informs him about the severity of the fire, the kind of assistance required, etc.
3) Continue to receive the necessary information from his superior officers and the DSP and adhere to the instructions.
4) Assist the police, Home guards and other Rescue Team the rescue evacuation of persons, salvage, etc.
5) Continue to be inaction till such times the divisional fire officer or his deputy arrives at the place of incident and takes charge. From there onwards, he will continue to assist the officials.

13.14 SOP FOR HOME GUARDS COMMANDANT

District Commandant/Dy. Commandant will position themselves in the Emergency Control Room and assist the District Administration in mitigating the emergency. They would be continuous in contact with the field officer/units.

Main functions: -

- Assist the Police or Fire personnel in carrying out their duties.
- Carry out rescue and evacuation operation in close association with other emergency agencies.

Evacuated areas would need to be guarded against theft

13.15 SOP FOR SUPERINTENDENT ENGINEER PUBLIC WORKS/HIGHWAY

Depending on type and location of the disaster, the in-charge of the PWD/Highway or Irrigation department representatives would make themselves available at the ECR and maintain close contact with their engineers who would be at the scene of the disaster.

Main functions: -

- Help the police to divert traffic away from the scene of accident along all the major roads.
- Ensure diversion routes are in good condition and traffic does not get jammed.
- Exhibit proper diversion signs conspicuously at suitable places.
- Provide the mobile crane/heavy earthmoving equipment for the purpose of salvage operation.
- Provide necessary assistance as required and directed by Deputy Commissioner/Superintendent of Police.

13.16 SOP FOR DEPUTY DIRECTOR OF ANIMAL HUSBANDRY

1. Deputy Director of Animal Husbandry will be the overall in charge for treatment of affected animals at site/hospital in co-ordination with police/voluntary organizations and revenue authorities.
2. On receiving information from DC, he will rush to the site and activate the Temporary Medical Centre (TMC) at appropriate places in consultation with DC.
3. Dy. Director will also co-ordinate with Assistant Commissioner/RTO/DCP /Inspector of Police (Traffic), for arranging necessary vehicles for shifting of animals, if required.
4. The officer will be provided with one Police Officer with adequate number of Police Personnel and Home guards to ensure the orderly treatment and management of the Temporary Medical Center.
5. The officer will identify the drug stores and ensure the supply of adequate and necessary drugs through the Drug Control Authorities.

13.17 SOP FOR RTO

1. The RTO will be the overall in charge for providing number of rescue vehicles like trucks, buses, cars or any other type of transportation vehicles to emergency site, rescue shelter cum rallying post etc., for transportation of human beings as well as animals.
2. Receive information from DC and act accordingly.
3. Mobilize all possible resources is arranging transportation vehicles in co-ordination with KSRTC, Truckers Association, Travel Agencies, etc, also ensure availability of adequate number of skilled drivers and advise the Inspector (Traffic).
4. Workout the requirement of heavy earth moving equipment like cranes etc., and mobilizes the same in co-ordination with such agencies/parties.
5. Depute adequate numbers of Motor Vehicle Inspectors for assisting Inspector of Police, Traffic (in charge of parking yard), and Rescue Shelter cum rallying post, at the site of emergency.

The transportation department plays an important role during any type of disaster as it would involve large-scale evacuation of people in the affected area. RTO/ARTO would be based at ECR and assist the District Administration in mitigating the emergency.
Main functions

- Deploy required number of buses with drivers to evacuate people to safe shelters.
- Mobilize various earth moving equipment and other heavy machinery from different sources required for rescue operation.
- Provide mobile workshop if required for urgent repairs/breakdown.
- Provide assistance as required and directed by Superintendent of Police/Deputy Commissioner.

13.18 SOP FOR ENVIRONMENTAL OFFICER POLLUTION CONTROL BOARD

1. On receiving information from DC, the Environmental Officer will mobilize all possible resources at his disposal and keep the laboratory functioning for analysis of pollutants, emissions, etc.
2. Rush to the site, collect the samples, analyze the pollutants and the likely effect on human life/environment and inform the DC about the same and the corrective actions to be taken to prevent further damage.
3. Act as an expert and advice the DC about the kind of message to be disseminated to the public and press, etc., on pollution matters.

The representative of the Pollution Control Board would be based in the Emergency Control Room during any disaster and ensure the environmental damage is kept minimum.
Main functions: -

- Mobilize all possible resources at his disposal and keep the laboratory functioning for analysis of pollutants and emissions.
- Rush the team to the affected area for collection of samples and analyze the same.
- Keep the Emergency Control Room informed about the possible effect on human life as well as environment and corrective actions taken to minimize the same.

13.19 SOP FOR EXECUTIVE ENGINEER KPTCL

1. The Executive Engineer will be responsible for all electrical power supplies and illumination of places like site of incident, rescue shelter, rallying posts, parking yard, temporary medical centers, emergency route, etc.
2. In case of need to establish the temporary power supply points he will do so as advised by DC and ensure adequate continuous power supply.
3. Assist any other agency such as water works, PHE as and when needed.

13.20 SOP FOR EXECUTIVE ENGINEER OF PANCHAYAT RAJ ENGINEERING

1. The Executive Engineer will be over all in charge for providing adequate sanitation facilities such as dry latrines, soak-pits, etc. at the temporary rescue shelters.
2. Ensure maintenance of hygienic conditions at all such places including the site of incidence.
3. Ensure adequate supply of potable water to all places such as rescue shelters cum rallying post, parking yard, and temporary medical centers.
4. Assist other agencies as advised by DC as and when needed.

13.21 SOP FOR D Y. DIRECTOR, FOOD AND CIVIL SUPPLIES

He would be based in the Emergency Control Room and assist the District Administration in running the safe shelters and relief centers set up during the disaster.

Main functions: -

- Will be overall in-charge or Relief and Rehabilitation activities.
- Identify the rehabilitation center in advance and establish them in shortest possible time.
- Arrange for orderly transportation of population from the emergency zone and adjacent villages in case evacuation has been ordered by Deputy Commissioner.
- Co-ordinate with the other departments connected with relief measures.
- Provide basic amenities such as food, drinking water and sanitation at the rehabilitation centers.
- Distribute food packets at the affected areas to the people, emergency services agencies such as police, fire fighting personnel and others.
- Exercise any other powers to seek any assistance from the local authorities in achieving this objective.
- Establish contact with the voluntary organizations for assistance.
- To ensure that necessary arrangements are made for the orderly return of all villagers to their respective places once the Deputy Commissioner informs about the termination of the emergency.

13.22 SOP FOR DISTRICT INFORMATION OFFICER

The District Information Officer would be based in the Emergency Control Room during any disaster and assist the district authorities in smooth operation.

Main functions: -

- Upon receiving the information from District Administration, the information officer should co-ordinate with media for giving information regarding emergency.
- Co-ordinate with the affected victims' families for giving information of their dear ones if

RESPONSIBILITIES OF OTHER LINE DEPARTMENTS: -

Designation of the officer	Duties to be performed in normal time	Duties to be performed after receiving 1st warning	Duties to be performed after the disaster
Asst. Engineer/ AEE, Electrical, KPTCL/ PWD	He should see that the field staff checks the electrical line and replace old materials used in the power supply. He should see that all had wiring in service connections are rectified. He should enumerate the diesel sale available and his jurisdiction and keep it available. He should see that trees, branches etc., fall on electrical lines are out and removed. The field staff should see that electrical supply in the places where landslides	On receipt of the 1st warning it should be communicated to all the sub ordinates staff. He should see that all the vehicles under his control be kept in perfect order. Alert the entire staff to return their headquarters and get in touch with immediate requirement. They should give wide publicity that houses consumers should arrange lanterns and battery light for use in case of power is out off.	Restoration of power lines on priority to: 1) Hospital, water supply 2) Control room 3) Railway station and 4) To other office on priority as per list appended. Live wires on ground should be removed promptly. Damaged or felled electrical poles should be immediately replaced and obstructions on roads should be get removed.

	may be serving is cut off. The field staff should be in touch with local panchayats and inform the situation at frequent intervals. To provide diesel generators to hospital water works, control room collector's office in case of failure of powers.		
Asst. Engineer/ AEE, Irrigation	The branches to canal drain to be closed. The embankments should be strengthened. It should be checked whether the passage bridge and channels are in good condition. The obstruction in the canals if any should be got removed immediately to be enabling free flow of water. The bocks and shutters of the canals are to be checked and satisfied that they are in good condition. Water supply into canals should be out off by closing the sluices. The canals and drains should be free from constructing and they should be made available for free discharge of drain water.	1st warning should be communicated to all the sub ordinate staff and employees. They should be alerted to check whether the canals and drains are in proper condition to allow free flow of water. The situation tour should take their duty places and be readily available.	Damages due to hazards to government properties, lives of man and cattle etc., should be assessed and reported to Panchayats, Sub-collector concerned immediately.
Fire Officers	The Fire Engineers should alert and other vehicles should be kept in good working condition. Materials required for use in emergency should be indented for and kept in reserve. Message received from public on disaster for help should be immediately attended.	The 1st warning should be immediately communicated to fire stations. The staff should be called on for duty. Full complement of the staff should be available for the vehicles should be obtained and kept in reserve.	

	Keep in touch with each of the other fire stations in the district.		
Executive Engineer, Roads and Buildings	Government buildings should be inspected and necessary repairs to be got executed to withstanding hazards affected. Script for slides, pamphlets and cultural programmers should be got prepared immediately. Arrangements should be made to obtain poster and films by addressing the Director through the Collectors. Public addresses equipment should be obtained kept ready. The community radio sets available in the villages should be ascertained. The names of hamlets where they are not available to be reported. The public should be fully educated regarding the precautionary measures and after disaster through available media. Specific duties should be assigned to the field staff. The field staff should proceed to the place of work allotted.	The 1st warning should be communicated immediately to all sub ordinate officers. Wide propaganda should be arranged. The sub divisional public relation officer should be available at their headquarter and got ready for disaster duty with short notice. Ensures that all community radio sets are in working condition.	Photographs of damages should be taken. The field staff should conveying formation regarding the quantum of disaster, loss of property, lives of men and cattle. They should be posted with up-to-date information and the information should be passed to the Collector immediately.
Regional Transport Officer	List of vehicles running condition to be requisitioned kept ready.	Availability of petrol, oils should be ensured. The RTOs and MVIs should be asked to serve requisition orders on owners of vehicles for duty. Soon after receipt of 1st warning all the public call officers to be informed to instruct the village panchayats, Post Master for	Electricity department for restoration. Roads and buildings for clearance. Restoration of Telephone lines to control room to Collector, Hospital, Fire Station, SP and other offices as per the list appended.
Motor Vehicle Inspector	The MVI/AMVI will report before ADM (Relief)		
Civil Supplies Officers	The Asst. Engineer and Junior Engineers will remain alert.		
Divisional Manager,	Based on the experience on the previous disasters		

Telephone	sufficient number of vehicles should be procured and kept in district headquarters To contact all sub division control room and Collector's Office.	dissemination of warning in the villages. All telephone sets to be informed of disaster warning soon after the receiver is lifted from the book as in the case of new year's greetings and to request to telephone users to convey disaster warning to other public. Provision of vehicles	
	Identification and supply of availability of potable water sources, water purification tablets, construction of temporary shelters and maintenance		ZP/PWD/ULBs
	Identification of safe shelters for animals		DD, Veterinary Dept.
	Deployment of Home guards and constables to maintain law and order.		Police, Dy. Commandant, Home guards
	Encouraging NGOs to carry restoration and reconstruction works.		Revenue
	Supervising all the activities		Secretary Revenue/CS
	Collection of progress reports and furnishing report to the Government.		Secretary Revenue/CS

CHAPTER - 12

STANDARD OPERATING PROCEDURES FOR DEPARTMENTS

14.1 Introduction

Traditionally, the community provide the first humanitarian response. Responding to a sudden disaster is difficult and may become chaotic and complicated for the authorities and community. Disaster events during night time, rainy season or winter season with collapse of communication & transport network may further complicate the response. The first reaction is to act spontaneously. The district administration headed by Deputy Commissioner provides first organized response to any disaster calamity or crisis. Immediate response to any disaster is to launch rescue operations aimed at saving human lives animals lives and property in order of priority. The rescue operations are to be carried out over a short period of time ranging from few hours to few days. During this period depending upon intensity, mobilization of all possible resources is to be done. As the rescue operation is on, the process of providing relief such as food, clothing, shelter, security, first aid, sanitation etc. also starts and this phase may last for few days.

14.1.1 Response

Immediately on receiving information about the disaster that strikes any area the trigger mechanism is
activated either from 'TOP' or from the 'BOTTOM' depending upon the situations the following actions will be initiated:

- Generation of event scenario report to be sent as per the trigger mechanism.
- Preparation of current status on life line facilities and infrastructure.
- Rapid visual assessment of damage to buildings.
- Assessment of Causalities.
- Assessment of number of displaced persons.
- Assessment of transport requirements
- Assessment of requirement of shelters
- Assessment of basic need requirement of displaced persons.
- Status of search and rescue operations.
- Details and listing of missing persons.
- Assessment of type & extent of medical support for undertaking emergency operation.
- Status of identification of stakeholders and role players for providing supporting response and recovery operations.
- Status of activating call center for providing multiple pieces of information to callers and relatives of victims.

Primary tasks during this phase would be

- Proper need assessment through village response
- Deployment of resources to all affected sections in an equitable manner
- Besides food, cloth and shelter facilities such as public health and sanitation is to be provided in shelters or camps.
- Ensuring total transparency in distribution of relief material
- Putting in place an objective method of assessing damage

14.1.2 Role of Specialized agencies

- Civil defenseorganizations will be involved in organizing relief & rescue operations
- Recognizing the fact that police are among the first responders in any crisis all police stations in the State would be further trained for ensuring effective response rescue in the wake of disaster or crisis situation. As first responder police normally communicate information and mount rescue and relief operation with whatever rescue available at their disposal.
- Specific rescue teams will be constituted at State, District and Sub Division level to serve as an auxiliary to Police & Fire teams. Home guards will also assist the police in maintaining law and order.

14.1.3 State EOC

Getting early warning and alerts are critical to mount timely and appropriate response. The unified SEOC located in the Disaster Management Secretariat will handle information related to disaster management. The state EOC would provide necessary information and coordination to all nodal departments and ESF. The SEOC with robust communication system will be handled by concerned nodal departments by deploying their specialist at the time of crisis.

14.1.4 Sequence of Action at the State Level:

SEOC

On receipt of information either from NEOC from DEOC or from early warning agencies at national or state level or from any other reliable source the following action will be taken:

- SEOC shall bring the information to the notice of SEC
- Issue alerts / warnings to all concerned DDMAs / Nodal Departments ESF and all other designated Departments in the State.
- Release the information for public through AIR, television and Press.
- Establish contact and provide status report to NEOC, MHA
- Collect, collate and synthesize information for consideration of SEC & SDMA
- Provide regular appraisal and status reports to all designated authorities in the State.
- Arrange meetings of SEC
- Activate ESFs if situation warrants.

14.1.5 State Disaster Management Authority (SDMA):

- Meeting of SDMA shall be convened on the direction of chairperson.
- SDMA will take stock of the situation
- SDMA shall assess level of disaster and outside assistance and cooperation required.

14.1.6 State Executive Committee (SEC):

- Pr- Secy. Department of Revenue(Disaster Management) shall convene the meeting of SEC
- SEC shall assess the situation and level of disaster

- Based on the assessments SEC shall give directions for handling the situation and measures to be taken by role players in response to any specific situation or disaster.
- SEC shall review and coordinate response from all departments.
- SEC shall call for NDRF, ARMY, AIRFORCE or any other outside support warranted for handling the situation.

SEC may depute team for on the spot situation assessment and need assessment.

- Sec shall mobilize resources and dispatch them to concerned districts.
- SEC shall review the situation regularly as per demand of the situation.
- SEC shall maintain close liaison and contact with NDMA/MHA and keep them abreast of the situation.
- SEC shall constantly evaluate their own capabilities to handle the situation and project the anticipated requirements central resources.
- SEC will take necessary steps to pool the resources for better management of crisis situation.

14.1.7 Role of Key Departments:

- At the time disaster and on activation of State ESF plan, all the departments shall deploy nodal officers to SEOC for coordination measures.
- All concerned departments shall coordinate with their national counterparts and mobilize specialist resources and assistance as per requirement.
- All departments and organization of the state shall place the resources at the disposal of DDMA during disaster situation.

14.1.8 District Emergency Operation Centre (DEOC):

- District Emergency Operation Centre located in the office of Deputy Commissioner shall discharge the following functions:
- On receipt of information from SEOC/SEC or from any field office or Panchayat or from any other reliable source, DEOC will bring this in the notice of DDMA.
- DEOC shall issue necessary alerts to all authorities in the district or at state level depending on the situation.
- DEOC will send regular status and appraisal reports to SEOC.
- DEOC shall maintain all records.
- DEOC shall collate and synthesize information for consideration of DDMA.

14.1.9 District Disaster Management Authority:

- DDMA shall assess the situation and give directions to the concerned department heads in the district for better handling of the situation.
- DDMA shall assess the situation by taking into consideration reports from all formal and informal sources and decide upon the level of the disaster.
- Issue necessary direction for handling the response, relief & restoration measures.
- Call for outside support if necessary
- Keep the SDMA /SEC informed about the situation
- Raise demands for support and assistance

- Assess the resource availability and issue necessary direction for pooling resources for speeding an effective response.
- Process requests for NDRF/Army or any other specialized help.
- Coordinate with NGOs and Civil Society for supplementing the efforts of Govt.
- Monitoring and reviewing the situation on a regular basis.

14.1.10 First Response:

At the local or village level, when disaster is sudden and no early warning signals are available community members and specially the village disaster response team comprising Gram Panchayath Adhyakshya, PDO, Village Accountant, Supervisory level staff of GP & elected members, Civil Defense, nearest police station, Home-guards, Fire, Health and Family welfare, NCC, NSS, NYKS, Ex-servicemen volunteers shall be the first responder.

14.1.11 First information report:

- District Emergency Operation Centre shall prepare and send first information report to SEOC/summarizing the following :
- Severity of the disaster
- Action being taken
- District resources available and coping capacity.
- Need assessment for relief along with quantities.
- Logistics for delivering relief.
- Assessment on future development including new risks.
- FIR should be sent within 24 hours of occurrence of calamity as per the standard format.

14.1.12 Daily Situation Report:

Daily situation report is to be submitted by DEOC for the consideration of DDMA/SDMA/SEC. The report is to be submitted in a standardized form. SOEC shall submit similar report to NDMA/MHA.

Air dropping of food in inaccessible areas:

DDMA/SDMA/SEC shall decide about air dropping of essential commodities in cut off and inaccessible pockets. SEC will liaise with AIR Force or Govt. of India for requisition the helicopters. Food and Civil Supplies Department shall arrange preparation food packets for airdropping as per the advice of DDMA/SDMA.

Rapid Damage Assessment:

Teams of officials drawn from various sector and with the support of local Tahasildar shall make first hand ground assessment of the damage & loss for deciding upon the rescue & relief operations. Preliminary report should be available within 24 hours of the calamity.
Proformas for FIR, Daily situation report and Damage assessment are placed at Annexures II-IV.

Immediate restoration basic facilities & repair of infrastructure:

KPTCL and KUW&SDB will ensure the restoration and repair for providing electricity and drinking water. IT department through BSNL and other concerned agency shall ensure the communication for smooth operation of rescue and relief works.

Disposal of dead bodies:

District hospital, Police and District administration and forest department shall facilitate the disposal of bodies in event of mass casualties. The process of identification and handing over to next of kin shall be followed. Mass burial/disposal of bodies shall be the last resort. The bodies shall be disposed in honorable manner by observing religious and cultural practices in the area. NDMA guidelines in this direction would be followed. Brief guidelines are at Annexure – V.

Disposal of Carcasses:

Department of Animal Husbandry in association with the local administration shall be responsible for disposal of carcasses in the event of mass destruction. (As per the procedure in Annexure - VI).

Information & Media Management:

Department of Information and Publicity in consultation with SEC/DDMA shall be responsible for dissemination of information to electronic and print media. Press briefing shall only be given by a person authorized by DDMA/SEC

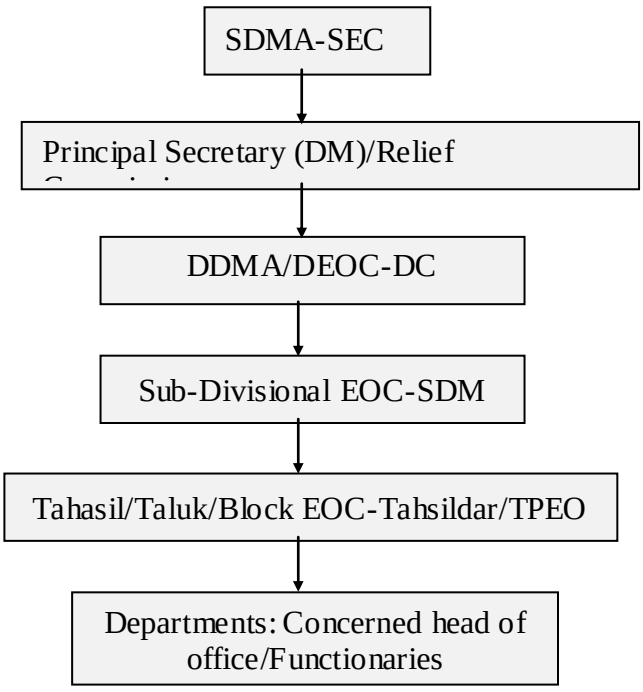
Institutional Mechanism

The State Government has adopted the Disaster Management Act 2005 as enacted by the Govt. of India for providing effective mechanism for Disaster Management in the State.

14.2 State Disaster Management Authority:

The State Disaster Management Authority (SDMA) has the mandate to lay down the state policies and approval of State Disaster Management Plan, with the assistance of SEC. Roles and Responsibilities explained in Chapter 4.

Hierarchy



The information flow when warning signals available shall be as follows:

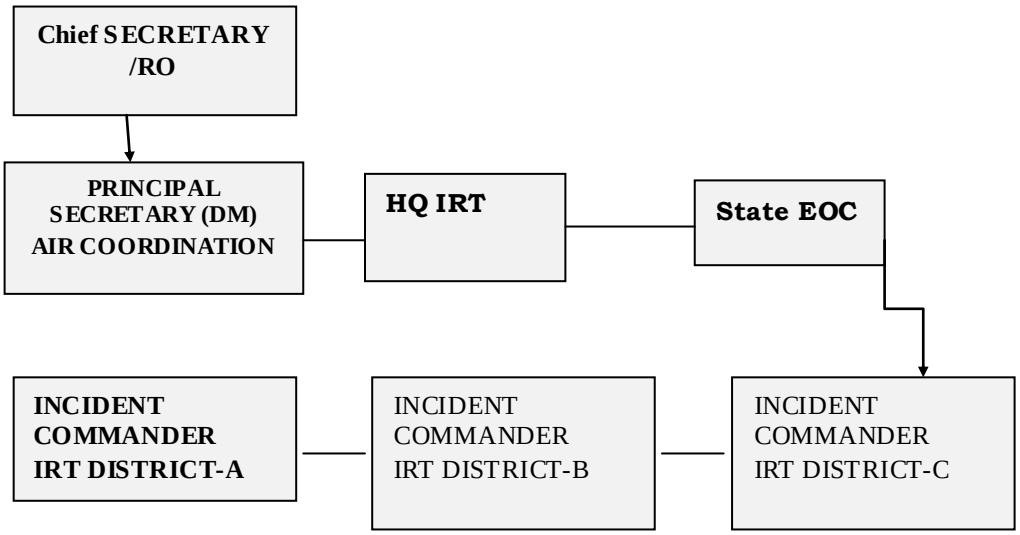
- ↓ Central nodal agency (IMD-CWC)
- ↓ NEOC/NDMA/MHA
- ↓ Chief Secy. /Pr-Secy. Revenue(DM)/ SEOC
- ↓ DEOC/Deputy Commissioner/DDMA
- ↓ SDM
- ↓ All nodal Departments-ESF
- ↓ TPEO / Tahasildar
- ↓ GP Adhyaksha / Village Disaster Management Committee
- ↓ All nodal Departments
- ↓ All nodal Functionaries

When Disaster occurs without early warning:

- The village response team or any other functionary at the village level shall inform the Tahasildar/SDM/TPEO/DEOC about the incidence
- Tahasildar/SDM/TPEO/DEOC shall apprise the DDMA and activate the operations of rescue & relief with whatever resources at their command.
- DDMA shall assess the situation and declare the level of disaster i.e. L0, L1, L2, L3.
- DDMA shall identify the support requirement and seek assistance if required.
- SEC and SEOC are activated and NEOC/NDMA/MHA informed.
- SEC shall assess the situation and mobilize external resources if required.
- DDMA shall constantly assess and review the situation and activate coordination, command and control.
- DDMA shall deploy teams for rapid assessment of damage.
- Line department teams shall begin work for restoration of power, water supply telecommunication and road connectivity.

14.3 Trigger Mechanism and Incident Response System (IRS):

The Trigger Mechanism prescribes the manner in which the disaster response system shall be automatically activated after receiving early warning signals of a disaster happening or likely to happen or on receipt of information of an incident. Activities envisaged in the SOPs under the response phase shall be initiated simultaneously without loss of time to minimize the loss and damage and mitigate the impact of disaster.



As per the DM Act-2005, CS is the Chief Executive Officer (CEO) of the SDMA as well as Chairperson of the SEC and Deputy Commissioner is the Chairperson of the DDMA and has been assigned all-encompassing role of planning, coordination and execution of DM in his jurisdiction assisted by all line departments and local bodies. As per the Incidence Response System (IRS) the chief Secretary shall function as RO at the State level and Deputy Commissioner at district level.

14.4 Roles and Responsibilities of Chief Secretary as RO of the State:

1. The CS who is the head of the State administration and also chairperson of SEC and CEO of SDMA, will perform responsibilities laid down under clause 22 (2) and 24 of the DM Act, 2005;
2. Ensure that IRTs at State, District, Sub-Division, and Tahsil/Taluk Panchayat are formed and IRS is integrated in the State and District DM Plan;
3. Ensure that a reasonable amount of interest fund is sanctioned clearly delineating the procedure for emergency procurement;
4. Ensure funds of Finance Commission (FC) for capacity building of administrative machinery in DM is spent appropriately;
5. Ensure that IRS and all key issues of DM are covered in the training conducted by ATI and other training institutions of the State;
6. Ensure that effective communication and Web based / online Decision Support System (DSS) is in place in the SEOC and connected with District, Sub-Division, Tahsil/Taluk level IRTs for support;
7. Ensure that toll free emergency numbers existing in the State for Police, Fire and Medical support and are linked to the EOC for response, command and control;
8. Activate IRTs at State headquarters when the need arises and issue order for their demobilization on completion of response;
9. Set overall objectives and incident related priorities;
10. Identify, mobilize and allocate critical resources according to established priorities;
11. Ensure that local Armed Forces Commanders are involved in the Planning Process and their resources are appropriately dovetailed, if required;
12. Ensure that when NDRF, Armed Forces arrive in support for disaster response, their logistic requirements like, camping ground, potable water, electricity and requirement of vehicles etc. are taken care of;
13. Coordinate with the Central Government for mobilization of Armed Forces, Air support etc. as and when required;
14. Identify suitable nodal officer to coordinate Air Operations and ensure that all District ROs are aware of it;
15. Consider the need for the establishment of AC, if required;
16. Establish Unified Command (UC) if required and get the approval of Chief Minister;
17. Ensure that telephone directory of all ESF is prepared and available with EOC and IRTs;
18. Ensure use of Global Positioning System (GPS) technology in the vehicles (Police, Fire, Ambulance etc.) To get connectivity for their effective utilization ;
19. Keep the chairperson of SDMA informed of the progress of incident response;
20. Ensure that the Non-Governmental Organizations (NGOs) carry out their activities in an equitable and non-discriminatory manner;

21. Conduct post response review on performance of IRTs and take appropriate steps to improve performance; and

22. Take such other necessary action as the situation demands.

14.4.1 Coordination of Response at the State Level:

The State Government / CS will designate various officers of line departments for the corresponding IRS positions to perform their duties. She/he may delegate some of the functions to the Principal Sec/ Secretary(DM)of the State, for the day to day supervision and management of the incident. She/he will however remain fully briefed by SEOC and IC and be aware of all developments and progress of response activities at all times. In case an incident is beyond the control of a District administration or a number of Districts are affected, the RO of the State will consider setting up of an Area Command and designate an Area Commander (AC). He may consider the Divisional Commissioner to act as AC or may deploy appropriate/suitable officer irrespective of seniority. The RO may also deploy some supporting staff to assist him.

14.5 Roles and Responsibilities of Deputy Commissioner as Responsible Officer (RO):

- Ensure that IRTs are formed at District, Sub-Division, Tahasil/Taluk levels and IRS is integrated in the District DM Plan as per Section 31 of the DM Act, 2005. This will be achieved by issuing a Standing Order by the RO to all SDMs and Tahasildars/ TPEOs;
- Ensure web based / on line Decision Support System (DSS) is in place in DEOC and connected with Sub-Division and Tahasil / Taluk level IRTs for support;
- Ensure that toll free emergency numbers existing for Police, Fire and Medical support etc. are linked to the DEOC for response, command and control;
- Obtain funds from State Government as recommended by the 13th FC and ensure that a training calendar for IRTs of District is prepared and members of IRTs are trained through ATIs and other training institutions of the District;
- Delegate authorities to the IC;
- Activate IRTs at District headquarter, Sub-Division, Tahasil / Taluk levels, as and when required;
- Appoint / deploy, terminate and demobilize IC and IRTs as and when required;
- Decide overall incident objectives, priorities and ensure that various objectives do not conflict with each other;
- Ensure that IAP is prepared by the IC and implemented;
- Remains fully briefed on the IAP and its implementation;
- Coordinates all response activities;
- Give directions for the release and use of resources available with any department of the Government, Local Authority, private sector etc. in the District;
- Ensure that local Armed Forces Commanders are involved in the planning process and their resources are appropriately dovetailed, if required;
- Ensure that local Armed Forces Commanders are involved in the planning process and their resources are appropriately dovetailed, if required;
- Appoint a nodal officer at the District level to organize Air Operations in coordination with the State and Central Government NO. Also ensure that all ICs of IRTs of the District are aware of it;

- Ensure that the NGOs carry out their activities in an equitable and non- discriminatory manner;
- Deploy the District Headquarter IRTs at the incident site, in case of need;
- Ensure that effective communications are in place;
- Ensure that telephone directory of all ESF is prepared and available with EOC and members of IRTs;
- Ensure provision for accountability of personnel and a safe operating environment;
- In case the situation deteriorates; the RO may assume the role of the IC and may seek support from the State level RO;
- Mobilize experts and consultants in the relevant fields to advise and assist as he may deem necessary;
- Procure exclusive or preferential use of amenities from any authority or person;
- Conduct post response review on performance of IRTs and take appropriate steps to improve performance; and
- Take other necessary action as the situation demands.

14.6 Area Command (AC):

In the event of disaster involving more than two districts the Commissioner of the respective zone will act as Area Command. Area Command will be activated when span of control becomes very large either because of geographical reasons or because of large number of incidents occurring at different places at the same time. Area Command may also be activated when a number of administrative jurisdictions are affected. AC will facilitate closer supervision, support to the IRTs and resolution of conflicts locally. In such eventualities the District Magistrate (RO) of the District will function as the IC. Similarly the District RO may introduce it Sub-Division wise when a large number of Tahasils / Taluks in different Sub-Divisions get affected. The RO will ensure adequate supporting staff for the AC. The roles and responsibilities of AC are as follows:

- Ensure that incident management objectives are met and do not conflict with each other;
- Allocate critical resources according to identified priorities;
- Ensure proper coordination in the management of incidents;
- Ensure resolution of all conflicts in his jurisdiction;
- Ensures effective communications;
- Identify critical resource needs and liaise with the SEOC for their supply;
- Provide for accountability of personnel and ensure a safe operating environment;
- Perform any other tasks as assigned by the RO.

14.6.1 Unified Command (UC):

In an incident involving multiple agencies, there is a critical need for integrating resources into a single operational organization that is managed and supported by one command structure. This is best established through an integrated, multi-disciplinary organization. In the IRS this critical need is addressed by the UC.

UC is a framework headed by the Governor / Administrator / CM and assisted by the CS that allows all agencies with jurisdictional responsibilities for an incident, either geographical or functional, to participate in the management of the incident.

UC will incorporate the following components:

- A collective approach for developing strategies to achieve incident goals;

- Improved information flow and inter-agency coordination;
- Familiarity with responsibilities and constraints of other agencies;
- Respect for the authority or legal responsibilities of all agencies;
- Optimal synergy of all agencies for the smooth implementation of the IAP; and
- Elimination of duplication of efforts.

14.7 Local Authorities PRIs and ULBs:

The DM Act, 2005 has defined the roles of Municipalities, Municipal Corporations, Municipal Councils and PRIs under section 41 (1) (2). These bodies will ensure that their officials and employees are trained in DM and resources relating to DM are also maintained in order to be readily available for use in any threatening disaster situation. These bodies will carry out relief activities in the affected areas in accordance with State and District DM Plans.

14.7.1 Community Participation in Disaster Response (CBDM):

A number of community based organizations like NGOs, Self Help Groups (SHGs), Youth Organizations, Volunteers of NYK, Civil Defense (CD) & Home Guard, etc., and workers of different projects funded by Government of India like National Rural Health Mission (NRHM), Integrated Child Development Services (ICDS), etc., would be required to act as volunteer in the aftermath of any disaster.

In the IRS structure, the skills of these organizations shall be utilized as Single Resource. The ROs of the State and District will ensure that such resources at village, ward or Gram Panchayat levels are organized with the help of leadership of PRIs and other community leaders. Their resources would be identified as per hazard and they would be encouraged and trained to be a part of the IRT. As a part of Plan one NGO for each Taluk/block as lead NGO shall be identified and whose capacity will be developed to coordinate response.

14.7.2 Role of Village Disaster Response Committees (VDRC):

The plan envisages constituting village response committees in each Panchayat comprising Panchayat President, Panchayat Secretary/PDO and village Accountant besides ward members. The village committees will constitute response teams from amongst the villagers by taking in to consideration the local needs vis-a-vis the hazard and vulnerability assessment. These response teams will be trained as first responders to garner disaster response in the absence of outside emergency responders. The plan envisages covering all Panchayats. The capacity building would involve awareness raising (about hazard, risks, disaster response) organizing training (medical first aid search & rescue extrication from damaged buildings, road clearance, and firefighting) equipping (first aid kit, radio, extrication equipment) and networking. The plan also envisages establishing and strengthening local warning systems holding community drills through VDRCs. The committee would be responsible for:

- Developing the village Disaster Mitigating Plan
- Keeping contact with Taluk/sub-district and District level committees and all other agencies related with the issue.
- Constituting response teams for search& rescue, medical aid, extrication of bodies, firefighting or for any other purpose as per village specific needs.
- Ensuring house hold preparedness to village specific hazards.
- Identification of safe locations for temporary shelters

- Training and capacity building of all teams
- Resource inventory and gap identification with respect to the needs
- Identification of vulnerable groups

14.8 State Emergency Operations Centre (SEOC)

SEOC is an offsite facility which will be functioning from the DM Department Secretariat which actually is an augmented control room having communication facilities and space to accommodate the various ESFs emergency supports functions. It will be manned by various line departments of Government and other agencies, whose services are essentially required during incident response. It will allow all agencies and departments to share information, make decisions, activate plans, deploy IRTs, perform and log all necessary response and relief activities and make the EOC effective.

Functioning of SEOC:

- Secretary(DM) Revenue, shall be overall in charge;
- Nodal officers of all concerned line departments will be the member of EOC and will have authority to quickly mobilize their departmental resources;
- The SEOC will have communication facilities with connectivity to Block, Taluk & Village level;
- SEOC will be equipped with a vehicle mounted with HF, VHF and satellite telephone for deployment in the affected site to provide immediate connectivity with the headquarters and ICP;
- SEOC will have connectivity with NEOC & National & State warning facilities;
- It will have well defined provision and plan for dovetailing the NDRF, Armed Forces and communication capabilities with the local communication set up. There will be proper plan so that all are able to connect with each other in case of large scale disasters or failure of the local communication systems;
- SEOC will have connectivity with KSNDMC and KARSAC for data and information.
- SEOC will have DM plans of all line departments incorporating the following:
- Directories with contact details of all emergency services and nodal officers;
- Connectivity with all District headquarters and police stations;
  Database of NGOs working in different geographical areas;
  Demographic details of the State and Districts;

Online /Web based DSS with the availability of at least the following components:

- Standardization of Command Structure with the details of the earmarked and Trained personnel in IRS;
- Proactive planning facilities;
- Comprehensive resource management system;
- Geographic Information System (GIS) for decision support; and
- Socio-economic, demographic and land use data for planning;
- Resource inventories of all line departments and connectivity with database of India Disaster Resource Network (IDRN) India Disaster Knowledge Network (IDKN) and Corporate Disaster Resource Network (CDRN);

14.8.1 Incident Response Team (IRT):

The ROs of the State and Districts will constitute IRTs from among officers at the State and District level respectively. The members of IRTs will be properly trained and sensitized regarding their roles during the pre-disaster phase itself. The SEOC & DOEC will provide continuous support to the on-scene IRT(s) and if required join them or take over response on the directions of the RO.

14.8.2 Incident Response System (IRS) Facilities:

For effective response the following facilities will be established depending on the needs of the incidents.

Incident Command Post (ICP):

The ICP is the location at which the primary command functions are performed. The IC will be located at the ICP. There will be only one ICP for each incident. This also applies to situations with multi-agencies or multi-jurisdictional incidents operating under a single or unified command will be located with other incident facilities like Incident Base.

The ICP may be located at Headquarters of various levels of administration and in case of total destruction or non-availability of any other space, the ICP will be located in a vehicle, trailer or tent with adequate lighting, effective communication system.

Deployment of IRT:

On receipt of information regarding the impending disaster, the EOC will inform the RO, who in turn will activate the required IRT and mobilize resources. The scale of their deployment will depend on the magnitude of the incident. In the event of occurrence of disaster without warning local IRT (District, Sub-Division, Tahasil /Taluk/ Village) will respond and inform the higher authority and if required seek reinforcement and guidance.

14.9 Roles and Responsibilities of Nodal Departments/ Agencies

State Disaster Management Authority	Lay down policies and plans for disaster management in the State. Declare emergency situation in case of State level disaster and the end of it. Provide policy directions and integration of Disaster Management programmes in the state development framework.
State Executive Committee for Disaster Management (SEC)	Implementation of the State Plan and monitoring body for management of disasters in the State.
ATI Mysuru (Centre for Disaster Management)	Primary agency responsible for conducting and coordinating training to all government officials involved in the planning and implementation of preparedness, mitigation response and relief work.
State Technical Committee(s)	Responsible for ensuring community participation in the disaster management activities. They will also advise the SEC on implementation of activities at State level.
Department of Revenue (Disaster Management)	Member Secretary of SDMA. Member of SEC, Overall coordination, implementation of the EOC activities and documentation and reporting to the SEC
Department of	Primary agency for maintenance of public infrastructure identifies safer

Public Works (PWD)	places, assess physical damage, identify safer routes, and provide necessary reconstruction and rehabilitation support. Ensure hazard resistant features as per all building by laws and maintain all National & State roads.
Department of Town and country planning	Primary agency responsible for evolving policy and ensuring land use, hazard wise zonation and implementation building by laws.
Department of Urban development	Main agency to ensure repair and maintenance in the urban areas. Implementing disaster resistant Building Codes and Designs
Department of Education	The department will prepare curriculum related to disaster management and conduct training programme for teachers and children. The department will coordinate with the local authority and arrange for mock drills, search and rescue drills. Awareness campaigns, Volunteer Teams. Ensuring maintenance and retrofitting of school buildings/school safety.
Department of Home	Be the primary agency responsible for "Urban Fire", "Village fire", Nuclear disasters, Serial Bomb blasts and Festival related disasters. And also for Security, evacuation, emergency assistance, search and rescue, first aid, law and order, communication, shifting of people to relief camps, traffic management. Burial work of dead bodies, Fire management.
Department of Forest	Be the primary agency responsible for "Forest Fire" and Man-Animal conflicts.
Department of Energy	Primary agency responsible for electrical disasters and fires. It will ensure power supply for public facilities such as hospital, police stations, telecommunication building and meteorological stations. Coordination with Hydro Power Projects.
Department of Science & Information Technology , KARSAC	Responsible for the fail proof communication. Maintenance of IT infrastructures, maintain communication and satellite links.
Department of Irrigation	Primary agency responsible for Floods, Water supply and Drought, Issue flood warnings, identification of safer places, construct embankments, arrangement of boats and pump sets, swimmers and divers and communication.
Department of Health	Be the primary agency responsible for "Biological Disasters and Epidemics". First aid, health and medical care, ambulance arrangements, preventive steps for other diseases, establishment of health camps. Providing Trauma Centers and all other health related support.
Department of Information and Public Relations	Communicate warnings to the public, relay announcements issued by SEC, telecast special programmes for information and actions, education and awareness messages for preparedness actions and coordinated response. Promote disaster related polices, provide emergency communication systems, enable critical communication links with disaster sites and coordinate with media.
Department of Rural Development	Primary agency to implement vulnerability reduction projects to alleviate poverty and improve people's livelihoods. Ensure Rural development schemes implemented in the State incorporating disaster reduction measures. Assists in rehabilitation of the victims.
Department of Agriculture	Primary agency for hailstorms, droughts and pest attacks. To provide seeds and necessary planting material and other inputs to assist in early recovery. Information to farmers on rainfall and cropping methods to avoid drought situations
Department of Finance	Arrange necessary funds and ensure equitable distribution, manage accounts.

Department of Planning	Allocation of funds on priority basis for disaster mitigation and rehabilitation projects
Department of Transport	Primary agency for Road accidents. Arrange for sending personnel and relief material to the disaster affected area, relocate the affected people, keep access routes operational and inform about alternate routes. Keep an inventory of resources available with Govt. & private operators.
Department of Town and Country Planning	Ensure hazard resistant features are in all building by laws. Zoning for safe construction sites and development of policies.
Department of Technical Education and vocational training	Be the primary agency responsible to conduct certificate training programmes for construction workers. To create a pool of qualified masons to ensure safe construction practices in construction work.
Department of Food, Civil Supplies and Consumers Affairs	Plan for food storage locations keeping in view the necessity. Primary agency responsible for identifying the basic needs of food in the aftermath of a disaster or emergency, to obtain appropriate supplies and transporting such supplies to the disaster area.
Department of Social Welfare	Primary agency for building capacities and increasing awareness of disabled persons and women. Organizing special camps for the disabled, widows, children and other vulnerable groups. It will also provide necessary help and assistance for socio-economic rehabilitation.
Department of Industries	Primary agency for landslides and mudflows and mining collapses.
Department of Horticulture	The primary agency for hailstorm and Pest Attack for horticulture sector. Support in crop damage assessment due to disasters.
Department of Animal Husbandry	Primary agency for Animal epidemics. Responsible for fodder assessments, supply and management during disasters and disposal of dead animals.
Department of Panchayati Raj	Ensure training of Panchayati Raj Institutions on disaster management and also ensure that all the development schemes of the department have the component of disaster mitigation as an integral part.
International Agencies / NGOs	Provide relief, coordinate with Government, and conduct awareness and capacity building programmes, preparedness activities at community level, assist in reconstruction and rehabilitation.
Department of Tourism	Coordinate in providing temporary shelters, food packages for air dropping.
Department of Disaster Management, KSNDMC	Monitoring natural disasters such as drought, flood and advise farmers about cropping pattern, drought/flood situations, giving early warning to officers and departments concerned regarding disaster events.

14.9.1 Standard Operating Procedures for Responsible Departments/Agencies

These procedures shall be updated and revised every six month incorporating the new insight experience and understanding of vulnerability & risk perceptions and disaster that take place with the passage of time.

The departments, divisions and agencies will organize proper training of officers and staff so that they can help in rescue, evacuation and relief work at different stage of disaster. Emergency responses teams will be kept ready by each department so that they can move to disaster site/affected area on short notice. The Standard operating procedure shall be followed during normal times, warning stage, disaster stage and post disaster stage.

14.9.2 Department of Revenue (Disaster Management)

Primary Tasks:

- To coordinate with Govt. of India & National Disaster Management Authority.
- To function as a secretariat of the State Disaster Management Authority.
- To coordinate the relief recovery operations in the wake of disasters.
- To declare and notify Disaster Situation.

Preparedness function

- Establish infrastructure for state EOC and maintain it in state of readiness with all equipment in working order and all inventories updated.
- Train personnel on operations of EOC.
- Ensure basic facilities for personnel who will work at district level for disaster response.
- To coordinate the preparedness functions of all line departments.
- Establish disaster management funding mechanisms to ensure adequate resources for preparedness work, and quick availability of resources for relief and rehabilitation when required.
- Help DDMA with additional resources for disaster preparedness.
- On annual basis report to the SEC of the preparedness activities.
- Establish and activate help lines through police and health departments and district public relations office.
- Prepare a list of potential shelters with clearly specifying their capacity and check upon their suitability for accommodating people with varying social behavior.
- Prepare a plan for the disposal of dead bodies and carcasses.
- Constitute / activate Village-level Preparedness Teams with the help of PRIs local NGOs and revenue officials.
- Prepare & update inventory of resources every quarter.
- Coordinate with National & International Institutions
- Development of policies
- Facilitate convening the meeting of District Disaster Management Authority
- Annually update the District Disaster Management Plan.
- Maintain and activate the District level EOC.
- Establish communications with state EOC and all stakeholders at all levels for purpose of receiving and sending warning and information exchange through district control room.
- Ensure collation of expense accounts for sanctions and audits.

Mitigation

- Ensure that funds are being allocated under the State Mitigation Fund.
- Ensure that structural and non-structural mitigation measures are taken by all its department offices.
- Establish warning system between State – District and in high risk zones.
- Monitor implementation of construction norms for all types of buildings and infrastructure.

- **Alert and Warning Stage**

- Maintain contact with forecasting agencies and gather all possible information regarding the alert.
- Ensure activation of State level EOC in standby mode.
- Instruct all ESFs to remain in readiness for responding to the emergency.
- Advise concerned DDMA to carry out evacuations where required, and to keep transport, relief and medical teams ready to move to the affected areas at a short notice.

- Dispatch field assessment teams, if required.
- Provide assessment report to the SDMA.

Response

- Activate EOC in full form
- Coordinate and plan all activities with the ESFs
- Conduct Rapid Assessment and launch Quick Response.
- Conduct survey in affected areas and assess requirements of relief
- Distribute emergency relief material to affected population.
- Coordinate all activities involved with emergency provisions of temporary shelters, emergency mass feeding, and bulk distribution of coordinated relief supplies for victims of disasters.
- Coordinate with GREF, ITBP, Army, and Indian Air Force as per the demand of the situation.
- Prepare an evacuation plan for villages which are devastated or affected.
- Ensure the supply of food grains through the Public Distribution System.
- Prepare a list of relief items to be distributed.
- Formulate sector specific teams such as transport, material and equipment for responding to the disaster incident.
- Prepare a transportation plan for supply of relief items.
- Convene meetings of all NGOs, Youth Clubs, and Self Help Groups operating in the district and assign them unambiguous responsibilities for relief, recovery and rehabilitation.
- Ensure to establish and manage relief camps through key departments responsible for ESF.
- Call for emergency meeting to take stock of the situation. Develop an action plan.
- Appoint In-charge Officers of Response base.
- Ensure damage and need assessment through teams formed through concerned department.
- Commence functioning of IRS and ESF systems.
- Recall important functionaries from leave; communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Ensure that panic does not occur.
- Activate all emergency communications.
- Coordinate NGO, INGO and international agencies interventions/support.
- Ensure media briefing through a DPRO or an officer specifically designated for the purpose.

Recovery and Rehabilitation

- Ensure preparation of rehabilitation plan for displaced population through ULBs/PRIs etc.
- Organize initial and subsequent technical assessments of disaster affected areas and determine the extent of loss and damage and volume and nature of relief required.
- Keep the SDMA informed of the situation.
- Ensure supply of food, drinking water, medical supplies and other emergency items to the affected population.
- Visit and coordinate the implement of various rehabilitation programmes.
- Coordinate the activities of NGOs in relief and rehabilitation programmes.
- Allocate funds for the repair, reconstruction of damaged infrastructure after considering their overall loss and damage.
- Ensure Provision of Nutritional aspects of food for disaster victims.
- Prepare an evacuation plan for population from the dangerous area / buildings as per the advice of agencies identified for issuing warnings before, during & after the incident.
- Ensure immediate disbursal of compensation.

Checklist:

Sl. No.	Preparedness Measures	Action Taken/Remarks
1	Update District Disaster Management Plan twice a year specifically with reference to the resources and improved HVRA.	
2	Check upon communication network; phones, wireless, fax, internet, HAM network every month.	
3	Identify and determinate Hazard wise most vulnerable & risk prone pockets quarterly.	
4	Activate District Control Rooms establish communication with sub- division, The, Block & Village level functionaries in the close proximity affected area.	
5	Fix the location of Response base	
6	Designate In-charge officials of the response base.	
7	Check the availability and deployment of resources and mobilize them.	
8	Convene meetings of District Disaster Management Authority once in three months	
9	Convene civil defense, NGOs, PRIs and ULBs meetings prepare a list of NGOs, PRIs and ULBs with their Functional Specialization and Geographical Coverage.	
10	Check the availability of Food Grains in PDSs shops and other stocking and distributors in the district	
11	Prepare a list of relief items for distribution division wise keeping in view the food habits of people	
12	Determine quantity of relief items as per minimum standards and expenditure to be incurred in it.	
13	Prepare a transport and alternate transport plan for evacuation and distribution of relief	
14	Prepare a plan for VIP's movement.	
15	Prepare a media plan for dissemination of information to the people of the district; local newspaper , radio, TV and cable, etc.	
16	Ensure appropriate stocking of relief material received from outside.	

Department of Home

Department of Home has an important role of providing security, logistics, and if necessary, assistance in distribution of relief items and provision of equipment for emergency response.

Primary Tasks:

- Maintain Law & Order
- Facilitate the evacuation of affected people
- Undertake search & rescue
- Ensure protection safety of relief & rehabilitation efforts.

Preparedness function

- Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point.
- Prepare an operational Plan for responding to any type of disaster.
- Establish, maintain and train state search and rescue response team.
- Impart training to the members of Police Force in first aid, evacuation, rescue and relief operations.
- To conduct Search and Rescue training to local volunteers.
- Prepare an inventory of all man power and equipment available.
- To prepare an inventory of volunteers who have already completed training courses successfully and can be utilized in the search and rescue operations.
- Identify the 'High Risk' and 'Risk' areas for different disasters and instruct the existing police installations located in those areas for keeping themselves in readiness for undertaking emergency rescue, evacuation relief operations.
- Arrange drills for fire extinguishing, rescue, evacuation and transportation of injured persons and prepare coordinated Action Plans in cooperation with District administration and concerned local agencies
- Constitute district wise 'Search & Rescue' Teams from the Police and arrange training for these units.
- Hold quarterly mock drills on disaster preparedness and response.
- Installation of radio communication at-
    - **District Police Control Room and SP Office.**
    - **Control room at affected site.**
- Keep the police vehicles and other transport in readiness for deployment of the police.
- Make an inventory of resources.
- Review quality maintenance of equipment & machinery constitution.
- Identify most vulnerable areas/pockets in each police districts.
- Ensure the availability of adequate warning mechanism for evacuation
- Identify alternative routes in hotspots.
- Identify the departmental needs for dealing with the disaster.
- Prepare a Deployment Plan for Police force, based on the needs of the most vulnerable areas.
- Ensure that a sufficient number of Police force is available for responding to disaster situation.
- Organize training for police officer to handle disaster/crisis situation.

Mitigation function

- Make departmental mitigation plan and ensure its implementation

Alert and Warning Stage

- Depute one liaison officer for the SEOC.
- Issue written cautionary instructions to all concerned.
- Maintain communications with the police installations in the areas likely to be affected by disaster.
- Inform nearest police station (from the likely disaster affected area) for dissemination of warning.
- Instruct all concerned to accord priority to disaster related wireless messages if required by appropriate officials.
- On receipt of directives from the SEOC for evacuation - organize personnel and equipment for evacuation and undertake evacuation operations.
- Earmark a reserve task force, if needed.
- Move task forces to the convenient positions, if needed.

Response

- Call for emergency meeting to take stock of the situation. Develop an action plan.
- Designate an area, within Police Station to be used as help line center for public.
- Send task forces in disaster affected areas.
- Carry out search and rescue operations.
- Carry out firefighting operations
- Maintain law and order, especially during relief distribution.
- Keep close watch for any criminal and anti-state activity in the area.
- Keep direct contact with different officers like District EOC for taking any steps to combat any situation.
- Dispatch situation reports to the DEOC and SEOC.
- Provide guards wherever needed particularly for staging area of cooperative food etc food stores and distribution centers.
- Provide convoys for relief materials.
- Establish coordination with the Fire Services.
- Coordinate with military service personnel on the area.
- Evacuation will be ordered by Deputy Commissioner, Addl. Commissioner and

Recovery and Rehabilitation

- Assist local administration in removing the dead bodies and debris in affected areas.
- Assist in Setting up field hospital if required.
- Participate in reconstruction and rehabilitation operation if requested.
- Arrange security of government property and installations damaged in a disaster.
- Coordinate with other offices for traffic management in and around damaged areas.
- Assist the local administration in putting a stop to theft and misuse in relief operation.
- Provide security in transit and relief camps, affected villages, hospitals and medical centers a identify areas to be cordoned off.
- Provide security arrangements for visiting VVIPs and VIPs.
- Assist district authorities to take necessary action against Hoarders, Black Marketers and thos found manipulating relief material.
- In conjunction with other government officers, activate a public help-line to:
- Respond to personal inquiries about the safety of relatives in the affected areas.
- Respond to many specific needs that will be given.
- Serve as a rumor control center.
- Confidence building among the public.
- Make officers available to inquire into and record deaths, as there is not likely to be time or p available, to carry out Standard Post-mortem Procedures.
- Monitor the needs and welfare of people sheltered in relief camps.
- Adequate Security to International Agencies/Countries personnel for Search & Rescue Medic Assistance and Security for their relief material and equipment etc.
- Manage Traffic/Crowd. Recall important functionaries from leave, communicate to the staff their places of duties like the ward and divisional offices and respective department

  Superintendent of Police.
- Patrolling for checking looting by antisocial elements.
- Dispatch Police to systematically identify and assist people and communicate in life-threatening situation.
- With the assistance of health professional, help injured people and assist the community in organizing emergency transport of seriously injured to medical treatment centers.
- Assist and encourage the community in road cleaning operation.
- Review & Draw the traffic plan and assess and identify road for the following

conditions/facilities.

- One Way
- Blocked
- Alternate route
- Overall Traffic Management
- Other access roads

- Under appropriate security, Law and Order, the evacuation of community and livestock should be undertaken with assistance from community leaders.
- All evacuation must be reported to Deputy Commissioner and Superintendent of Police immediately

Checklist:

Sl. No.	**Preparedness Measures**	**Action taken**
1	Prepare a deployment plan for police forces	
2	Check the availability and readiness of the search and rescue teams within the district police	
3	Check adequacy of wireless communication network and setup links with the SEOC DEOC and at Sub-divisional level to reach out the affected area.	
4	Develop a traffic plan for contingencies arising out of disasters – alternative routes and traffic diversion etc.	
5	Develop a patrolling plan for controlling the activities for controlling the activities of anti-social elements, critical infrastructure and affected villages/locality/shelters/relief camps.	
6	Keep the police vehicles and other modes of transport available in readiness.	
7	Prepare a Plan for VIP movements to the disaster affected areas.	
8	Identify anti-social elements that could take undue advantage and take suitable preventive actions.	
9	Coordinate with NGOs and provide them with adequate security	

14.9.3 Department of Transport

Primary Tasks:

- Arrange and organize transport for ensuring supplies to the affected villages and evacuation of the victims.
- Facilitating the movement of Emergency teams.
- Facilitate evacuation of people
- Grant Transport of relief material to the affected area

Non Disaster Time – Preparedness

- Designate one Liaison Officer of the department as the Focal Point and inform all concerned.
- Develop disaster management plan for the department.
- Carry out survey of condition of all highway systems at state and district level.
- Carry out survey of condition of all aircraft landing facilities.
- Prepare an inventory of vehicles trucks, buses, jeeps, tractors etc of government and private

agencies district wise and provide the list to the State EOC and District control room.

- Issue standing instructions to the State transport department for providing buses for evacuation and relief.

Non Disaster Time – Mitigation

- Make departmental mitigation plan and ensure its implementation.

Alert and Warning Stage

- Depute an officer at the SEOC.
- Ensure availability of fuel, recovery vehicles and equipment.
- Take steps for arrangement of vehicles for possible evacuation of people

During Disaster – response

- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Establish contact with the SEOC.
- Take steps for transportation of relief personnel and material to affected areas.
- Take steps for movement of affected population to safer areas.
- Collate and disseminate information regarding operational and safe routes and alternate routes, fuel availability etc. to personnel operating in the field.
- Launch recovery missions for stranded vehicles.
- Launch repair missions for damaged critical infrastructure and routes.
- Recall important functionaries from leave, communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Provide trucks, buses, jeeps, tractors etc. for evacuation and for ensuring supply chain continuity.

After Disaster – Recovery and Rehabilitation

- Assess damage to transportation infrastructure.
- Take steps to ensure speedy repair and restoration of transport links

14.9.4 Department of Public Works

Primary Task:

- To ensure the trouble free road communication.
- To evolve and implement earthquake design of building design of building.
- To evolve appropriate code and guidelines.
- To inspect buildings & critical buildings for their safety.
- To ensure appropriate designs of structures in areas of operation such as roads, bridges & buildings.

Non Disaster Time – Preparedness

- Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point.
- Take precautionary steps for the protection of government property against possible loss and damage during disaster.
- Formulate guidelines for safe construction of public works.
- Prepare list with specifications and position of heavy construction equipment in the state.
- Organize periodic training of engineers and other construction personnel on disaster resistant construction technologies.
- Procure HRV analysis of PWD.
- Based on HRV analysis, prepare a Contingency Action Plan division wise and vulnerable zone wise plan.
- Establish communication with State Emergency Operations Centre, District Control Rooms and departmental HQ within the division and state.
- Create an inventory of earth moving machinery available with each division and with private contractors.
- Create linkage and communication with power project authorities and identify resources available with them.
- Make an unambiguous written agreement for mobilization of private resources at the time of crisis.

- Officers at Taluk and Sub-Divisional level should be familiar with pre-disaster precautions and during and post-disaster procedures for road clearing and for defining safe evacuation routes.
- Review and update measures and procedures taken for the maintenance and protection of equipment.
- Clear areas beneath bridges to ensure smooth flow of water and especially prior to the monsoon season.
- Undertake rapid visual inspection of critical buildings and structures of the state government (including hospital buildings) by a specialized team and identify structures which are endangered requiring retrofitting or demolition.

Emergency tools kit should be assembled for each division and should include:

- Crosscut saws
- Axes
- Power chain saw with extra fuel, oil
- Sharpening files
- Chains and tightening wrenches
- Pulley block with chain and rope
- Cutters and Cranes
- Routes strategic to evacuation and relief should be identified and marked in close coordination with police and DEOC.
- Within the cities establish priority listings of roads which will be cleared and opened, among the most important are the roads to hospitals and main trunk routes.
- Identify locations for setting up transit and relief camps, feeding centers.

Non Disaster Time – Mitigation

- Actively work to develop a sustainable state-wide hazard mitigation strategy.
- Repair, Maintenance and retrofitting of public infrastructure.
- Identify / prioritize mitigation activities of lifeline buildings and critical infrastructure and coordinate with the Departments and SDMA for its implementation.
- Report to SDMA about mitigation plans.

Alert and Warning Stage

- Establish radio communications with State Emergency Operations Centre
- Instruct all officials at construction sites to keep manpower and materials prepared for protection and repair of public works.
- Direct construction authorities and companies to pre-position necessary workers and materials in or near areas likely to be affected by disaster.
- Vehicles should be inspected, fuel tanks filled and batteries and electrical wiring covered as necessary.
- Dispatched extra vehicles from headquarters to be stationed at safe strategic spots along routes likely to be affected.
- Move heavy equipment's, such as front-end loaders, to areas likely to be damaged.
- Inspect all roads, road bridges by a bridge engineer, including underwater inspection of foundations and piers. A full check should be made on all concrete and steel works.
- Secure works under construction ropes, sandbags, and cover with tarpaulins if necessary.
- If people are evacuating an area, the evacuation routes should be checked and people assisted.
- Identify locations for setting up transit and relief camps, feeding centers and quantity of construction materials and inform SEOC accordingly.

During Disaster – Response

- Provide assistance to the damage assessment teams for survey of damage to buildings and infrastructure.
- Adequate road signs should be installed to guide and assist the drivers.
- Begin clearing roads. Assemble casual laborers to work with experienced staff and divide into work gangs.
- Mobilize community assistance for road clearing by contacting community organizations.
- Undertake repair of all paved and unpaved road surfaces including edge metal ling, pothole patching and any failure of surface, foundations in the affected areas and keep monitoring their conditions.
- Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.
- As per the decisions of the State Emergency Operations Center and DEOC undertake construction of temporary structures required, for organizing relief work and construction of relief camps, feeding centers, medical facilities, cattle camps and SOC/s.
- Take steps to clear debris and assist search and rescue teams.
- Provide sites for rehabilitation of affected population
- The concerned Executive Engineer will be responsible for mobilizing staff and volunteers to
- clear the roads in case of any blockage.
- All response at district level teams should be provided with two way communication link.

After Disaster – Recovery and Rehabilitation

- Carry out detailed technical assessment of damage to public works.
- Assist in construction of temporary shelters.
- Organize repairs of buildings damaged in the disaster
- Prepare detailed programs for rehabilitation of damaged public works.
- Arrange technical assistance and supervision for reconstruction works as per request.
- Mobilize community assistance for road clearing by contracting community organizations.
- Undertake clearing of ditches, grass cutting, burning or removal of debris and the cutting of dangerous trees along the roadside in the affected area through maintenance engineer's staff.
- As per the decisions of the DDMA , undertake construction of temporary structures required for organizing relief work and construction of relief camps, feeding centers , medical facilities, cattle camps and Site Operations Centers.
- An up-to-date report of all damage and repairs should be kept in the Executive Engineer's office and communicate the same to the District Control Room & SEOC.

14.9.5 Department of Irrigation

primary Tasks:

- To act as nodal agency for floods.
- To ensure the availability of water supply.
- To ensure the operation of irrigation system.
- To undertake necessary steps for flood protection and management.
- To undertake drought management measures.

Non Disaster Time – Preparedness

- Designate one Liaison Officer in the department
- Ensure efficient management of flood forecasting and warning centers and improve procedure of flood forecasts and intimation to appropriate authorities.
- Identify flood prone areas and activate flood monitoring mechanisms.
- Coordinate with KSNDMC Bengaluru in the flood season every year.
- Collect all the information on weather forecast, water level of all principal reservoirs.
- Keep in readiness essential tool kits and protection material at critical places for emergency deployment. These may include:
  - Empty Cement Bags
  - Boulders
  - Ropes
  - Sand
  - Wire mesh
  - Shovels
  - Baskets
  - Lights
  - First Aid Kit
- Materials likely to be damaged by rains, such as cement bags, electric motors, office records etc. should be covered with plastic even though stored inside.
- Coordinate with KSNDMC for rain gauge data
- Procure / prepare HRV analysis for water resource management and flood protection.
- Based on HRV analysis, prepare department specific Contingency Action Plan.
- Review and update precautionary measures and procedures and review with staff the precautions that have been taken to protect the equipment and machinery in the wake of any

disaster.

- Keep Standby diesel in petrol pumps or generators in damage- proof buildings.
- A standby water supply plan should be available in the event of damage or pollution of the regular supply sources in disaster prone areas.
- Establish procedures for the emergency distribution of water if existing source of supply is disrupted.
- Make an inventory provisions to acquire tankers and establish other temporary means of distributing water on an emergency basis.
- Make an inventory provision to acquire containers and storage tanks, required for storing water on an emergency basis.
- Prepare a plan for upkeep and maintenance of equipment.
- Where ever possible make sure auxiliary generators and standby engines are in good working order.

Non Disaster Time – Mitigation

- Make departmental mitigation plan and ensure its implementation.
- Review and update precautionary measures and procedures.

Alert and Warning Stage

- Alert SEOC in the event of floods.
- Since flash floods get triggered within short time-spans, take steps to alert all through telephone and wireless according to needs.
- Organize on the receipt of flood warning or any other disaster continuous monitoring of
  - Wells
  - Intake structures
  - Pumping stations
  - Buildings above ground
  - Pumping mains
  - The treatment plant
- Mount watch on flood protection works and irrigation and water supply systems.

During Disaster – Response

- Transportation of water with minimum wastage (in coordination with local administration).
- Locate drinking water facilities separate from sewer and drainage facilities
- Ensure that remaining or unaffected sources of water do not get contaminated and the distribution of water is equal to all victims in the area affected.
- Identify and mark damaged water pipelines and contaminated water bodies and inform disaster victims against using them.
- Recall important functionaries from leave communicate to the staff to man their places of duties like the ward and divisional officers and respective department.
- Repair damaged pipes, blocked sewages and salvage important and damaged facilities.
- Organize round the clock inspection and repair of :
  - Dams, Check dams
  - Irrigation Channels
  - Control gates
  - Overflow channels
- Organize round the clock inspection and repair of:
  - Pumps
  - Generators
  - Motor equipment
- Make sure the water supply to key establishment such as fire hydrants and hospital storage tanks is full and the hospital is conserving water.

- Inform people to store an emergency supply of drinking water.
- Establish emergency works gangs for immediate post-disaster repairs.
- After any repair on the distribution system, the required main should be flushed and disinfected with a chlorine solution of 50mg/liter for a contact period of 24 hours. After which the main is emptied and flushed again with potable water.
- If the demand for water is urgent or the repaired main cannot be isolated, the concentration of the disinfecting solution may be increased to 100mg/liter and the contact period reduced to 1 hour.
- At the end of disinfection operations, but before the main is put back into services, samples should be taken for bacteriological analysis and determination of chlorine residue.
- Recall important functionaries from leave: communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Identify unacceptable water sources and take necessary precautions to ensure that no water is accessed from such sources, either by sealing such arrangements or by posting the department guards.

After Disaster – Recovery and Rehabilitation

- Carry out Environmental Impact Assessment of the disaster.
- Take up sustained programs for rehabilitation of flood protection works, water supply schemes, check dams.
- Take up afforestation drives for rehabilitation of vegetative cover lost in disaster.
- Protect pump stations from water ingression in the stream beds or banks.
- Repair sewage lines where damage is detected.
- Repair water pipelines wherever damaged.
- Ensure that potable water supply is restored as per the standards and procedures laid down in 'Standards for Potable Water'.

14.9.6 Department of Agriculture

Primary Task:

- To act as nodal department for drought related disasters
- To undertake need & damage assessment with respect to crops of all types.
- To ensure the uninterrupted functioning of all infrastructures related to agriculture sector.
- To assist the farming community in restoration & relocation efforts.

Non Disaster Time

- Designate an RO for DM within the department.
- Procure HRV analysis for the State and Identify most vulnerable areas
- Identify areas likely to be affected.
- Organize distribution of seeds, seedlings, fertilizer and implements to the affected people.
- Arrange for keeping stock of seeds, fertilizers and pesticides.
- Develop district contingency action plan based on HRV.
- Establish communication with SEOC, DDMA, Deputy Commissioner and District Control Room and Agriculture Universities.
- Review and update preventive measures and procedures

- Check available stocks of equipment and materials which are likely to be most needed during disaster like floods and droughts.
- Determine the type of damage, pests or disease may cause crop wise and identify the insecticide required for the purpose, in addition to requirement of setting up extension teams for crop protection and accordingly ensure that extra supplies and materials be obtained quickly.
- All valuable equipment's and instruments should be packed in protective coverings and stored in room the most damage-proof.
- Suggest variety of seeds and cropping pattern, which can reduce losses and reduce the risks to farmers.
- Ensure that certified seeds of required varieties are available in adequate quantities..
- Develop a pest and disease monitoring system so that timely steps can be taken to reduce damage to crops.

Warning

- Check available stocks of equipment's and materials, which are likely to be most, needed after the disaster.
- Stock agricultural equipment's which may be required after a disaster
- Provide information to all concerned, about disasters, likely damages to crops and plantations, and information about ways to protect the same.
- All electrical equipment's should be unplugged when disaster warning is received and especially in flood prone areas

During Disaster

- Depute one liaison officer to the SEOC.
- Monitor damage to crops and identify steps for early recovery.
- Estimate the requirement of
    - Seeds
    - Fertilizers
    - Pesticides and Labor
- Organize transport, storage and distribution of the above with adequate record keeping procedures.
- Ensure that adequate conditions through cleaning operations are maintained to avoid water-logging and salinity.
- Print and widely distribute the list of points where certified seeds are available along with names of varieties and rates. Notices may be affixed at public places such as bus stands, on buses themselves, PHCs, Block headquarters, Tahasils etc.
- Recall important functionaries from leave: communicate to the staff to man their places of duties like the local and divisional offices and respective departments.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Establishment information centers through Raitha Samparka Kendras and extension network and assist in providing an organized source of information.

After Disaster

- Quantify the loss and damage within the quickest possible time and finalizes planning of agriculture rehabilitation.
- Ensure availability of adequate supply of seeds, seedlings, fertilizers, pesticides and agricultural implements.
- Assist farmers to re-establish their contacts with agriculture produce market and ensure that appropriate prices be offered to them.

- Provide information to NGOs and other organization about the initiative and resources of the department.
- Assess the extent of damage to soil, crop, plantation, micro-irrigation systems and storage facilities and the requirements to savage or replantation

Checklist:

	Preparedness Measures	**Action Taken/ Remarks**
1	Check the availability of seeds and disseminate information about the outlets where seeds can be made available.	
2	Set up a public information center for providing information sowing of crops, alternative crops, pests and application of fertilizers.	
3	Prepare a schedule for spray of pesticides and insecticides after the disaster.	

14.9.7Department of Animal Husbandry

Primary tasks:

- Provide necessary assistance in ensuring the protection of animal stock of the state.
- Develop strategy and plan for animal related issues vis-à-vis disasters.
- Control & check any outbreak of epidemics.
- Make an inventory of all veterinary centers and assess their capacity to handle disaster situation.
- Develop protocol for disposal of bodies of dead animals
- Develop protocol for tranquilization of wild animals during conflicts

Non Disaster Time

- Designate a focal point for disaster management within the department.
- Procure / Prepare HRV Analysis of Animal Husbandry sector in the state & District wise.
- Identify areas likely to be affected.
- Identify disaster prone areas, livestock population at risk, requirement of medicine; vaccines, equipment's, disinfectants and other materials material require any material during disaster in prone area.
- Prepare inventory of human recourses along with their contact number (Veterinary Doctors, Para Vets, and Class-IV).
- Based on HRV analysis, prepare state wise & district wise plan for feed procurement
- Identify shelters for animals.
- Review and update precautionary measures and procedure for equipment's protection.
- Prepare a list of water borne diseases that are preventable by vaccination. Publicize the information about common diseases afflicting livestock and the precautions that need to be taken.
- Stock emergency medical equipment which may be required during and post disaster.
- Determine what injuries / illness may be expected, and what drugs and other medical items will be required, in addition to requirements of setting up cattle camps.
- Check stocks of equipment and drugs which are likely to be most needed during and after disaster.
- Capacity building of all veterinary hospitals staff in dealing with likely damages and effects in the aftermath of disaster.
- Prepare kits for veterinary diseases, which could be provided to veterinary doctors at the block level and extension officers at the village level. The kits may also be provided to village level veterinary volunteers.

- The provision of medical services should be coordinated by the District Animal cattle camps.
- An injury and disease monitoring system should be developed, to ensure that a full picture of risk is maintained.
- Identify sites for cattle camps by ensuring the following:
    - Cattle sheds constructed should not exceed 20 sq. feet per animal.
    - There is adequate supply of drinking water.
    - There is sufficient shade for cattle to rest during the afternoon.
    - They are accessible.
    - They are conveniently located to be as close as possible to the affected villages

Warning

- Check available stocks of equipment's and materials which are likely to be most needed after the disaster.
- Stock veterinary equipment's which may be required after a disaster
- Determine what damage, pests or diseases may be expected, and what drugs and other insecticide items will be required, in addition to requirements of setting up extension teams for animal protection, and accordingly ensure that extra supplies and materials, be obtained quickly.
- All valuable equipment's and instruments should be packed in protective coverings and stored in room the most damage-proof.
- Check the emergency electrical generator, to ensure that it is operational and that a buffer stock of fuel exists.
- Fill department vehicles with fuel and park them in a protected area.
- Fill hospital water storage tanks and encourage water savings. If no storage tanks exists water for drinking should be drawn in clean containers and protected.
- Prepare an area of the hospital for receiving large number of livestock.
- Develop emergency admission procedures (with adequate record keeping)
- The sterilized surgical packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polythene is recommended as an added safety measures.
- All valuable equipment's and instruments should be packed in protective coverings and stored in room the most damage proof.
- All electrical equipment's should be unplugged when disaster-warning id received especially in flood prone areas.

During Disaster

- Depute one liaison officer to the SEOC or DEOC as the case to facilitate quick coordination between SEOC and parent department.
- Rush Rapid Assessment Team to Incident site to assess the quantum of damage and immediate requirement for relief and rescue
- Rush IRT along with the needed medicines equipment's and other materials for relief and rescue operation at disaster site to minimize further loss and damage.
- Arrange for quick and proper disposal of carcasses with disinfection of the premises with the help of local people, other line department in coordination with SOEC or DEOC to check the spread of epidemic.
- To take immediate preventive measures like quarantine, immunization and culling etc. as per requirement of the situation.
- Develop a strategy for rehabilitation of affected animals.
- Establish radio communication with
    - SEOC and DEOC
    - Deputy Commissioner
    - District Control Room

- Veterinary aid centers and hospital (including private practitioners) within the division

- Arrange for emergency supplies of anesthetic drugs.
- Provide information to the local police and rescue groups about the resources available with veterinary aid centers and hospital.
- The minimum number of cattle in the camp should be about 50 and the maximum 300.
- Make provision for 6kg per cattle head per day of fodder, and 1 to 1.5kg per cattle head per day or any other concentrate
- Organize vaccination campaigns in disaster prone villages
- Cattle camps and hospitals administrators should
- Establish work schedules to ensure that adequate staff are available.
- Set up teams of veterinary doctors and assistants for visiting flood affected sites.
- Organize transfer of serious injured livestock from villages to veterinary aid centers wherever possible.
- Establish cattle camps and additional veterinary aid centers at affected sites and designated an Officer In-charge for the camp.
- Estimate the requirement of water, fodder and animal feed, for cattle camps and organize the same.
- Ensure that adequate sanitary conditional through cleaning operations are maintained in order to avoid outbreak of any epidemic.

After Disaster

- Quantify the loss and damage within the quickest possible time and finalizes planning for rehabilitation.
- Coordinate with revenue Department to ensure relief distribution as per direction of the State Govt./ already laid down norms by the Govt.

Preparedness Checklist for Animal Husbandry:

Sl. No.	Preparedness Measures	Action Taken/ Remarks
1	Prepare and publicize the list of common disaster specific ailments and possible precautions for the farmers to observe.	
2	Organize vaccination for cattle in disaster villages.	
3	Prepare a plan for setting up cattle camps and cattle feeding centers.	
4	Prepare kits which could be given to Veterinary doctors and Animal Husbandry workers/volunteers.	
5	Prepare a plan for disposal of dead animals	
6	Prepare a plan for feed storage centers.	

14.9.8 Department of Education

Primary tasks:

- The department will prepare curriculum related to disaster management and conduct training programme for teachers and children.
- The department will coordinate with the local authority and arrange for mock drills, search and rescue drills

Non Disaster Time – Preparedness

- Identify one Liaison Officer in the department as RO for DM.
- Develop a safety plan for the department

- In consultation with SDMA, include disaster related subjects in the curricula in schools, and colleges.
- Arrange for training of teachers and students of disaster prone areas about the steps to be taken at different stages of disaster, organize them, in coordination with volunteers, and inspire them for rescue, evacuation and relief works.
- Ensure that all schools and colleges develop their disaster management plans.
- Ensure that construction of all educational institutions in earthquake zones is earthquake resistant and disaster resistant

Non Disaster Time –Mitigation

- Identify structural and nonstructural mitigation measures.
- In coordination with the SSA and/or Public works department assess schools and colleges buildings conditions.
- Make departmental mitigation plan and ensure its implementation.
- Ensure that earthquake multi-hazard resistant features are included in new school buildings.

During Disaster – response

- In the event of disaster, place required number of education institutions and their buildings, under the SEOC for use as emergency shelter and relief center if necessary.
- Students and staff can provide local voluntary assistance for distribution of relief material and assistance to special needy people in the locality

After Disaster – Recovery and Rehabilitation

- Determine the extent of loss in educational institutions and prepare plans for their rehabilitation

14.9.9 Department of Technical Education

Primary tasks:

- The department will play a vital role in the State mitigation strategy. Its main role will be to conduct training programs to the construction workers, involved at the community level.

Non Disaster Time – Preparedness

- In consultation with SEC, include disaster related subjects in the curricula.
- Arrange for training programs and certificate course of construction workers.
- Prepare a disaster management plan for the department

Non Disaster Time –Mitigation

- To prepare an inventory of volunteers who have already completed training courses successfully and can be utilized in implementation of mitigation measures and new construction.

During Disaster – Response

Within the department, respond as per the departmental response plan

After Disaster – Recovery and Rehabilitation

Coordinate with SDMA and DDMA for the recovery and rehabilitation

14.9.10 Department of Health & Family Welfare

- The department of Health has a responsibility in the reduction and prevention of suffering during natural and man-made disasters.
- During emergency department is responsible for prevention and response of natural disasters and man-made disasters, as well as in the investigation and response to outbreak of communicable diseases.

Primary Task

- To provide overall medical and health service
- Check the spread of epidemics.
- To provide Trauma services.
- To provide MRHS.
- To create awareness

- **Non Disaster Time – Preparedness**

- Procure Hazard Vulnerability and Risk Map for each District.
- Ensure disaster management plans are developed in health centers and hospitals.
- Ensure that all hospital staff has been informed about the possible disasters in the district, likely damages and effects, and information about ways to protect life, equipment and property.
- Ensure that orientation and training for disaster response plans and procedures are undertaken. Special skills required during disaster situations are imparted to the officials and the staff.
- Ensure adequate availability of Emergency Health Kits in high risk areas
- Train volunteers on emergency preparedness programmes such as first aid and preventive measure against diseases in disaster prone areas.
- Prepare a list of medical and Para-medical personnel in disaster prone areas and make available to DDMA
- Establish and operate an early warning system for health threats based on the routine health information and in collaboration with other departments.
- Identify likely disease associated with each disaster prepare a health contingency plan keeping in view the threat perception and vulnerability.
- Based on HRV analysis, obtain a list of Response Base from the DDMA office and assign the medical personnel to each of these Response Base to the extent possible. Keep essential medicines and first aid facilities with each Response Base.

- Constitute mobile response units consisting of a doctor, health workers and ANMs and prepare a deployment plan such that each mobile unit is able to cover at least one Response Base in a day.
- Review and update precautionary measures and procedures.
- Review with staff, the precautions that have been taken to maintain and protect equipment's.
- Stock emergency medical equipment which may be required in Disaster Management.
- Determine type of injuries/illness expected and drugs and other medical items required and accordingly ensure that extra supplies of medical items are obtained quickly.
- Check stocks of equipment and drugs which are likely to be most needed in disaster management. These can be categorized generally as :
    - Drugs used in treatment of wounds and fractures such as tetanus toxoid analgesics,

antibiotics, dressing material and splint.
- Drug used for treatment of diarrhea, water borne diseases influenza malaria, infective hepatitis.
- Drug required for treating snake bite and fighting infection
- Drug needed for detox cation including breathing equipment's.
- Intravenous fluids

Non Disaster Time – Mitigation

- In coordination with the SEC, conduct building assessments, identification of structural and nonstructural mitigation activities.
- Prioritize mitigation activities and ensure budget allocation to such mitigation activities.

Alert and Warning Stage

- To prepare and keep ready Mobile Hospitals and stock them with emergency equipment that may be required after the disaster.
- Assess likely health impacts and share with SEOC for planning purpose
- To ensure pre-positioning of Emergency Health Kits and Personnel.
- Direct the activation of health/medical personnel, supplies and equipment as required.

During Disaster

- Designate one liaison Officer to be present at the SEOC.
- Mobilize medical teams and Para-medical personnel to go to the affected areas as part of the Rapid Assessment and Quick Response Teams.
- Provide medical assistance to the affected population
- Carry out technical assessment on health infrastructure availability and need
- Non-ambulatory patients should be relocated to the safest areas within the hospital.
- Dressing pads should be assembled sterilized. A large enough number should be sterilized to last for four to five days.
- Secure medical supplies in adequate quantity for dealing with these situations, which may include:
  - Oral Rehydration Solutions
  - Chlorine Tablets
  - Bleaching Power
  - Anti-diarrheal and Anti emetic medicines
  - Intravenous fluids
  - Suture materials
  - Surgical Dressings
  - Splints
  - Plaster rolls
  - Disposable Needle and Syringes
  - Local Antiseptics

- All valuable instruments such as surgical tools, ophthalmoscopes, portable sterilizers, ECG machine, dental equipment's, Ultra sound machine, analyzer, computer hardware etc. should be packed in protective coverings and stored in rooms considered to be the most damage proof.
- The safest rooms are likely to be :
  - On ground floor.
  - Rooms in the center of the building away from windows.

- Rooms with concrete ceilings.

- Protect all immovable equipment such as X-ray machines, Sterilizer, Dental chair by covering them with tarpaulins or polythene.
- Ensure adequate supplies of blood in each district.
- Keeps one operating facility in each Response Base in readiness. Maintain all the equipment necessary for operations.
- Prepare a maternity facility for pregnant women in every Response Base/ Advance Medical Post.
- All electrical equipment likely to be affected should be marked & unplugged when flood warning is received.
- Check the emergency electrical generator to ensure that it is operational and that buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrange for one.
- Request central warehouse immediately to dispatch supplies likely to be needed in hospitals, on an emergency priority basis.
- Fill hospital water shortage tanks, if no storage tanks exists; water for drinking should be drawn in clean containers and protected.
- Prepare an area of hospital for receiving casualties.
- Develop emergency admission procedures
- Orient field with standards of services, procedures including tagging

Field Office Priorities

- Transport is arranged for transfer of seriously injured/ill patients from villages and peripheral hospital to general hospitals. If roads are blocked helicopter transportation should be ensured.
- Establish health facilities and treatment centers at disaster affected site.
- The provision of medical services will be coordinated by the CMO with District EOC and site operation centers.
- Procedures should be clarified between
    - Health Services of Govt. , Private and other established at transit camps, relief camps and affected site / villages.
    - PHCs
    - CHCs
    - Civil Hospital
    - Private Hospitals
    - Blood Banks
- Maintain check posts and surveillance at railway stations, Bus Stands and all entry and exit points of the affected area, especially during the threat or existence of an epidemic.
- An injury and disease monitoring system should be developed to ensure that a full picture of health risk is maintained. Monitoring should be carried out for portable water and quality of food and disposal of waste in transit and relief camps, feeding centers and affected villages.
- Plan for emergency accommodations for auxiliary staff from outside the area.
- Information formats and monitoring checklist must be used for programme monitoring and development and for reporting to emergency operation center at state level.
- Seek security arrangements from Senior Superintendent of Police to keep curious persons from entering hospital areas and to protect staff from hostile actions.

- Establish a 'Health Helpline' with means of communication to assist in providing the organized source of information. The hospital is responsible for keeping the community informed of its potential and limitations in disaster situations, list of admitted patients and dead persons etc.
- The local police, rescue teams and ambulance teams should be aware of the resources of each hospital.

Checklist:

Sr. No.	Preparedness Measures	Action Taken/ Remarks
1	Prepare a Health Contingency Plan for deployment of health and medical personnel.	
2	Obtain a list of respondent Base from district administration and assign mobile health units and medical staff to each Response Base.	
3	Organize vaccination in Disaster affected area.	
4	Ensure necessary stock of medical supplies and blood.	
5	Organize maternity care centers in every Advance Medical Post.	
6	Keep operative facilities in readiness.	
7	Seek mutual aid arrangement with private hospitals and other dispensaries existing in the area	

14.9.11 Department of Environment and Forests

Non Disaster Time – Preparedness

- Develop a disaster management plan for the department.
- Designate one Liaison Officer of the department as the Focal Point and inform all concerned.
- Establish contact with KSNDMC and IMD for receiving alerts and warnings.
- Conduct community capacity building and awareness programs
- Conduct HRV of forest fires and wild animal conflicts

Non Disaster Time – Mitigation

- Develop and upgrade risk assessment and vulnerability analysis at state and district level in GIS format.
- Research on avalanche, earthquake and landslide mitigation/technology methods and share them with the State Mitigation task force.
- Research on climate change impacts in the State and recommend adaptation strategies.
- Vulnerability assessment of the State and GIS mapping

Alert and Warning Stage

- Share the findings related to hazard and vulnerabilities studies taken up by the department.
- Provide information to all concerned.

During Disaster

- Respond within the department as per the departmental disaster management plan.

After Disaster

- Carry out environmental impact assessment of the disaster.
- Update risk and vulnerability assessment of the state.
- Provide specialized inputs for damage and loss assessment.

14.9.12 Department of Forest

Primary Task:

- Create provision for permitting grazing in the forest land in the event of disaster when enough fodder is not available.
- Extraction and transportation of fodder from forest areas, when the fodder is not freely available.
- Provide wooden poles and bamboo for relief and reconstruction at subsidized rate to the inhabitants of affected villages.

Non Disaster Time – preparedness

- Prepare a department disaster management plan.
- Forest Fire prone areas should be identified and extra vigilance be ensured in such cases.
- Organize community awareness programs
- Depute one liaison officer within the department, who will be in contact with the SEOC during disasters
- Conduct/Procure HRV analysis of Forest resources in the state.
- Based on HRV analysis, prepared district wise Contingency Action Plan of the department.
- Create task forces for forest fire fighting.
- Draw district specific action plan

Non Disaster time - Mitigation

- Prepare and maintain forest lines
- Prepare mitigation plan for the department buildings and infrastructure.

Alert and Warning Stage

- A rapid response team will be established at division/sub-division level, which will have all tools and equipment readily available.
- Information dissemination to the people likely to be affected.

During Disaster

- Recall important functionaries from leave: communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Respond within the department as per the department disaster management plan
- The liaison officer will coordinate with SEOC for information exchange and also for requirements of resources to and from SEOC
- Ensure supply of wood for disposal of dead bodies.

After Disaster

- Damage assessment and sharing of reports with SEOC
- Ensure plantation of fodder trees to maximum possible extent

14.9.13 Department of Urban Development

	Preparedness function
14	Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point.
15	Develop a disaster management plan for the department, including the identification of location of camps for different type of disasters, existing locations that can be used as shelters, inventories of agencies that can be used for tent establishment.
16	To conduct regular training of the staff on minimum standards for shelter, relief camps and tent structures.
	Mitigation
17	Designate one Liaison Officer in the department as focal point for the mitigation activities.
18	Coordinate with the SDMA/SECand HoDs for implementation of mitigation activities in the urban areas.
19	Prepare and implement departmental mitigation plan
	Alert and Warning Stage
20	Locate adequate relief camps based on survey of damage
21	Quick assessment of functional and stable building structures.
22	Clear areas for setting up relief camps
23	In case of damage to offices, assist local authorities to establish and house important telecom equipment and officials at the earliest
24	Develop alternative arrangements for population living in structures that might be affected after the disaster.
25	Establish water point in key locations and in relief camps
	Response
26	Quick assessment of damaged areas and areas that can be used for relief camps for the displaced population
27	Locate relief camps close to open traffic and transport links
28	Set up relief camps and tents.
29	Provide adequate and appropriate shelter to the entire population
30	Coordinate with other ESFs in equipping shelter and relief sites with basic needs of communication and sanitation.
31	Maintaining provide and procure clean water
32	Coordinate with SEOC for proper disposal of dead bodies in the urban areas
	Recovery and rehabilitation
33	Implement recovery and rehabilitation schemes through municipalities for urban areas

14.9.14 Department of Food, Civil Supplies and Consumer Affairs

	Primary Tasks:
34	To arrange uninterrupted supply of food, essential articles and to meet the requirements of all in affected areas.
35	To ensure the supply of POL, LPG.
36	To check black marketing and hoardings.
37	Non Disaster Time – Preparedness
38	Develop a disaster management plan for the department and update it half yearly.
39	Develop a plan that will ensure timely distribution of food to the affected population.
40	Maintain a stock of food relief items for any emergency.
41	Identify and delineate vulnerable areas.
42	Prepare departmental contingency plan
43	Make an inventory of storages &go downs
44	Assess and ensure the safety of storage places.
45	Constitute district wise/ vulnerable zone wise response teams and delineate roles

	&responsibilities.
46	Estimate the quantity and nature of supplies required district / vulnerable zone wise.
	Non Disaster Time – Mitigation
47	Prepare and implement department's mitigation plan
	Alert and Warning Stage
48	Determine the critical need of food for the affected area
49	Catalogue available resources of food
50	Ensure that food distributed is fit for human consumption
51	Ensure quality and control the type of food.
52	Allocate food in different packs that can be given to families at household and distributed in relief camps
53	Arrange and the transport system in readiness
	During Disaster
54	Coordinate with local authorities and other ESFs to determine requirements of food for affected population
55	Mobilize and coordinate with other Department of Revenue (DM) for air dropping of food to affected site.
56	Control the quality and quantity of food that is distributed to the affected population.
57	Ensure that special care in food distribution is taken for women with infants, pregnant women and children.
	After Disaster
58	Establishment of PDS points as per the changed scenario/resettlements (If any)
59	Issuing of duplicate ration cards to the disaster victims, who lost their papers.

14.9.15 Department of Rural Development & Panchayat Raj

Non Disaster Time – Preparedness
• Develop a disaster management plan for the department and update it annually. • Analyze the training needs of the department's personnel, which include its officials and elected representatives of Gram Panchayat, Taluk Panchayat and Zila Panchayat and organize trainings with the help of ATI/DTI or any training institute. • Conduct gram Panchayat level mock drills as part of preparedness. • Assist in establishing village disaster management teams.
Non Disaster Time – Mitigation
• Prepare and implement department's mitigation plan • Ensure that all the developmental schemes have a mitigation component as an integral part.
During Disaster
• Coordinate with local authorities and support the response efforts. • Coordinate the support from unaffected Gram Panchayats.
After Disaster
• Ensure proper distribution of reconstruction schemes and monitoring of the same through Block development committee and Zila Panchayat meetings.

14.9.16 Department of Information and Public Relations

The Department has to play a major role in education and awareness programmes for better organized preparedness and response at government and community levels. It also plays a main role to collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at State level.

Non Disaster Time – Preparedness

- Develop a disaster management plan for the department.
- Designate one Liaison Officer of the department as the Focal Point and inform all concerned.
- Conduct education and awareness for local community
- Popularize the techniques for preparedness and survival during pre-disaster, disaster and post-disaster period through television, radio and other publicity media.
- Ensure strict performance of the allotted duties by radio, television, news media, films and publications related departments.
- Take proper and adequate security steps for the protection of own installations and properties.
- Prepare guidelines / policy for necessary action by mass media on reporting disasters.

Non Disaster Time – Mitigation

- Prepare and implement department's mitigation plan
- Prepare and implement public awareness on mitigation activities

Alert and Warning Stage

- Acquire accurate scientific information from the nodal departments
- Flash warning signals on all TV and radio networks. Disseminate information to all victims in the affected area
- Curb the spread of rumors.
- Caution the victims about the do's and don'ts during a disaster.

During Disaster :

- Coordinate with the EOCs for required information for relief workers.
- Provide information of emergency numbers and other key contact numbers on television, through newspapers, loudspeakers and radio networks.
- Send news flashes of latest updates / donation requirements for disaster area.
- Ensure that the news to be broadcasted reflects the true and clear presentation of the actual position and does not create panic in the minds of the people and also advises them to desist from taking unreasonable steps.
- Take steps for publicity of news and directives relating to the situation issued by the SDMA.
- Curtail normal programmes to broadcast essential information on disaster if requested by the EOC.
- Arrange visit to the affected area by the local and foreign journalists in the interest of publication of accurate and true report in the news.
- Help victims as well as emergency workers in providing information regarding hospitals, help desks.
- Inform unaffected population about hospitals where they can find victims and where assistance is required.

After Disaster

- Arrange dissemination of information of the short and long term measures of different departments/agencies for relief and rehabilitation of the affected people.

14.9.17 Department of Energy

Primary Task

- Ensure uninterrupted power supply in the disaster prone area
- Coordination & mobilize the resources with private power developers in different basins.
- Protect the infrastructure against impending threats

Non Disaster Time – Preparedness

- Designate one Liaison Officer of the department as the Focal Point and inform all concerned.
- Develop a disaster management plan for the department.
- Carry out survey of condition of all power supply at state and district level.
- Conduct HRV analysis for KPTCL and ESCOMs for installation & implementation in the state.
- Based on HRV analysis, prepare Contingency Action Plan of KPTCL/ESCOMs
- Establish radio communication of key functionaries with State Emergency Operation Center, District Control Room and with Boards and Departments.
- Review and update precautionary measures and procedure and review with staff the precautions that have been taken to protect equipment.
- Ensure that alternate power supply arrangements for emergency supply are available for critical facilities such as:
    - Secretariat Building at State & District level
    - Hospitals
    - IPH installations
    - State EOC/DEOC
    - Police Stations
    - Telecommunication buildings
    - Meteorological stations
    - Dc Office/BP Office
    - Any other place if required
- Check whether emergency tool kits are properly assembled and if any additional equipment needed.
- Protect Power Stations from disaster. Raise the height of compound walls

Non Disaster Time – Mitigation

- Designate one Officer as nodal officer for mitigation activities...
- In coordination with the SEC, conduct building assessments, identification of structural and nonstructural mitigation activities.

Alert and Warning Stage

- Establish radio communications with the SEOC.
- Prepare a First assessment report in conjunction with other ESFs for the SEOC to take further decision.
- Check emergency toolkits.

- Keep alternate power supply systems and generators in state of preparedness.
- Immediately undertake inspection of
  - High tension lines
  - Towers
  - Sub-stations
  - Transformers
  - Insulators
  - Poles and
  - Other equipment's

During Disaster – Response

- Establish contact with the SEOC.
- Assist authorities to reinstate generators for public facilities such as Hospital, water supply, police stations, telecommunication building and meteorological stations.
- Dispatch emergency repair teams equipped with tools, tents and food.
- Establish temporary electricity supplies for relief material warehouses.
- Instruct district staff to disconnect the main electricity supply for the affected area.
- Provide accurate & regular information to the people about the state of power supply.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Establish temporary electric supplies to transit camps feeding centers, relief camps and Site Operation Center, District EOC and on access roads to the same.
- Assist hospital in establishing an emergency supply by assembling generators and other emergency equipment if necessary.
- Establish temporary electric supplies to other key public facilities, public water system etc., to support emergency if necessary.

After Disaster – Recovery and Rehabilitation :
To facilitate restoration of energy systems after a natural /manmade disaster

- Review total extent of damage to power supply installations.
- Take steps to ensure speedy repair and restoration of power supply installations
- Begin repair/reconstruction.
- Compile an itemized assessment of damage from reports made by various electrical receiving centers and sub-centers.
- Report all activities to the head office and EOC at state and district level.

14.9.18 Departments of Industries, Factories and Boilers

Non Disaster Time

- Designate one Liaison Officer in the department as RO for Disaster Management
- Prepare and revise on-site and off-site DM Plan for all MaH units and other factories
- Conduct regular safety drills on the site of factory
- Ensure all possible steps for the security of manpower, implements, stock, installations/factories etc.
- Prepare listing and locations of industries and establishments for possible sourcing of relief material during disasters.
- Ensure training on preparedness programmes to be adopted at different levels for all manpower employed in factories and establishments in disaster vulnerable areas.
- Promote the preparation of implementation of emergency preparedness plans by all industrial units

- Implementing the existing laws for preventing environmental disaster in chemical industry or
  industries emitting toxic gases and effluents.
- Issue detailed instructions to the employees about their duties and responsibilities in precautionary, disaster and post-disaster stages of normal disaster.
- Arrange regular training for employees and contractors in the disaster prone areas on disaster issues.

Alert and Warning Stage

- Evacuation of the workers from the factories on the receipt of early warning

During Disaster

- Request industries to provide emergency relief material such as food products, temporary shelter, medicines and medical equipment and search and rescue equipment.

After Disaster

- Take steps to plan for rehabilitation of industries adversely affected by disasters

14.9.19 Department of Labor& Employment

Non Disaster Time

- Designate a liaison officer as a focal point and inform all concerned.
- Issue disaster management guidelines to all the industries and ensure on-site and off-site plans for all industries.
- Prepare and disseminate guidelines for the labor security and safety.
- Prepare and implement rules and regulations for industrial safety and hazardous waste management.
- Prepare and disseminate public awareness material related to chemical accidents

During Disaster

- Provide labor to other departments for relief supply and distribution.
- Provide skilled labor for maintenance of equipment and tools.
- Help in establishment of camps.
- Ensure minimum wages to labor during relief work in drought or other disasters

After Disaster

- Take appropriate steps to provide labor assistance to concerned ministries in reconstruction and rehabilitation programmes.
- Assist in employment generation and alternate livelihoods for affected populations

14.9.20 Department of Finance

- Beside normal duties, the department of finance will perform the following responsibilities

Non Disaster Time

- Designate one Liaison Officer in the department as the Disaster Management Focal Point.
- Arrange for the necessary funds as per decision of the State Government

After Disaster

- To monitor international loans and aid assistance to the state.
- To allocate and monitor government plan expenditure towards relief and rehabilitation of Disaster affected areas.

The Emergency Support Functions (ESF)

Disaster response is a multi-agency function. The Department of Revenue(DM) is the lead and nodal department responsible for managing and coordinating the response while other agencies will support and provide assistance in managing the incident. These ESFs will form integral part of the Emergency Operation Centers (EOCs) and each ESF would coordinate its activities from the allocated EOC. Extension teams and workers of each ESF will be required to coordinate the response procedures at the disaster affected site.

Alert Mechanism – Early Warning System

- In most disaster situations, the experience has shown that loss of life and property could be significantly reduced if preparedness measures are taken and appropriate warning systems are put in place. With respect to every disaster the following procedure will be used to issue warning and alerts:
- The District Disaster Management Authority will be the prime agency responsible for issuing the disaster warning at the district level and similarly at state level the State Executive Committee will be the prime agency.
- Technical State agencies authorized to liaison with national agency will receive warning and also communicate the same to the District Emergency Operation Center and State Emergency Operation Centre for further dissemination.
  Agencies responsible to issue the warnings are as follows:

Hazards	Agencies (National Level)	Agencies (State Level)
Drought	Department of Agriculture	Department of Agriculture and KSNDMC
Floods	Central Water Commission	Department of Water Resources and KSNDMC
Human Epidemics	Ministry of Health	State Department of Health & Family Welfare
Animal Epidemics	Ministry of Animal Husbandry	Animal Husbandry
Road Accidents	MHA	State Department of Home
Industrial and Chemical Accidents	Ministry of Industry	Department Factories and Boilersand Dept.,of Industries
Fires	MHA	Department of Home (Fire), Department of forest
Heat and Cold waves	Indian Meteorological Department	Department of Revenue(DM)

- During non-disaster time, the SEC will ensure that the following activities are being carried out in coordination with the concerned line departments:
- ***Pre-Disaster Warning and Alerts***
- For any information received on likelihood of disasters the SEC shall carry out the following activities
- Activate the SEOC

- Based on early warning received, prepare initial information report with estimation of likely severity and scale of disaster.
- The ESF will be asked to conduct a review of the preparedness level of the districts likely to be affected by the disaster, by calling a meeting of District Crisis Management Committees
- Prepare a team for deployment to assess damage and need.
- Inform respective departments to activate respective SOPs
- Inform the recognized national and international organizations if necessary.
- Provide appropriate warning to general public and carry out evacuation.
- Request Home Department to be on standby for rescue and relief operations.
- If required, declare de-warning

Relief and Rehabilitation

- In the aftermath of disasters the affected people must be looked after for their safety, security and the wellbeing and provided food, water, shelter, clothing, medical care etc. so as to ensure that the affected people live with dignity.
- ***Guiding Principle of this phase would be "To build back better"***
- The Department of Revenue(DM) through SEOC will coordinate the recovery and rehabilitation activities in the disaster affected areas under the aegis of SEC by undertaking the following activities.
- Declaration of end of Disaster Situation by the SEC under the directions of SDMA.
- Submission of the recovery and rehabilitation plan by the SEC as per the disaster specific emergent situational needs, to SDMA.
- Declaration of Compensation, which will be done by Department of Revenue(DM) under the directions of the State Government as per relief manual.
- Declaration of Rehabilitation Schemes by the SDMA under the directions of the State Government.
- Coordination with respective departments for implementation of rehabilitation programme
- Pooling of resources including external loans and funds if required.
- Implementation of the recovery and rehabilitation activities in the affected villages through existing mechanism and lessons learnt under the administration control of DDMA.
- Documentation of the disaster based on experiences and lesson learnt of all the involved departments/agencies by DDMA and submission of the report to the SEC for review and revision of the State Disaster Management Plans based on the report findings.

Food and Civil Supplies

People during disaster situation normally experience shortage of food. In order to ensure adequate availability to sustain life the following measures shall be taken:

- Free distributions of food shall be made to those who need the food most.
- The food distribution will be discontinued as soon as the situation comes to normal.
- Preferably dry rations shall be provided for home cooking.
- Community Kitchen for mass feeding shall be organized for an initial period following a major disaster and in situation where affected people do not have the means to cook.
- While providing food assistance, local food habits and preferences shall be kept in mind.

- Foods provided shall be of good quality, safe to consume, appropriate and acceptable to recipients.
- Rations for general food distributions shall be adopted to bridge the gap between the affected population requirements and their own food resources
- Food shall be stored, prepared and consumed in a safe and appropriate manner at both household and community levels.
- Food shall be distributed in a responsive, transparent, equitable manner.
- Local voluntary groups, NGOs and other social organizations shall be involved for supplementing the efforts of the Government.
- The nutritional needs of the population shall be ensured.

Water:

Water supply is invariably affected in natural disasters. Availability of Safe drinking water becomes doubtful particularly in hydro-meteorological disasters.

The following measures shall be taken by the State Governments/District Administration:

- The Water Resources Department and KUWS&DB shall identify alternative sources of water and make necessary arrangements for supply to the affected population.
- The Water Resources Department and KUWS&DB shall ensure that affected people have adequate facilities and supplies to collect, store and use sufficient quantities of water for drinking, cooking and personal hygiene.
- Drinking water supplied shall conform to the prescribed quality standards for domestic consumption.

Health:

During post disaster phase many factors increase the risk of diseases and epidemics. These include poverty, insecurity, overcrowding, inadequate quantity and quality of water, poor environmental and sanitary conditions, inadequate shelter and food supply.

Medical Response:

Medical response has to be quick and effective. The execution of medical response plans and deployment of medical resources warrant special attention at the State and District level in most of the situations. The following measures shall be taken by the Department of Health & Family welfare:

- A mechanism for quick identification of factors affecting the health of the affected people shall be established for surveillance and reporting.
- An assessment of the health and nutritional status of the affected population shall be done by medical teams to be constituted by DHOs of each district.
- The deployment of the nearest medical resources to the disaster site, irrespective of the administrative boundaries shall be ensured by DHOs.
- Ensuring the availability of adequate supply of medicines, disinfectants etc.
- Protocol for inoculation shall be developed.
- Vaccination of the children & pregnant women shall be undertaken.
- Vector control measures shall be undertaken.
- To prevent outbreak of water borne diseases appropriate measures shall be taken.

Mental Health Services:

Disasters cause tremendous mental trauma to the survivors. Psycho-social support and mental health services would be made available immediately in the aftermath of disaster so as to

reduce the stress and trauma of the affected community and facilitate speedy recovery. The following measures shall be undertaken by department of Health & Family welfare:
A Nodal Mental Health Officer shall be designated for each affected District.

- Rapid needs assessment of psycho-social support shall be carried out by the Nodal Officer/ Health Department.
- Trained man power for psycho-social and mental health services shall be mobilized and deputed for psycho-social first aid and transfer of critically ill persons to referral hospitals.
- Psycho-social first aid shall be given to the affected community/ population by the trained community level workers and relief and rescue workers.
- Psycho-social first aid givers shall be sensitized to local, cultural, traditional and ethical values and practices.
- Psycho-social support and mental health Services shall be arranged in relief camps set-up in the post disaster phase.
- In case of large number of disaster victims psycho-social support through a referral system for long term treatment shall be followed.
- The services of NGOs and CBOs shall be requisitioned for providing psycho-social support and mental health services to the survivors of his disasters
- Community practices such as mass prayers; religious discourse etc. will be organized in addition to medical support.

Clothing and Utensils:
During disasters, people lose their clothing and utensils. The following measures shall be taken by DDMA:

- The people affected by the disaster shall be provided with sufficient clothing as per the weather to ensure their dignity, safety and well-being.
- Each disaster-affected household shall be provided with cooking and eating utensils.

Shelter:
In a major disaster a large number of people are rendered homeless. In such situations shelter becomes a critical factor for survival of the affected people in the initial stages of a disaster. Further, shelter becomes essential for safety and security and for protection from the adverse climatic conditions. Shelter is also important for human dignity and for sustaining family and community life in difficult circumstances. The following measures shall be taken while providing shelter to the affected people:

- Disaster affected people who have lost their dwelling units or where such units have been rendered damaged/useless shall be provided sufficient covered space for shelter.
- Disaster affected households shall be provided access to appropriate means of artificial lighting to ensure personal security.
- Disaster-affected households shall be provided with necessary tools, equipment and materials for repair, reconstruction and maintenance for safe use of their shelter.
- Shelter shall be chosen by taking into consideration the geographical terrain and weather conditions of the affected area.
- Different parts of the state have specific shelter requirements which can withstand severe weather conditions. For instance a simple tent may not work during winter season and hence providing of winterized tents or creation of temporary shelters would be required.
- Provision will be made for keeping the shelter warm during winter season.

Relief Camp:

The following steps shall be taken for setting up relief camps in the affected areas:

- Adequate numbers of buildings or open space shall be available where relief camps can be set up during emergency.
- The use of premises of educational institutions for setting up relief camps shall be bare minimum.
- One member of the Incident Command Team from the district trained pool will manage the relief camps.
- The requirements for operation of relief camps will be worked out in detail by each DDMA.
- Agencies to supply the necessary stores will be short listed in the pre-disaster phase.
- The temporary relief sites will have adequate provision of water for drinking and bathing, sanitation and essential health-care facilities.
- Adequate security arrangements shall be made by the local police
- Adequate lighting arrangements shall be made in the Camp Area including at water points, toilets and other common areas.
- Special task forces from amongst the disaster affected families will be constituted for managing community kitchens.
- The victims will be issued identification cards and if required bank accounts for cash transfers etc.

Contact details of District Level Officer and Taluk Level Officer

Sl No	Name	Designation	Mobile No	Landline / Extension No	E-Mail I.D
1	M.S. Archana, IAS	Deputy Commissioner & District Magistrate	9632854006	080-7273777	deo.ramanagara@gmail.com
2	Mohammed Ikramulla Shariff,, I.A.S.	Chief Executive Office	9480875000	27276720	ceozpramngr-ka@nic.in
3	Anoop Shetty, IPS	Superintendent of Police	9480802801	080-27273700	sprmn@ksp.gov.in
4	Vijay B P, K.A.S	Additional Deputy Commissioner & Additional District Magistrate	8884554706	080-27275945	deo.ramanagara@gmail.com
5	Ravi K. H	Agriculture Department	8277932400	27273779	jdarmgm@gmail.com
6	Gunavantha	Horticulture Department	944899241	27274766	ddhramanagar@yahoo.com
7	Sadashiv N hedge	Forest Department	9448381927	27270106	dcfrmngr@gmail.com
8	Shrinivas	Social welfare officer	9620678031	27273003	dswormgm12@gmail.com
9	Basavaraju	BCM	9964387981	27276047	dobcmramanagara@gmail.com
10	Savitha	P.U Education	9886723914	27275195	ddbr.pue@gmail.com
11	Niranjan	DHO	9449843061	27276058	ramanagaram@gmail.com
12	Vijaya gopal Gopalakrishna	Executive Engineer	9113814897 9945833193	27273787	eermnspl@kpwd.gov.in
13	Bharathi devi	Women and Child Welfare	9108377782	27272741	ddwcdrnd@gmail.com
14	Shashikala	Sub Register Officer	9482515847	27271043	dr.ramanagar@karnataka.gov.in
15	Dr. Dakshayini, K.A.S	Additional Commissioner	9845925372	27271229	acofficeramanagara@gmail.com

		Ramanagara District			
16	Shivalinge gowda	JD Industries	9448505524	27273006	Jd-ramanagara@karnatakaindustry.gov.in
17	Krishna	D.D Food	9342334242	27275148	ddfcsramanagar@gmail.com
18	Suresh	RTODept	9449864042	27273471	rtoka42@gmail.com
19	Pushpalatha	Mines Dept	9739129069	27274099	ddkandmgka@gmail.com
20	Siddaramaiyya	Animal Husbandry Dept	9845907321	2272055	rmnddahvs.9@gmail.com
21	Nagaratna	Youth & Sports Service	9886847266	27274655	rnagarayss@gmail.com
22	Themmegowda	Minor Irrigation	8073233302	27275520	aeemisdram@gmail.com
23	Shankarappa	Tourism Dept	9480940555	27271004	adtormg@gmail.com
24	Siddaramaiah	Pollution Control Board	9845311539	27275678	ramnagar@kspcb.gov.in
25	Ashe Khan	JailDept	9480806415	27274220	dprmg.prisons_kar@gov.in
26	Jayaramaiah	FishDept	9480822948	27275258	sadf.ramnagar@gmail.com
27	Shankarappa	NewsDept	9480940555	27273405	varthabhavanramanagar@gmail.com
28	Purushotham	Home Guards	9480802820	-	-
29	Vasanth Kumar	KRIDL Executive Engineer	9449863043	27272747	27272747
30	Mahesh	K.S.R.T.C (Divisional Controller)	7760990850	27272826	dcrmn@ksrtc.org
31	Shiva kumar	Railway Station, Ramanagara	9741366352	27271011	
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