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FIRST DRAFT APPROVED BY THE DISTRICT DISASTER MANAGEMENT AUTHORITY
[DDMA] EAST DISTRICT
DISTRICT DISASTER MANAGEMENT PLAN,
EAST DELHI

Updated in: October, 2014
(This plan is the updated version of DM Plan, 2013)

Published by
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I am pleased to present the District Disaster Management Plan (DDMP) of East District. As we all know that Disaster Management has become an Act now in the country and the Government has decided to make serious efforts to mitigate and manage disasters. The Disaster Management Act, 2005 stipulates to put in place Disaster Management Plans aimed at reducing potential loss of life and property in disasters as well as ensuring strong preparedness, responses and recovery measures to manage any disaster situation.

Disasters either natural or manmade have been main hurdles in the development of civilization since ages and affect humanity on long term basis. Natural / manmade disasters like Earthquake, floods, fires, Building collapse etc. affect life and environment. Past experiences in the District shows that each disaster situation throws up a new set of challenges which Government agencies have to deal with. This plan has been prepared as per the guidance provided by the National Disaster Management Authority and mandates the roles and functions to be played by the District Disaster Management Authority. Disaster Management, by its very nature, requires a multi-disciplinary approach & hence, a strong co-ordination mechanism forms the core of successful management.

This plan outlines the functions of the principal coordination aimed namely the East District, Disaster Management Authority and the support functions to be performed by the line departments as well as the SDMA. However District Disaster Management Authority functions are listed out for the line departments. Regular updation of this DDMP shall help to initiate real time management. As such, each line department requires to prepare its own Disaster Management Plan in alignment with this plan. This plan shall be reviewed periodically by the DDMA to update all activities and information. A training plan has been prepared to enhance capacities of all departments for effective management of disasters.

I hope that plan serves the purpose.

District Magistrate (East) / Chairperson DDMA (East)  
District East  
(Sh. Kunal, IAS)
EXECUTIVE SUMMARY

India has been traditionally vulnerable to Natural Disasters on account of its unique geo-climatic conditions. Floods, drought, cyclone, earthquakes and landslides have been a recurrent phenomenon. About 60% of the landmass is prone to earthquakes of various intensities, about 40 million hectares of land is prone to floods, about 8% of the total area is prone to cyclones which covers around 8000 Km stretch of Indian coastline 68% of the area is susceptible to drought. In the past decade, about 4344 people lost their lives and about 30 million people were affected by disasters every year. The loss in terms of private, community and public assets has been astronomical.

The super cyclone of Orissa in October 1999 and the Bhuj Earthquake in Gujarat in January 2001 underscored the need to adopt a multi disciplinary and multi sectoral approach and incorporation of risk reduction in the development plans and strategies. Over the past couple of years, the Government of India has brought a paradigm shift in the approach to disaster management from relief and rehabilitation to prevention, mitigation and preparedness. The new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process. Another cornerstone of the approach is that mitigation has to be multidisciplinary spanning across all sectors of development. The new policy also emanates from the belief that investment in disaster mitigation is much more cost effective than expenditure on relief and rehabilitation.

The capital of India, Delhi spreads across 1450 sq. km area over both the eastern and East Banks of River Yamuna. The National Capital Territory of Delhi is significant, not only historically, but in the modern era too. Over a couple of the past decades, Delhi has emerged as the socio-economic hub of India. Delhi is comprised of nine districts and the East district on Yamuna Bank is among the most vulnerable districts in the state.

East District is spread over an area of 51 Square Kilometers (approx.) with a total population of 17,07,725. The population density of 26,683 is the second highest in Delhi. Delhi lies in the Gangatic Plains and the eastern part of Delhi is most vulnerable to earthquake as well as flood, fire and so forth. It is well known that the entire state of Delhi falls under Seismic Zone IV. In addition, fire is a major concern for the District as fire incidents have risen steeply in the last couple of decades. The vulnerability of the district to fire accidents is high especially in JJ Clusters and Slums, which are thickly populated.

The District Disaster Management Plan for East District has been prepared with the objective to introduce more effective and tested methods of disaster management, where general awareness, effective co-ordination and response from various stakeholders and peoples participation is invoked at all stages. The plan documents contain 12 chapters along with annexure giving additional details of the district.

Additional District Magistrate (East) / Chief Executive Officer
DDMA (East)
(Ranjeet Singh)
## CONTENTS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>PARTICULARS</th>
<th>PAGE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>FOREWORD</td>
<td>03</td>
</tr>
<tr>
<td>2.</td>
<td>EXECUTIVE SUMMARY</td>
<td>04</td>
</tr>
<tr>
<td>3.</td>
<td>MAP OF DISTRICT EAST</td>
<td>05</td>
</tr>
<tr>
<td>4.</td>
<td><strong>CHAPTER-01: INTRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This Chapter discusses about the need and objective of planning in the district and talks about the changing context of Disaster Management. The methodology of plan development has also been discussed in the chapter. It comprises of the following:</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>- Aims and Objectives of the DDMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Authority for the DDMP : DM Act 2005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Evolution of plan in brief ( A separate chapter is included in Annexure on Evolution, Procedure and methodology to be followed for the plan preparation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Stakeholders and their responsibilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- How to use the plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Approval Mechanism of the plan: Authority for implementation (state Level/District level orders)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Plan review and updation : periodicity</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td><strong>CHAPTER –2: HAZARD, VULNERABILITY, CAPACITY AND RISK ASSESSMENT</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Broadly discusses the Hazards and Vulnerabilities of the district and also analyses the capacity existing to cope with the existing hazard. The chapter gives the details of previous disaster in the district, discusses the various hazards to which the district is prone to like Earthquake, Floods, Fire, Health related disaster and Accident Risks. Impact Analysis of some of the worst disaster in the district has also been discussed. Hazard and Vulnerability Analysis, resource inventory and capacity analysis and preparedness analysis has also been discussed in detail.</td>
<td>13-32</td>
</tr>
<tr>
<td>6.</td>
<td><strong>CHAPTER –3: INSTITUTIONAL ARRANGEMENTS FOR DM</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discusses the Institutional Mechanism of Disaster Management at the National, State and the District Level. At the district level it discusses the formation of the District Disaster management Authority (DDMA) &amp; District Disaster Management Committee (DDMC) that is a high-powered committee at the district level to look into the issue of disaster management at different phases of disaster. The role and responsibility of the DDMA &amp; DDMC has also been laid down. Establishment of Emergency Operation Centre and its role during different phases of</td>
<td>33-41</td>
</tr>
</tbody>
</table>
disaster and normal time have been explained. The Incident Response System in the district has been discussed in details giving the organization structure and the major functions of the various players within the system.

### 7. CHAPTER –4: PREVENTION AND MITIGATION MEASURES

Discusses about the Disaster Mitigation Plan which consist of both Non-Structural Mitigation and Structural Mitigation measures.

- The Non-Structural Aspect of Mitigation talks about Preparedness methodology, Sensitization/Awareness Campaign, Training and Capacity Building, Community Disaster Management Planning, developing disaster resource inventory and enforcement of existing codes and laws.
- The Structural aspect talks about Retrofitting and Earthquake resistant construction.

### 8. CHAPTER –5: PREPAREDNESS MEASURES

This chapter discusses the Community preparedness plan, detailed out preparedness strategy under which communities and district authorities would be prepared so that level of destruction and unnecessary delay in relief and response can be reduced.

### 9. CHAPTER –6: CAPACITY BUILDING AND TRAINING MEASURES

The chapter gives a brief approach about the capacity building plan including Institutional Capacity building, Community Capacity building, training of trainers like Civil Defence Volunteers, etc. It emphasizes on skill up gradation and follow up training programmes. The chapter gives a brief idea about the capacity building & training measures adopted as Non-Structural Mitigation for enhancing & elevating the capacity & building resilience of the community towards disaster.

### 10. CHAPTER –7: RESPONSE AND RELIEF MEASURES

The chapter also gives a brief idea about the Action (Response) Plan of Emergency Support Functions. It discusses in detail the Action Plan of each of the concerned department with respect to short-term response plan and long term response plan. It further emphasises on the relief measures adopted for restoring the normalcy followed by the aftermath of any disaster.
CHAPTER –8: REHABILITATION AND RECONSTRUCTION MEASURES

The Chapter describes the strategy to restore the normalcy to the lives and livelihoods of the affected population. It provides short term reconstruction strategy for vital life support systems to minimum operating standards as well as long term rehabilitation.

92-97

CHAPTER –9: FINANCIAL RESOURCES FOR IMPLEMENTATION OF DDMP


98-100

CHAPTER –10: PROCEDURE AND METHODOLOGY FOR MONITORING, EVALUATION, UPDATION AND MAINTENANCE OF DDMP

Discusses the Monitoring and Evaluation aspect of the District Disaster Management Plan and talks about its regular updation.

101-104

CHAPTER –11: COORDINATION MECHANISM FOR IMPLEMENTATION OF DDMP:

The chapter throws light on the coordination mechanism performed by all ESFs & other line Departments / participants which may include national government, local government, national and international humanitarian organizations, expert and volunteer rescue teams, third-party logistics providers, suppliers of goods used for disaster relief, and the affected people.

105-109

CHAPTER –12. STANDARD OPERATION PROCEDURES (SOPS) AND CHECKLIST

The Chapter also gives the detailed Standard Operation Procedures (SOP) for all the 11 identified Emergency Support Functions in the district. It discusses the SOP for the various community task forces.

110-123

ANNEXURES

Annexure-1 - District Profile- History of past Disasters: This section would provide a brief review of the followings:

i) Climate (temperature, rainfall and weather patterns), vegetation, geological features (fault lines, mountains areas) topography (rivers, deserts), forest areas.

ii) Forests, Agriculture, Land use patterns, Irrigation systems and dams

iii) Demography (size, growth trends, literacy rates, poverty level ( APLVs BPL), Income per-capota, main occupations),
| iv) | Society (Religious, ethnic groups, social structure, situation of cohesion/conflict) |
| v) | Economy (key sectors, percentage of their share in economy, growth and development trends) |
| vi) | Infrastructure and services (roads, telecommunications, hospitals, educational institutions, water sanitations etc) |
| vii) | Shelter, if any (number and types)- Flood/Cyclone shelters or Earthquakes resilient Bunkers |
| viii) | Political system and social systems (local government system, councils, etc) |
| ix) | Administrative system (administrative units, number of blocks, Gram Panchayat, villages) in the district. |

**Annexure-2** - Laws and policies related to disaster risk management  
**Annexure-3** - Shelter Management Plan: List of Relief Centres  
**Annexure-4** - Medical and Hospital Management Plan  
**Annexure-5** - Projects for prevention of disasters  
**Annexure-6** - List of vulnerable talukas and villages with risk ranking (hazard-wise)  
**Annexure-7** - List of resources available in district (public and private)  
**Annexure-8** - List of infrastructure in the district (public and private) such as police stations, shelters etc  
**Annexure-9** - List of NGOs, CBOs List of public Volunteers – their areas of specialty and capabilities  
**Annexure-10** - List of Trained Personnel: machinery & equipment available in the district with different stakeholders  
**Annexure-11** - List of emergency supplies needed along with Contacts for emergency suppliers  
**Annexure-12** - Contacts directory (Nodal officers in different departments, NGOs, suppliers etc) to be updated every month  
**Annexure-13** - Distribution List (20 the agencies/individuals to whom the plan will be distributed  
**Annexure-14** - List of Acronyms  
**Annexure-15** - Map of Metro Stations  
**Annexure-16** – Details of Metro Stations in District East  
**Annexure-17** – List of Schools in East Delhi  
**Annexure-18** – List of RWAs & MTAs in East Delhi  
**Annexure-19** – Maps of District East  
**Annexure-20** – Disabled Population by Type of Disability, Age and Sex
Disaster Management has undergone a paradigm shift in recent years from the earlier approach of *response to disasters* to the current holistic approach of *disaster mitigation and preparedness*, which yields long term benefits while minimizing damage due to disasters. Among other natural calamities to which Delhi is prone, the state is most vulnerable to earthquakes. As per the Seismic Map of India the National Capital Region of Delhi falls in Zone IV which is the second most severe seismic zone.

**Aims & Objectives of the District Disaster Management Plan :**

The aim of District Disaster Management Plan is to make District East safe, secure and prepared for any unforeseen disaster. So as to minimize the impact of any disaster on life, environment and property.

This plan is a multi response plan and outlines the institutional framework required for managing disaster situations. The front-end or local level, response of any disaster response organization may differ depending upon the type of disaster, but the back-end i.e. the controlling level at the district will remain almost the same for all types of disasters. This plan provides an insight into Hazard, Vulnerability, Capacity & Risk Assessment, Institutional Arrangements, Prevention, Mitigation & Preparedness Measures, Capacity Building & Training Measures, Response & Relief Measures, Reconstruction, Rehabilitation & Recovery Measures and Financial Resources for implementation of DDMP, procedure & methodology for monitoring, evaluation, updation & maintenance of DDMP, Coordination Mechanism & Standard Operating Procedures (SOP) of various Departments.

**The basic objectives for formulating a Plan are as under :**

The basic objective of the District Disaster Management Plan is to protect all the residents of the district and all property from all sorts of untoward incidents through the following objectives:

- Institutionalization of Disaster Management in District Administration
- Encouraging a culture of Disaster Preparedness in the district
- Creation of the best government mechanism to handle any unprecedented events
- Instant response and effective decision making in disasters
- Encouraging and empowering the local community to own Disaster Management

Essentially, communities draw their support from the existing social institutions, the administrative structures, and their values and aspirations they cherish. Disasters may temporarily disorganize these institutions 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 footing, with necessary technology support and resources, will contribute significantly to the resilience of the community and nation. In pursuance of this policy, the District Disaster Management Plan addresses itself to strengthening the pre-disaster and post-disaster responses of Emergency Support functionaries and stakeholders including the “victims” of the disaster.

**Authority for the DDMP: DM Act 2005**

As per Section 31 of the DM Act 2005, there shall be a plan for disaster management for every district of the State. The District Plan shall be prepared by the District Authority, after consultation with the local authorities and having regard to the National Plan and the State Plan, to be approved by the State Authority.
The District Plan shall include:

a) The areas in the district vulnerable to different forms of Disasters.

b) The measures to be taken, for prevention and mitigation of disaster, by the Departments of the Government at the district level and local authorities in the district;

c) The capacity-building and preparedness measures required to be taken by the Departments of the Government at the district level and the local authorities in the district to respond to any threatening disaster situation or disaster;

d) The response plans and procedures, in the event of a disaster, providing for-
   i) Allocation of responsibilities to the Departments of the Government at the district level and the local authorities in the district;
   ii) Prompt response to disaster and relief thereof;
   iii) Procurement of essential resources;
   iv) Establishment of communication links; and
   v) The dissemination of information to the public;

e) Such other matters as may be required by the State Authority.

The District Plan shall be reviewed and updated annually. The copies of the District Plan referred to in subsections (2) and shall be made available to the Departments of the Government in the district. The District Authority shall send a copy of the District Plan to the State Authority which shall forward it to the State Government. The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

Evolution of the Plan in brief:

Preparation of the District Disaster Management Plan is the responsibility of the District Disaster Management Committee of the district. The first draft plan is to be discussed in the DDMA and later the Chairperson of the DDMA shall improve on it.

The main steps involved in the development of this plan are:

- Data collection from all line departments
- Data analysis
- Discussion with experts
- Reference of national and international literature
- Preparation of action plans for all line departments
- Preparation of draft plan document
- Mock drill to check the viability and feasibility of the implementation methodology
- Wide circulation for public and departmental comments
- Preparation of the final plan document

Stakeholders & their responsibilities:

As per Section 31 of the DM Act 2005 Every office of the Government of India and of the State Government at the district level and the local authorities shall, subject to the supervision of the District Authority, -

a) Prepare a disaster management plan setting out the following, namely:-
   i) Provisions for prevention and mitigation measures as provided for in the District Plan and as is assigned to the department or agency concerned;
   ii) Provisions for taking measures relating to capacity-building and preparedness as laid down in the District Plan;
iii) The response plans and procedures, in the event of, any threatening disaster situation or disaster;

b) Coordinate the preparation and the implementation of its plan with those of the other organizations at the district level including local authority, communities and other stakeholders;

c) Regularly review and update the plan; and

d) Submit a copy of its disaster management plan and of any amendment thereto, to the District Authority.

How to use the Plan:

- Plans will work only in the case when present organizational structure is responsible to its non-emergency duties i.e. if a job is done well everyday; it is best done by that organization during emergency.
- Crisis should be met at the lowest and most immediate level of government. Plans call for local response supplemented if necessary, by the next higher jurisdiction.
- Voluntary response and involvement of the private sector should be sought and emphasized. The emergency management partnership is important to all phases of natural and man-made disasters.

Approval Mechanism of the Plan: Authority for implementation (State Level/ District Level orders):

As per Section 31(2) of the Disaster Management Act 2005, there shall be a plan for disaster management for every district of the State. The District Plan shall be prepared by the District Authority, after consultation with the local authorities and having regard to the National Plan and the State Plan, to be approved by the State Authority.

Also, as per Section 31(6) of the Disaster Management Act 2005, the District Authority shall send a copy of the District Plan to the State Authority which shall forward it to the State Government.

Plan Review & Updation: Periodicity

As per Section 31(4) The District Plan shall be reviewed and updated annually.
Also, As per Section 31(7) The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

Evolution of the Plan:

The main steps involved in the development of this plan are:

1. Data collection from all line departments
2. Data analysis
3. Discussion with experts
4. Reference of national and international literature
5. Preparation of action plans for all line departments
6. Preparation of draft plan document
7. Mock drill to check the viability and feasibility of the implementation methodology
8. Wide circulation for public and departmental comments
9. Preparation of the final plan document
East District is highly prone to multi hazards like earthquake, flood, fire accident, LPG cylinder blast as well as building collapse and epidemics. The low socio-economic development in the district along with the high density of population is one of the most important reasons for this menace. The history of disasters in the district will provide a clear picture of the vulnerability to which the district is prone.

**HAZARD & VULNERABILITY PROFILE OF DISTRICT EAST**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Hazard</th>
<th>Reasons</th>
<th>Vulnerability</th>
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<tbody>
<tr>
<td>1.</td>
<td>Earthquake</td>
<td>- Seismic Zone IV&lt;br&gt;- Non earthquake resilient buildings&lt;br&gt;- High density of population&lt;br&gt;- Unplanned &amp; unsafe structures&lt;br&gt;- Congested area</td>
<td>High</td>
</tr>
<tr>
<td>2.</td>
<td>Fire</td>
<td>- LPG leakage&lt;br&gt;- Short Circuit&lt;br&gt;- Jhuggi Clusters&lt;br&gt;- Lack of fire safety installations</td>
<td>High</td>
</tr>
<tr>
<td>3.</td>
<td>Flood</td>
<td>- Yamuna river bed&lt;br&gt;- Habitation in low-lying area&lt;br&gt;- Sudden discharge of water from neighboring states&lt;br&gt;- Poor drainage causes water logging</td>
<td>High</td>
</tr>
<tr>
<td>4.</td>
<td>Building Collapse</td>
<td>- Old &amp; unsafe buildings&lt;br&gt;- Unauthorized &amp; unplanned structures</td>
<td>High</td>
</tr>
<tr>
<td>5.</td>
<td>Stampede</td>
<td>- High density of population&lt;br&gt;- Congested areas&lt;br&gt;- Spread of rumors</td>
<td>Medium</td>
</tr>
<tr>
<td>6.</td>
<td>Terrorist Attack/Bomb Blast</td>
<td>- Attack by terrorists</td>
<td>Moderate</td>
</tr>
<tr>
<td>7.</td>
<td>Epidemic</td>
<td>- Poor hygiene &amp;&lt;br&gt;- Sanitary Conditions&lt;br&gt;- Post flood effects</td>
<td>Medium</td>
</tr>
</tbody>
</table>
2.1 TYPES OF HAZARDS THE DISTRICT PRONE TO DISTRICT EAST

The entire state of Delhi falls under Seismic Zone IV in the national seismic map. This means the state is adjacent to the high vulnerability area i.e. zone V. The Tectonic activities under the National Capital Region are shifting swiftly. The increased number of illegal construction practices in the area has been one of the forces behind this. The Yamuna Pusta of the National Capital Region of Delhi has been considered as the most vulnerable area in Delhi itself. The map of Delhi given below shows the Seismic zone.

People living in District East are basically migrants from various parts of the other states. As per a recent study, about 30 per cent of Delhi’s population is illiterate and a 60 per cent of the total illiterate in Delhi are from the Eastern districts of the state. This shows how vulnerable the district is. Even a minor accident turns as a disaster due to the socio-cultural back ground of the district.

2.2 HAZARDS & VULNERABILITY ANALYSIS:

District East is highly prone to Multi Hazard disaster like earthquake, flood, fire accident, LPG cylinder blast, building collapse, epidemics, Road accidents, stray cattle incidences etc. The high density of population coupled with socio economic backwardness increases the vulnerability towards various disasters. The history of disasters in the district will provide a clear picture of the vulnerability to which the district is prone.

TYPES OF DISASTERS: VULNERABILITIES IN DISTRICT EAST

**EARTHQUAKE:**

District East being a part of Delhi, a unique city-state combination, can not be studied in isolation for the purpose of developing a hazard profile for the district. The type of risks East Delhi is prone to is the same as that of the whole of Delhi. The hazards can be classified into natural and man-made. Delhi is prone to natural hazards like Earthquake and floods while manmade hazards like fire and terrorism etc. there for this chapter discuses the issues, and risks involved fro difference hazards Delhi is prone to.

An earthquake is a sudden motion or trembling of the ground produced by abrupt displacement of rock masses, usually within the upper 15 to 50 km of the Earth’s crust. Most earthquakes result from the movement of one rock mass past another in response to tectonic forces. Rock is elastic and can, up to a point, accumulate strain where adjacent areas of rock are subjected to forces pushing or pulling them. When the stress exceeds the strength of the rock, the rock breaks along a pre-existing or new fracture plane called a fault.

The rupture extends outwards along the fault plane from its point of origin, or focus. The epicenter of an earthquake is the point on the Earth’s surface that is directly above the focus. The rupture usually does not proceed uniformly; its progress typically is jerky and irregular. Variations in rock properties and overburden
pressures can bring the rupture almost to a stop; then because of there arrangement of elastic forces, the rupture suddenly may break free and swiftly move out. The rupture will continue until it reaches the places at which the rock is not sufficiently stained to permit it to propagate further. If the rupture reaches the surface, it produces a visible surface break. During the rupture, the sides of the fault rub against one another so that considerable energy is expended by frictional forces and in the crushing of rock. The surfaces are heated locally. Earthquake waves are generated at the same time by the rebounding of the adjacent sides of the fault at the rupture surfaces, as well as by rubbing and crushing. The seismic energy is emitted from the rupture as seismic waves. The fastest are the primary (or P).

Waves, also called compressional waves travel in average crystal rocks at about 5km per second. The secondary (or S) waves, which are slower, are shear waves with a speed in the crust of about 3km per second. The slowest waves are surface waves, called Rayleigh and Love waves, whose depths of penetration are dependent on their wavelengths. They travel near the surface of the surface of the Earth with a speed of less than 3km per second. Earthquakes are considered to be one of the most dangerous and destructive natural hazards. The impact of this phenomenon is sudden with very little or without any warning. It is not yet possible to make a prediction about earthquake’s occurrence and magnitude. A very large number of earthquakes occur every year all round the earth but only a limited number of them are centred near populated areas or are having sufficient strength to cause damage to built environment.

**Earthquake Scales: Magnitude and Intensity**

Earthquakes are described in terms of their magnitude (M) and intensity (I). These are two distinct scales which should not be confused. Earthquake magnitude is a measure of strength of an earthquake, i.e., the strain energy released at its source. Earthquake intensity is a measure of the observed effects of the earthquake on man, buildings and the earth’s surface at a particular place.

Magnitude, as the logarithm, to the base 10, of the amplitude in micrometers of the maximum amplitude of seismic waves that would be observed on a standard torsion seismograph at a distance of about periods 100km from the epicentre. The seismic waves used for local magnitude have periods ranging approximately from 0.1 to 2 seconds, equivalent to a wavelength of 300 meters to 6km. Since 1935, more than half a dozen different magnitude scales have been devised to measure earthquake magnitude. Most magnitudes of earthquake occurring at great distances (more than about 600km) from a seismograph station are determined using the logarithm of the amplitude of the surface or body waves with a period of 20 second (a wavelength of about 60km), which are often dominant on the seismograms. The bodywave magnitude scale (Mb) measure seismic bodywaves, primary (P) and secondary (S) which have period usually from 1 to 10 seconds.

Although the magnitude scale is logarithmic, the energy associated with an increase of one degree of magnitude is not ten-fold, but about thirtyfold. For example, approximately 900 times more energy is released in a magnitude 7 earthquake than in a magnitude 5earthquake. The 1964 Alaskan earthquake, for example, of magnitude (M) 9.2 released 45*1025 (450,000,000,000,000,000,000,000,000) ergs of seismic energy, i.e., the equivalent of the total energy consumption for the USA in the year. The Alaskan earthquake is one of the largest instrumental (as opposed to historical) earthquakes ever recorded. The public systematically confuses the two scales, referring to the Richter 9-point, and even 12-point, scale! It must be understood that the Richter magnitude (M) scale is open-ended. It must also be understood that earthquake magnitude is not, strictly-speaking, an adequate planning or mitigation tool, unless magnitude/intensity relationship can be established for a particular area or region. The intensity scale is the most commonly used for building and planning.

**Intensity**

Earthquake intensity is a measure of the effects of an earthquake at a particular place. Intensity is determined from observation of an earthquake’s effect on people, structures, and the Earth’ surface. This first intensity scale to gain wide use was developed in Europe in 1883 by M.S. DeRossi of Italy and F.G. Forel of Switzerland. The Rossi-Forel scale grouped earthquake effects into 10 steps of intensity beginning with 1 for the least noticeable.
The Rossi-Forel scale proved too peculiar to 19th century Europe to be universally applicable. In 1902, Giuseppe Mercalli, improved scale which also had 10 grades of intensity (later increased to 12).

Two intensity scales are used today: the Modified Mercalli scale (short version of 1931) symbolized as MM; and the Medvedev-Sponheer-Karmic scale of 1964, known as the MSK scale. The MM scale is used in the certain western countries of Europe. The MSK scale is used predominantly in Eastern Europe. The MSK scale is a much more elaborate and explicit scale than the MM scale but both are useful and valid.

Hazards and Impacts associated with an earthquake:

Earthquake cause a variety of impacts on the crust of earth. Various hazards associated with an earthquake can be grouped as following:

**Primary Hazards:** These are the effects, which occur simultaneously along with natural phenomenon of the earthquake:

- Ground shaking
- Fault rupture
- Tectonic deformations

**Secondary Hazards:** These effects are those, which occur at the end or after the earthquake phenomenon:

- Soil liquefaction
- Land and Mud slides

Due to these hazards associated with an earthquake, a number of impacts occur. The impacts of an earthquake may also be grouped in the same manner on the basis of the type of hazard, as mentioned below:-

**Primary Impacts:**

- Building and Bridge collapse
- Rupture of water and gas pipelines and other utilities
- Changes in underground water sources
- Changes in courses of rivers
- Secondary Impacts:
- Death and damage due to collapse of infrastructure including buildings
- Fire and explosions
- Disease and epidemics
- Floods
- Assessment and Mapping

**Seismic Zoning**

Seismic zoning consists of dividing a national territory into several areas indicating progressive levels of expected seismic intensity for different return periods. These zones can be described in terms of expected intensity, peak ground accelerations, or any other strong ground-motion parameter.

The number of zones into which a country is divided is fairly arbitrary. Zoning at the territorial or national levels depends on the collection and analysis of historical and instrumental records of strong ground-motion. For example, a country may be divided into three, four or more seismic zones. The definition of these is a matter not only of technical but also of administrative competence.

**Seismic Micro-Zoning**

Hazard micro-zoning consists of recording in detail all seismological, geological and hydro-geological parameters that may be needed in planning and implementing a given project area at an appropriate scale for physical planners, urban designers, engineers and architects, or any other user. Seismic micro-zoning consists in mapping in detail all possible earthquake and earthquake-induced hazards. These maps should contain information that is limited to the users’ requirements, and presented in a form comprehensible to them.
Invariably, the users’ maps will be different to those prepared by or for the specialists. This is a problem which has yet to be properly explored.

**Type of Studies Required**
The physical framework of a study zone and the localizing of urban sites chosen by national or local authorities for the detailed study of seismic micro-zoning must be selected beforehand. The main aim of seismic micro zoning is the definition of seismic hazards which may affect the areas in question and to present data in summary form so that it may be useful to governmental agencies, urban planners and the building industry.

The results will be used to facilitate either the planning or the repair and strengthening of buildings destroyed or damaged by previous earthquake. These results will contribute to urban planning and the design of new buildings in the selected urban areas. This in turn will limit the potentially destructive effects of future earthquakes.

**The framework for any micro-zoning study must include the following tasks:**
A geological survey of the sites concerned in order to identify those which are potentially dangerous, such as those which follow active faults or which are susceptible to landslides, and to delimit spatially surface deposits.

A compilation and analysis if existing geotechnical data in addition to that already provided by drilling and trial wells undertaken during rests, including the results of laboratory tests. These tests characterize the geotechnical properties of the lithological unit identified on photo geological maps of urban areas and show and three dimensional variation information.

A compilation of available hydro geological data which allows the calculation of the liquefaction potential of urban areas soils. Determination of maximum ground acceleration for return periods of 50,200 and 500 years, and the development of typical spectra for the different general categories of subsurface conditions which take into account all the sites under study.

An evaluation of flood potential in urban zones due to tectonic collapse or upheaval of river beds, or due to landslips, caused by an earthquake which could block river flow. The preparation of summary maps of seismic hazards and of micro-zoning for each of the urban zones. These maps should contain potential seismic hazards and divided each district into zones of comparable risk due to the combined effects of these hazards.

The result must be annotated and specific to each site. Data contained in the analysis of seismic hazard for a given zone must also be useful for evaluating potential secondary effects such as the breakdown of transport infrastructure (roads, railways, pipelines, aqueducts or electric power lines), or flooding caused by dam failure due to earthquake.

**INTENSITY SCALES:** The Modified Mercalli Scale (MM) of 1931

**Intensity I**
Not felt except by a very few persons under especially favourable circumstances.

**Intensity II**
Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

**Intensity III**
Felt noticeably indoors, especially on upper floors of buildings, but many people of not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated
**Intensity IV**
During the day felt by many.

**Geological Setting of Delhi**

Delhi, the capital of India is bounded by the Indo-Gangetic alluvial plains in the North and East, by Thar Desert in the West and by Aravalli hill ranges in the South. The terrain of Delhi is flat in general except for a low NNE-SSW trending ridge which is considered and extension of the Aravalli hills of Rajasthan. A computer image of the surface topography of Delhi is presented in the figure below. Seismicity around Delhi appears to be associated with a major geological structure, which is known as the Delhi-Hardwar Ridge. It coincides with the extension of the Aravalli Mountain belt beneath the alluvial plains of the Ganga basin to the northeast of Delhi towards the Himalayan Mountain.

Of all natural hazards, earthquakes seem the most terrifying. They can inflict tremendous damage within seconds and without warning at any time of day, on any day of the year. Ground shaking and surface faulting are often just the forerunners of secondary damage, such as fires, floods (caused by dam bursts), landslides, quick soil and tsunamis (seismic sea waves). “It is seen that the Delhi region has a long seismic history being affected by earthquakes of local origins as well as those of Himalayan origin. Based on the tectonic map of the region prepared by Srivastav and Roy, this region is characterized by several dominant features such as the Delhi-Haridwar ridge, Delhi-Lahore ridge, the Aravalli. “It is seen that the Delhi region has a long seismic history being affected by earthquakes of local origins as well as those of Himalayan origin. Verma et al. And Chouhan et al., who have studied more than 100 events recorded in the region, have shown that the epicenters have a pattern of clustering in two belts, namely Rohtak and Delhi. The distribution of the epicenters appears to have a NE-SW trend correlated with the direction of major tectonic features of the region. According to these authors it is not possible to associate the seismicity of Delhi with any particular tectonic unit. On the other hand a number of lineaments appear to be active to various degrees.”

Delhi, the Sohna fault, the Mathura fault and the Muradabad fault. Verma et al. & Chouhan et al., who have studied more than 100 events recorded in the region, have shown that the epicenters have a pattern of clustering in two belts, namely Rohtak and Delhi. The distribution of the epicenters appears to have a NE-SW trend correlated with the direction of major tectonic features of the region. According to these authors it is not possible to associate the seismicity of Delhi with any particular tectonic unit. On the other hand a number of lineaments appear to be active to various degrees.”
A study of local small earthquake events shows a good correlation of seismicity with major fault zones. It is likely that seismicity near Rohtak is caused by fault zone of the Aravalli. The major fault zone passing through Mathura and Moradabad is likely to be active and might have been the cause of past few earthquakes. Seismicity around Delhi appears to be associated with a major geological structure, which is known as the Delhi-Hardwar Ridge. This ridge constitutes an important tectonic block between 28° - 30° N and 76° - 79° E with a NESW trend. It coincides with the extension of the Aravali Mountain belt beneath the alluvial plains of the Ganga basin to the northeast of Delhi towards the Himalayan Mountain (Jain, 1996).

Delhi, which is lies in Seismic Zone IV, is currently experiencing mild seismicity. An earthquake of magnitude 7.0 on the Richter scale, that was once considered hypothetical, is today a very real possibility. Keeping in view the forecast of a major earthquake resistant design consideration, it has become imperative to size up the earthquake scenario of the city and increase awareness of earthquake resistant techniques. Considering areas affected during past earthquakes of M - 6.5, it can be expected that such an earthquake occurring in Delhi could adversely affect the whole of it with damaging intensities and more than 50% of the Delhi Metropolitan Area – in terms of probable damage scenario, earthquake would be the worst natural disaster for Delhi.

DISTRICT EAST & EARTHQUAKE:

The Yamuna River - bed section, extending till NOIDA and Faridabad, are more vulnerable to damage even by a moderate earthquake because they are on alluvial soil upto 200 m deep. These regions face a very grave problem of soil liquefaction during an earthquake. Moreover, earthquakes are amplified by alluvial soils. The most recent Chamoli earthquake (29 March 1999) was felt all over Delhi. There have been reports of cracks in a few tall buildings located on alluvial deposits in the trans-Yamuna area.

However, entire state of Delhi falls under Seismic Zone IV in the national seismic map & the state is also adjacent to the high vulnerability area i.e. zone V. The Tectonic activities under the National Capital Region are shifting swiftly. The increased number of illegal construction practices in the area has been one of the forces behind this. The Yamuna Pushta of the National Capital Region of Delhi has been considered as the most vulnerable area in Delhi itself. Many areas in the district such as Resettlement colonies, unauthorized areas and villages are very vulnerable to Earthquake risk due to

- poor masonry constructions,
- high density of population,
- narrow streets
- Most of the houses have only one opening/ exit- entry.
- The population residing in the area is socially and economically weaker section making them all the more vulnerable.

### Congested Areas in the district

<table>
<thead>
<tr>
<th>Highly Congested Area</th>
<th>Sub Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khareji Khas, Mandawali, Fazalpur Gazipur, Hasan Pur</td>
<td>Preet Vihar</td>
</tr>
<tr>
<td>Gharauli, Samesh Pur Jagir, Kondli Dallupura, Chilla Saroda Bangar, Chilla Saroda Khadar, Gharonda Neem ka Banagar, Gharonda Neem ka Khadar, Kotla Village, Khichripur</td>
<td>Mayur Vihar</td>
</tr>
<tr>
<td>Gandhi Nagar, Seelampur Village, Kanti nagar, Kailash Nagar</td>
<td>Gandhi Nagar</td>
</tr>
</tbody>
</table>

### Past Earthquakes around Delhi

Damaging earthquakes have occurred around Delhi since ancient times. Mahabharata mentions about earthquakes during the war at Kurukshetra (Circa 3000 BC?). More recently, damage to Delhi in the 1720
earthquakes (intensity IX in Delhi) is well discussed by Kafi Khan. Tandon (1953) mentions of damage to the Qutab Minar during the 2803 earthquake near Mathura.

The more earthquakes in Delhi region includes: (a) earthquake of year 893 or 894 (Intensity XI XII) which took place not far from Delhi in which many persons died; (b) earthquake of 22 March 1825 near Delhi Intensity VII; earthquake of 17 July 1830 near Delhi (Intensity VIII); and (d) earthquake of 24 October 1831 near Delhi (Intensity VI)

Delhi has also sustained earthquake damage in more recent times. For instance, Srivastava and Somayajulu (1966) mention of (a) Khurja earthquake (M6.7) of 10 October 1956 in which 23 persons were killed in Bulandshahr and some injured in Delhi; (b) M6.0 earthquake of 27 August 1960 near Delhi wherein about 50 persons in Delhi were injured; and (c) an earthquake near Moradabad on 15 August 1966 that killed 14 persons in Delhi. Iyengar (2000) also mentions about damage to one of the minarets of Delhi's Jama Masjid during the M4.0 earthquakes on 28 July 1994.

Most recently, the 1999 Chamoli earthquake (M6.5) took place about 280 km from Delhi. Such a moderate earthquake does not normally cause damage at such large distance. And yet, several buildings in Delhi sustained non-structural damage possibility due to peculiar geological and geotechnical features if this area. Fig. 1 shows damage to the ground storey partition walls of a multi-story apartment building in the Patparganj area. Collapse of a few architectural fins at the Shastri Bhawan during this earthquake is shown in Figs.2 (a,b). In 1985, an earthquake about 400 km from Mexico city caused very considerable damage and deaths in Mexico city, primarily due to the peculiar site conditions there. The Chamoli earthquake effects in Delhi indicate that there is real possibility of a large earthquake in the Himalaya causing considerable damage to Delhi.

It is therefore seen that Delhi is prone to severe earthquake damage both by nearby earthquakes and by large earthquakes occurring in the Himalayas. The scientists and engineers need to urgently take up detailed investigations to develop a more quantitative understanding of the seismic hazard faced by Delhi. Unfortunately, not many such studies have been carried out so far. For instance, paleoseismics studies to locate major earthquake events of the past, e.g., the 1720 and the 1803 events, would add significantly to the hazard evaluation. Due to its complex geological setting, some areas of Delhi are likely to sustain much higher levels of damages than the others and to evaluate this, detailed microzontation studies are needed.

FIRE:
Fire loss is national loss because what burns never returns. Fire is a good servant, but a bad master. Amongst all hazards, fire and fire related accidents carry a high degree of fire risk and pose a great problem. All fires invariably cause loss of property both of private and government origin besides causing loss of lives/injuries. Increased usage of electricity, LPG and hazardous chemicals result in increase of the fire hazard potential. There is need to have proper blend of inbuilt fire safety measures in building/premises as per the specifications, there proper servicing and maintenance and also the existence of well equipped public fire service which reduces the fire risk to great extent. Fires are largely man-made disasters caused mostly by negligence, poor maintenance or sabotage. The increased numbers of fire accidents are mainly due to lack of fire safety norms including various aspects like storage of inflammable material in godowns and enforcement measures.

Characteristics of Fire:
Frequently we come across the horror of fire, but by understanding fire we can know its true nature and prepare our families and ourselves. Each; year many people die or are injured in fires, many of which could be prevented.

Fast: There is little time. In less than 30 seconds a small flame can gent completely out of control and turn into a major fire. It only takes minutes for thick black smoke to fill a house. In minutes, house can be engulfed
**Hot:** heat is more threatening than flames. The heat from a fire alone can kill room temperatures in a fire can be 100 °C at floor level and rise to 600 °C at eye level. Inhaling this super hot air will scorch the lungs. This heat can melt clothes to your skin. In five minutes a room can get so hot that everything in it ignites at once causing a flashover.

**Dark:** Fire is not bright but is pitch black. Fire starts bright, but quickly produces black smoke and complete darkness. If you wake up to a fire you may be blinded, disoriented and unable to find your way around even in a familiar place like your own home.

**Deadly:** Smoke and toxic gases kill more people than flames do. Fire uses up the oxygen you need and produces smoke and poisonous gases that kill. Breathing even small amounts of smoke and toxic gases can make you drowsy, disoriented and short of breath. The odourless fumes can lull you into a deep sleep before the flames reach your door and you may not wake up in time to escape.

Urban fire can occur in public places like cinema halls or high-rise buildings; oil depots; petrol pumps; gas godowns; chemical godowns; religious places; industrial establishments like factories, etc. Scientific analysis of all causes of fire reveal that human negligence is either directly/indirectly responsible for almost all fire accidents. Indicative factors contributing to the outbreak of urban fires are:

**Electric Origin:** Caused due to defective wiring, use of sub-standard equipment, overloading, fluctuations in electric supply and illegal tapping of electricity.

**Careless Smoking:** Caused due to careless disposal of burning cigarette or beedi ends, match – sticks etc.

**Oven/Kitchen Fires:** Caused in kitchen and ovens due to careless and negligent handling of LPG as fuel and kerosene stoves.

**Naked Light:** Caused due to careless and inattentive use of naked flames, candles, oil lamps, etc.

**Arson:** Caused due to extremist activities, groups or faction rivalry, revenge, malicious ignition, etc.

**Other Causes:** Caused due to gas leakage, sparks from machinery, spontaneous combustion, sparks from welding, chemical reaction, explosives and fire works, lightening, etc.

Fire in Delhi is a major cause for loss of property and life. If the number of incidents of fires is carefully studied area wise in Delhi Connaught place is one of the places from where maximum percent of calls of fire incidents have been received if we analyze the causes of maximum number of fires in Delhi 70 percent of calls are due to electric short circuiting. This is alarming because a single cause can be disastrous to life and property that major investments are required mitigating these risks. Over the years the fire accidents have also increased in places like Connaught Place, due to uncontrollable increase in congestion. In places where a better control can be exerted there has been a visible reduction in fire accidents.
Issues
High population density, crowded streets, unmatched mix of occupancies, inadequate water supply, poor electrical services, encroachment are few examples of ineffective planning which adversely affect the fire response time. Under the present circumstances, a response time of 3 minutes in urban areas and 5 minutes in rural areas is very difficult to achieve. City administration has mainly concentrated on fire fighting rather than fire prevention.

Implementation of fire prevention regulations is poor. Evacuation plans in most buildings, schools, colleges, offices are not prepared and hence lead to increase in casualties due to stampede in a major fire.

Assessment of Risk
Fire risk in the district is more prominent in the following areas.

- **Risk in multi-storey buildings used as office premises**: the risk is primarily due to congestion, low maintenance, high frequency of visitors.
- **Risk in JJ Clusters**: District comprises lot of JJ clusters. JJ Clusters by the virtue of the material used in the construction are prone to frequent fire hazards. In addition illegal storage of flammable materials and other such activities increase the probability of fire tremendously.

If we look at the breakup of fire accidents according to the type of building Occupancy, it is clearly seen that major fires break out in industrial and residential areas only. However fire in high rise building can cause more damage to property and hence cause more financial losses.

Fire in District East
District East is highly vulnerable to fire keeping in view the mushrooming JJ clusters all over the district. The Yamuna Pushhta belt starting from Old Railway till Chilla village is littered with JJ clusters all along the riverbanks and across the embankment. Due to the use of highly inflammable material like polythene sheets, dry palm leaves and wooden logs in construction of jhuggies and loose electricity wirings added with high density of residents makes the whole area highly vulnerable to fire risk. The people residing in these jhuggies are socially and economically weak and are mostly migrants from the neighboring states. District East also has 69 unauthorized colonies with unplanned settlement pattern and poor housing conditions and a very high density of population which makes these areas highly vulnerable to fire risk.

**LIST OF JJ COLONIES FROM DISTRICT EAST**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Cluster Code</th>
<th>Name of JJC Proper</th>
<th>Division</th>
<th>Location</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1700</td>
<td>Indira Camp, Block-11,12, Kalyan Puri</td>
<td>DD7</td>
<td>Kalyan Puri</td>
<td>East Delhi</td>
</tr>
<tr>
<td>2.</td>
<td>1705</td>
<td>Block-17 &amp; 21, Kalyan Puri</td>
<td>DD7</td>
<td>Kalyan Puri</td>
<td>East Delhi</td>
</tr>
<tr>
<td>3.</td>
<td>1714</td>
<td>JJC Block-18, Indira Camp, Kalyan Puri</td>
<td>DD7</td>
<td>Kalyan Puri</td>
<td>East Delhi</td>
</tr>
<tr>
<td>4.</td>
<td>1717</td>
<td>Block-19,20, Kalyan Puri</td>
<td>DD7</td>
<td>Kalyan Puri</td>
<td>East Delhi</td>
</tr>
<tr>
<td>5.</td>
<td>1624</td>
<td>Harijan Campm Block-31, Trilok Puri</td>
<td>DD7</td>
<td>Trilok Puri</td>
<td>East Delhi</td>
</tr>
<tr>
<td>6.</td>
<td>1631</td>
<td>Sanjay Camp, Block-27, Trilok Puri</td>
<td>DD7</td>
<td>Trilok Puri</td>
<td>East Delhi</td>
</tr>
</tbody>
</table>
Short-circuiting is often a result of illegal connections, low quality wiring and therefore even if single major cause is taken, of, not only would it lead to saving innumerable lives and properties but also cut down on expenditure incurred on fire mitigation.

If the number of incidents of fires is carefully studied area wise in Delhi maximum percent of calls of fire incidents have been received in Shahdra (East division), Janakpuri (East division), Moti Nagar (North East), Connaught Circus (Central), Roopnagar and Nehru Place in South Delhi. The reason is congestion and illegal storage of recycling material and chemicals.

At present there are four fire stations in East district viz.

- Laxmi Nagar Fire Station,
- Geeta Colony Fire Station
- Mayur Vihar Fire Station and
- Mandawali Fire Station.
- Kalyan Vas Fire Station.

High population density, crowded streets, unmatching mix occupancies, inadequate water supply, poor electrical services, unplanned sitting of fire stations, encroachment are few examples of ineffective planning which adversely affect the fire response time.

The developmental activities are in full swing in the sub-urban area, with complete disrespect to environment and fire safety aspects in absence of regulatory laws exempted in these areas. Many of the problems are attributable to the lack of awareness and knowledge about the concept of fire safety. The designers of the buildings and the planners of the town have no formal education in the fire safety management.

**FLOOD:**

Yamuna is the main river of Union territory of Delhi, which flows, in its Easterly direction from North to South. This river is an alluvial river and hence has got a meandering tendency. In the past this river has caused serious flood problems in U.T. of Delhi by inundating large areas during flood season, and disturbing the normal life of Delhi-ties. Prior to construction of Shahdara Marginal Bund and Left Marginal Bund in 1956, this river used to inundate the trans-Yamuna areas very often (nearly every year). The main city areas of Delhi and New Delhi and Trans-Yamuna Area of Shahdara Block are although protected by embankments but there also remains a danger to breaches, which may endanger the normal life of the residents in these areas. The floods of the years of 1924,
1947, 1955, 1956, 1967, 1971, 1975, 1976, 1978 are the main examples of the flooding in River Yamuna when the normal lives of the residents of Delhi were either disturbed or threatened, badly. As per available records, during the last 40 years, the following years have been the high flood years for River Yamuna, when the water level in the river at old railway bridge was observed to be 206.0m or more.


Floods In 1978

Out of the above the flood of 1978 has been the highest recorded in the available history of River Yamuna, which was recorded as 207.49 m (680.75 ft.) on 5/6 September 1978 at Delhi Old Railway bridge, with a discharge of 7175 cumecs (2,53,350 cusecs). The right marginal bund between palla village and Bawana Escape out-fall also breached which caused a very large area of Alipur block and urban colonies like Adarsh Nagar, Model town, Mukerji Nagar submerged under deep water. Apart from the damages estimated at nearly Rs. 10 crores, eighteen lives were lost and thousands of people were rendered homeless. On the left bank also Shahdara marginal bund reached the point of distress but could be saved by raising its heights in certain reaches with earth filled bags.

Nearly 35000 jhuggis are located on the either banks of river Yamuna and nearly 7000 people are there alone in the East district, but around 2000-2500 people mainly residing in the slums still are located within the marginal embankments in the river bed at various locations and residents of these jhuggi clusters will be required to be shifted from the river bed in the event of high floods.

The Irrigation and Flood control department has marked following areas falling in the district East along the river as vulnerable points prone to flooding or erosion by river:

- Left forward Bund in Trans Yamuna area
- Left Marginal Bund between Old Railway Bridge & ITO Barrage.
The following areas affected during Monsoon are:
- Kondli Gharoli area (East)
- Dallupura
- Adjoining areas of Ashok Nagar (East)

**ACCIDENT RISK:**

Today population of Delhi exceeds 15 million, vehicular population is 40, 31,855 and road length is 26,323 kms. In Delhi there are 9.92 Traffic Police men per 10,000 motor vehicles, while there is only one traffic policeman for every 6.58 kms. of road stretch, making traffic management a Herculean task for traffic police.

Delhi Reported a total of 8699 accident cases in the year 2002, and East district nearly 682, therefore accounting for a mere 7.8% of Delhi’s total accidents, thus the situation of east district is surely better-off than other districts namely North East (1780), South (1590), South East (1028) and East (1106).

Shakarpur, Trilok Puri and Kalyan Puri being the areas in the east district which have reported higher number than any other in the district. It is to be specially mentioned that Shakarpur has the record of having the highest number of injury, fatal etc. accidents in the entire East District.

### ACCIDENTS IN DISTRICT EAST

<table>
<thead>
<tr>
<th>Police Station</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<th>2011</th>
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<td>57</td>
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<td>46</td>
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<td>62</td>
<td>92</td>
<td>85</td>
<td>67</td>
<td>67</td>
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<tr>
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<td>34</td>
<td>22</td>
<td>29</td>
<td>28</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>42</td>
<td>33</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>500</strong></td>
<td><strong>568</strong></td>
<td><strong>550</strong></td>
<td><strong>598</strong></td>
<td><strong>644</strong></td>
<td><strong>645</strong></td>
<td><strong>665</strong></td>
<td><strong>705</strong></td>
<td><strong>782</strong></td>
<td><strong>730</strong></td>
<td><strong>682</strong></td>
</tr>
</tbody>
</table>
The total number of accidents has witnessed a drop in the year 2011, from the record highest number of accidents in the year 2009 & 2010. The probable reasons for this can again be enlisted as to better traffic awareness, traffic checks and stricter enforcement of laws and faster availability of medical services.

**Health**

An epidemic of acute haemorrhagic conjunctivitis affecting persons of all ages and both sexes occurred in Delhi and surrounding areas during the monsoon season of 1994. The symptoms lasted on an average for 4-5 days. In some of the patients corneal involvement was observed. Conjunctival swabs from the affected patients were processed for viral antigen detection, virus isolation and bacterial culture and sensitivity. Viral antigen was detected in 62% (31/50) of the smears tested by indirect immunofluorescence assay. In 22 (44%) of the specimens Coxackie A 24 (Cox A 24) virus antigen and in 9 (18%) of the specimens Entero Virus 70 (EV 70) antigen were detected. In confluent monolayers of Hep 2 cells cytopathic virus was isolated in 10 (30.30%) of the 33 specimens processed. The isolated viruses were identified as either Cox A 24 (7 isolates) or EV 70 (3 isolates) using indirect immunofluorescence assay. Super added bacterial infection was observed in 33% (89/270) of the cases, *Staphylococcus albus* being the predominant bacteria isolated.

The table below shows various diseases that were reported to the main DGD Suraj Mal Vihar Building, A - Block, Suraj Mal Vihar Delhi-92 to which all the dispensaries in the East district report. They are to report any incidence of diseases listed by the DHS. This method of listing the diseases and maintenance of record was only started in 2004 hence data for previous years are not yet available.

Vishwas Nagar had reported over a thousand cases of intestinal cases, thus indicating that the poor quality of water may be one of the reasons for the high number of case in the area.

Similarly Krishna Nagar, Mandawali and Vishwas Nagar had large number of patients coming in for respiratory diseases therefore a clear indication of poor quality of air in the area thus creating problems related to Respiratory disorders.

The DHS already has in place a Disaster Management plan in order. They have also come out with a telephone directory, which has names, addresses and telephones of all the concerned officials and persons.(Annexure 6)

**IMPACT ANALYSIS OF THE WORST CASES**

The district had been severely afflicted with various kinds of disasters in the past years. The district is highly vulnerable to Earthquake and the area has experienced several tremors of minor intensities in the past years the last among the series in September 2004. The district is also highly vulnerable to Fire hazard specially the Yamuna Pushhta JJ clusters where the fire incidences keep on happening at
an amazing regularity the intensity increasing in the summers. Incidences of Cylinder burst and building collapses have also been reported. The unauthorized dairies in the district and stray animals have also led to disasters in the district. Chemical accidents have also been reported causing loss of life and property. Some the incidences that have been reported in the district are given in the table below.

DISASTERS IN EAST DISTRICT

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name Of The Disaster</th>
<th>Month/Year</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fire at Pushta Slums (Thokar-8)</td>
<td>June, 2004</td>
<td>600 Jhuggi gutted</td>
</tr>
<tr>
<td>2.</td>
<td>Fire at Pushta Slum (Geeta Colony)</td>
<td>July, 2004</td>
<td>700 Jhuggi gutted</td>
</tr>
<tr>
<td>4.</td>
<td>Cylinder Burst, Geeta Colony</td>
<td>August, 2004</td>
<td>No casualty</td>
</tr>
<tr>
<td>5.</td>
<td>Chemical Fire Accident, Parwana Road, Khureji</td>
<td>September, 2004</td>
<td>13 Dead, 7 Injured</td>
</tr>
<tr>
<td>6.</td>
<td>Yamuna Pushta slum fire (Thokar-21), Kailash Nagar, near old railway bridge</td>
<td>December, 2004</td>
<td>70 Jhuggi gutted</td>
</tr>
<tr>
<td>7.</td>
<td>Yamuna Pushta Slum fire, Shamshan Ghat, Geeta colony</td>
<td>December, 2005</td>
<td>680 Jhuggi gutted, 1 minor dead</td>
</tr>
<tr>
<td>8.</td>
<td>Yamuna Pushta Slum Fire (Thokar-16) Safeda wali jhugi, Geeta Colony</td>
<td>January, 2005</td>
<td>450 Jhuggi gutted</td>
</tr>
<tr>
<td>10.</td>
<td>Mad Bull rampage, Khureji</td>
<td>February, 2005</td>
<td>2 Person dead 2 injured</td>
</tr>
<tr>
<td>11.</td>
<td>Slum Fire, Mandawali</td>
<td>April, 2005</td>
<td>30-40 Jhuggi gutted</td>
</tr>
<tr>
<td>12.</td>
<td>Pusha Fire, Geeta Colony</td>
<td>May, 2005</td>
<td>08 jhuggi gutted</td>
</tr>
<tr>
<td>13.</td>
<td>Pusha Slum Fire, Kailash Nagar, near railway line</td>
<td>May, 2005</td>
<td>58 jhuggi gutted</td>
</tr>
<tr>
<td>14.</td>
<td>Earth Quake</td>
<td>26 Nov. 2007</td>
<td>4.3</td>
</tr>
<tr>
<td>15.</td>
<td>Earth Quake</td>
<td>Sept 2004</td>
<td>3.1</td>
</tr>
<tr>
<td>16.</td>
<td>Earth Quake</td>
<td>June 2004</td>
<td>2.0</td>
</tr>
<tr>
<td>17.</td>
<td>Earth Quake</td>
<td>April 2004</td>
<td>1.9</td>
</tr>
<tr>
<td>18.</td>
<td>Earth Quake</td>
<td>March 2004</td>
<td>2.7</td>
</tr>
<tr>
<td>19.</td>
<td>Earth Quake</td>
<td>Nov. 1994</td>
<td>2.9</td>
</tr>
<tr>
<td>20.</td>
<td>Earth Quake</td>
<td>Dec 1993</td>
<td>3.5</td>
</tr>
<tr>
<td>21.</td>
<td>Earth Quake</td>
<td>March 1993</td>
<td>3.6</td>
</tr>
<tr>
<td>22.</td>
<td>Earth Quake</td>
<td>June 1992</td>
<td>2.8</td>
</tr>
<tr>
<td>23.</td>
<td>Riots</td>
<td>1984</td>
<td>Sikh riots</td>
</tr>
<tr>
<td>24.</td>
<td>Flood on Yamuna Bank</td>
<td>July 1980</td>
<td>Not available</td>
</tr>
<tr>
<td>25.</td>
<td>Flood on Yamuna Bank (effected area - Chilla Khadar, Near)</td>
<td>September 2008</td>
<td></td>
</tr>
</tbody>
</table>
From the above table it could be interpreted that the District is highly susceptible to hazards such as Earthquake, Fire and Flood. The poor soil condition, High density of population, socio-economic condition, poor masonry construction, high migrant population leading to mushrooming JJ clusters make the district highly vulnerable to multi hazard disasters and lack of capacity/resources makes the district highly risk prone to various disaster.

2.3 IMPACT ANALYSIS OF THE WORST AREAS

District East of the NCT of Delhi is ill reputed for its slums and resettlement colonies. The people of this district are of less civic sense and low security concern. Illegal constructions, large number of cottage industries, stealing electricity, disordered weekly markets, illegal setting up of tent houses etc leads to fire accidents in the district. If taking record of the last five years, one can see that fire accidents are overtaking all other disasters in the district.

Gandhi Nagar Sub Division Area

**Gandhi Nagar** is the one of the highly **vulnerable** Sub Division in the State of Delhi along with the infrastructure facilities as well as cultural back ground in pathetic mode. Some of the colonies like Gandhi Nagar, Geeta Colony, Shaker Pur Khas, Shaker Pur Bramad and Krishna Nagar are congested with cycle rickshaws and other older transportation means. Roads in these colonies are narrow and institutional set up is very poor. People in these colonies are mainly migrants from neighboring Uttar Pradesh, Punjab, and Bihar etc. Numerous rag pickers and street children are seen here. Roads in these colonies are too narrow and houses are mainly in one room set up on multi-storied buildings. Neither open area, parks nor any better community centre available here. Gandhi Nagar has been considered as one of the worst areas in the district prone to multi disasters. People comprise mainly Muslims and Hindus. The office of the (SDM) Gandhi Nagar is located in L.M.Bund Office Complex, Shastri Nagar.

Preet Vihar Sub Division Area

**Preet Vihar** is a big sub division in the district. The office of the Sub Divisional Magistrate (SDM) Preet Vihar is located in L.M.Bund Office Complex, Shastri Nagar. The main area in the sub division a Mandawali Fazal Pur, Hasan Pur, Laxminagar, Gazi Pur and Khajuri Khas, Madhuban, which are a mixture of villages, CGH Societies, Resettlement colonies, Marketing Centres and Residential areas etc. People in these colonies are mainly migrants from neighboring Uttar Pradesh, Punjab, and Bihar etc. Numerous rag pickers and street children are seen here. Roads in these colonies are too narrow and houses are mainly in one room set up on multi-storied buildings. Most of these colony are resettlement colony.
Mayur Vihar Sub Division Area

Mayur Vihar is a vast Sub division in the district. The office of the Sub Divisional Magistrate (SDM) Mayur Vihar is located in L.M.Bund Office Complex, Shastri Nagar. The main area in the sub division are Gharauli, Dallu Pura, Kondli-Gharoli, Vasundhara Enclave, Mayur Vihar, Trilokpuri, Chilla Saroda Khadar, Chilla Saroda Banger, Samesh Pur Jagir, New Ashok Nagar, Khichripur, Gharonda, Neema Ka Nanger, Neema Ka Khadar and Kotla which are a mixture of villages, CGH Societies, Resettlement colonies, Marketing Centres and Residential areas etc. Most of these colonies are resettlement colony.

2.4 RESOURCE INVENTORY/CAPACITY ANALYSIS

Considering the backwardness of the district it is analyzed that sufficient resources are not available within the district. Material resources, monitory resources and human power are not sufficient to manage any larger calamities.

A better disaster management with minimum vulnerability is possible only by means of preparedness and mitigation measures. Maximum the disaster preparedness minimum the vulnerability. Neither a disaster can be prevented nor diverted to any other place. The only possible thing is to minimize the effect.

The changing concept of disaster management has taken its birth in mere hypothesis. Today there is a paradigm shift in the approach to disaster management from a culture of relief and rehabilitation to that of preparedness and mitigation. In District East, there shall be two approaches in disaster mitigation viz. structural mitigation and non-structural mitigation.

As it has been discussed that district lies in Zone IV. Vulnerabilities compounded when hazard meets with high dense population, weak physical structures and conventional construction technologies. Similarly, district is also vulnerable to high degree of the fire and chemical explosions. Although, district has not faced any high intensity earthquake but studies envisages that Delhi can receive an earthquake of 6 to 7.5 Richter scale band.

Earthquakes can destroy buildings and infrastructure with secondary effects i.e. fires, embankments failures, release of poisonous gases, release of nuclear radiations, liquefaction etc. Sometimes losses can be much more than as a direct consequence of earthquakes itself. Therefore it is important to consider both primary and secondary effects into earthquake disaster mitigation planning.

The district also consists of various industrial sites, densely built-up areas, slum clusters; narrow to medium road width with high density of transport. Therefore district can also be affected by domestic fires, chemical explosions and road accidents.

Therefore an effective mitigation planning is necessary to reduce the risk involved in the district. For efficient disaster mitigation, the pre-disaster phase needs to be utilized for planning, implementing preventing measures on the one hand, and working out preparedness activities on the other. Disaster is caused due to failure of manmade structures, lack of preparedness and awareness. So far, disaster mitigation efforts are mostly reactive.

EMERGENCY SUPPORT FUNCTIONS IN EAST DELHI
<table>
<thead>
<tr>
<th>ESF</th>
<th>FUNCTION</th>
<th>NODAL AGENCY</th>
<th>SUPPORTING AGENCIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESF-1</td>
<td>Communication</td>
<td>MTNL</td>
<td>NIC, Police/Revenue Wireless, HAM Reps, Private telecom/ Mobile operators</td>
</tr>
<tr>
<td>ESF-2</td>
<td>Evacuation</td>
<td>DC (E)</td>
<td>Police, DFS, Civil Defence, NCC, Army</td>
</tr>
<tr>
<td>ESF-3</td>
<td>Search and Rescue</td>
<td>DFS</td>
<td>Police, Civil Defense, NCC, Army, Department of Health</td>
</tr>
<tr>
<td>ESF-4</td>
<td>Law and Order</td>
<td>Police</td>
<td>Home Guards, Civil Defense, Army, CPMF</td>
</tr>
<tr>
<td>ESF-5</td>
<td>Medical Response &amp; Trauma Counseling</td>
<td>CDMO</td>
<td>CATS, DHS, Indian Red Cross, Civil Defense, NSS</td>
</tr>
<tr>
<td>ESF-6</td>
<td>Water Supply</td>
<td>DJB</td>
<td>MCD, CGWC, CWC, Irrigation and Flood Control, Delhi Jal Board</td>
</tr>
<tr>
<td>ESF7</td>
<td>Relief</td>
<td>F &amp; CS</td>
<td>Department of Revenue, Indian Red Cross, NGOs</td>
</tr>
<tr>
<td>ESF8</td>
<td>Debris and Road Clearance</td>
<td>MCD</td>
<td>PWD, DJB, DDA, DMRC</td>
</tr>
<tr>
<td>ESF9</td>
<td>Help lines, Warning dissemination</td>
<td>DC (E)</td>
<td>NIC/NGO Reps</td>
</tr>
<tr>
<td>ESF10</td>
<td>Electricity</td>
<td>BSES</td>
<td>TRANSCO, DERC</td>
</tr>
<tr>
<td>ESF11</td>
<td>Transport</td>
<td>Sec. Transport/ DTC</td>
<td>DMRC, Northern Railways, Civil Aviation, PWD, MCD</td>
</tr>
</tbody>
</table>

Civil Society Organizations

District East has decentralized its administration by increasing people’s participation in various levels. To take part in this effort it has a large number of Resident’s Welfare Associations (RWA) in the district. The Entire Community Based Disaster Management planning process has been designed in such a way that each RWA territory has to prepare their own plans and sensitize its residents on disaster managements.

At present altogether there are more than 315 RWAs (registered) in the district. Apart from this numerous non-registered RWAs are also working in the field of development.

The Non Governmental Organizations (NGOs) working in district East play a significant role in educating the public on various social issues and their rights. Disaster Management is one of the major subjects for them and the District Administration has already started collaboration with such organization for community level disaster management planning.
Though numerous NGOs are working in the district, most of their Head Quarters are in other districts of Delhi. The day-to-day operations of these NGOs take place through their project offices. This creates problem in quick decision making in cases of disaster management.

2.5 RECORD OF PREVIOUS DISASTERS

In the district records, no major disaster has been mentioned for the last 25 years, except a single case of communal riots following the killing of the then Prime Minister Mrs. Indira Gandhi and another flood occurred due to overflow of river Yamuna in the 1980s leading to massive loss of property. Most of the other disasters for which compensation has been given or registered as untoward incident are minor cases of accidents, which may not come under the definition of a Disaster.

But at the same time a large number of earthquakes and fire accidents are registered in the district. According to Delhi Fire Service, in the last 10-year span a total number of 13336 fire assistance calls have been received in the district. Though most of these calls were of minor cases, the number is alarming. Similarly more than half a dozen of minor tremors were registered in the last decade in district East. The available data of disasters may be referred in Annexure -1

GRAPHICAL PRESENTATION OF DISASTERS IN DISTRICT EAST

Though the above table may be incomplete in the sense large number of fire accidents, Building Collapse and LPG Cylinder blast are gone unregistered, it’s clear that District East is vulnerable to earthquake predominantly and fire accidents in large number.
Being on the other side of River Yamuna, access to the central part of Delhi has always become a problem for the district. There are only Five bridges over Yamuna to commute to the district one is Vikas marg (ITO Bridge), second is Geeta Colony third is NH 24 (Nizamuddin Bridge) a, fourth is Old Railway Bridge and last DND Mayur Vihar. All the bridges cater to heavy traffic In case of a high magnitude Earth Quake in the Yamuna Pushta, existence of all these bridges will be in question. For better solution the Old Railway Bridge and ITO Bridge needs to be strengthened and the roads leading to it needs broadening.

The road and ways leading to the district head quarters are narrow in nature and old in capacity. Increased number of Cycle Rickshaws and trucks on these roads create acute problem even in emergency traffic. Lack of over bridges over Vikas Marg may thwart progress in relief and response in disaster management. All roads in the district colonies are very narrow in nature and even annual maintenance is nor sustainable. Though limited in number, a couple of bus terminals and bus depots are in the district, which may help in moving or storing relief materials. The public distribution system in the district is not completely successful. Lack of modern and basic equipments, vehicle, and storage facility in the system may delay the process of relief and rehabilitation in a worst case. To cope up with an earthquake of 8.0 magnitudes will not leave even the cornerstone of the public distribution system.
CHAPTER 3
INSTITUTIONAL ARRANGEMENTS FOR DISASTER MANAGEMENT

Report of the High Powered Committee (HPC) on Disaster Management, set up with the approval of the Prime Minister also recommends immediate formation of District Disaster Management Committee (DDMC) with representative of all concerned departments/ agencies/NGOs etc. who may contribute in both pre and post disaster phase in the district. The DDMC was an apex planning body responsible for disaster risk reduction initiates at the district and below district level units.

District Disaster Management Committee set up on recommendation of HPC, has been super seeded with Delhi / District Disaster Management Authority after enactment of DM Act, 2005.

For prevention and mitigation effects of disasters and for undertaking a holistic, coordinated and prompt response to any disaster situation it has been decided by the Government to enact a law on disaster management to provide for requisite institutional mechanism for drawing up and monitoring the implementation of Disaster Management Plans and ensuring measures by various wings of Government. The Disaster Management Act, 2005 provides for the effective management of disasters and for other matters connected therewith or incidental thereto. The Disaster Management ACT, 2005 under section 3, 14 & 25 seek to provide for establishment of National, State and District Disaster Management Authorities. The main functions of each authority are as under:-

<table>
<thead>
<tr>
<th>DM Mechanism</th>
<th>Institutions/ Nodal Department</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Level</td>
<td>National Disaster Management Authority (NDMA)</td>
<td>For better coordination of disaster management at national level, National Disaster Management Authority (NDMA) is constituted. This is a multi disciplinary body with nodal officers from all concerned departments/ministries/ organizations.</td>
</tr>
<tr>
<td>State Level</td>
<td>Delhi Disaster Management Authority (DDMA)</td>
<td>Delhi Disaster Management Authority (DDMA) is constituted under the chairmanship of Lt. Governor of Delhi with the Chief Minister of Delhi as Vice Chairperson and Ministers of relevant Departments as members. For Delhi, the Department of Revenue has been identifies as nodal department to tackle disasters, being the Divisional Commissioner as its Nodal Officer and convener of the DDMA.</td>
</tr>
<tr>
<td>District Level</td>
<td>District Disaster Management Authority, District East (DDMA-East)</td>
<td>District Disaster Management Authority (DDMA) is constituted under the Chairmanship of District Magistrate of District East, elected representative of the District (Member of Legislative</td>
</tr>
</tbody>
</table>
3.1 National Disaster Management Authority:

As per Sub-Section (2) of Section (3) of Disaster Management Act 2005, the National Disaster Management Authority, has been established as an APEX body for laying down the policies, plans and guidelines for disaster management for ensuring timely and effective response to disaster. The National Authority consists of the following members:-

a) The Prime Minister of India, who shall be the Chairperson of the National Authority, ex officio;
b) Other members, not exceeding nine, to be nominated by the Chairperson of the National Authority.
c) The Chairperson of the National Authority may designate one of the members nominated under clause (b) of sub-section (2) to be the Vice Chairperson of the National Authority.
d) The term of office and conditions of service of members of the National Authority shall be such as may be prescribed.

Institutional Arrangements for Disaster Management

Powers and functions of the National Authority:

As per Section (6) of Disaster Management Act 2005, the National Authority shall have the responsibility for laying down the policies, plans and guidelines for disaster management for ensuring timely and effective response to disaster.

The National Authority may
  a. Lay down policies on disaster management;
  b. Approve the National Plan;
  c. Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan;
d. Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
e. Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;
f. Coordinate the enforcement and implementation of the policy and plan for disaster management;
g. Recommend provision of funds for the purpose of mitigation;
h. Provide such support to other countries affected by major disasters as may be determined by the Central Government;
i. Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;
j. Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

Meetings of the National Authority:

As per Section (4) of Disaster Management Act 2005, the National Authority shall meet as and when necessary and at such time and place as the Chairperson of the National Authority may think fit.

3.2 State Disaster Management Authority:

Institutional Structure at State Level

The subject of disaster management is a matter under the direct control of the Revenue Department of the Government of NCT Delhi. Looking at the extremely complex requirements in terms of manpower and material resources, all the line departments of the district administration are involved for managing emergency.

Institutional Arrangements for Disaster management

Disaster Management Hierarchical in Delhi

Powers and functions

Lieutenant Governor, Delhi
Chief Minister, Delhi
Chief Secretary, Delhi
Divisional Commissioner Cum Secretary Revenue, Delhi

Delhi Disaster Management Authority
Constituents

District Magistrate

District Disaster Management Authority

Emergency Support Functionaries
As per Section (18) of Disaster Management Act 2005, a State Authority shall have the responsibility for laying down policies and plans for disaster management in the State.

The State Authority may-

a. Lay down the State disaster management policy;
b. Approve the State Plan in accordance with the guidelines laid down by the National Authority;
c. Approve the disaster management plans prepared by the departments of the Government of the State;
d. Lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance there for;
e. Coordinate the implementation of the State Plan;
f. Recommend provision of funds for mitigation and preparedness measures;
g. Review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein;
h. Review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government of the State and issue such guidelines as may be necessary.

**Control Room of State / Delhi Disaster Management Authority**

There is a State Disaster Control Room in the Office of the Divisional Commissioner, 5 Sham Nath Marg, Delhi to provide Secretarial support to the Delhi Disaster Management Authority and also facilitate the functioning of the Authority. 1077 is the Helpline Line No. of State Disaster Control room which is operational 24 x 7. This Control Room will receive the information from various sources. It shall be in constant contact with the District Disaster Control Rooms, Police Control Rooms. The State Disaster Control Room will receive the information, record it properly and put up to the Delhi Disaster Management Authority instantly. Similarly the instructions passed by the State Authority shall be conveyed to the addressees and a record maintained to that effect.

The Delhi Disaster Management Authority is involved in the Management of large scale Disasters. The Divisional Commissioner in consultation with other members of the Authority shall decide its involvement after the receipt of the report from the District Magistrate of the Districts.

**3.3 District Disaster Management Authority (DDMA):**

District Disaster Management Authority (DDMA) is created under Section 25 of the Disaster Management Act, 2005 by the Parliament of India. The same has been notified by L.G. under F. DRM/ADM (HQ)/DM/Rules/2006(i). DDMA, East, is the apex planning body responsible for disaster risk reduction initiatives in the district.
The DDMA consist of the following:

1. District Magistrate of the District: Chairperson, ex-officio
2. Elected representatives (MLAs/Councilor) Co-Chairperson, ex-officio of the District nominated by the LG
3. Additional District Magistrate/Ex-officio, Chief Executive Officer Member, ex-officio
4. Deputy Commissioner of Police Member, ex-officio
5. Zonal Deputy Commissioner, MCD Member, ex-officio
6. Chief District Medical Officer, DHS Member, ex-officio
7. Superintending Engineer, PWD Member, ex-officio

The Chairperson of the District Authority shall, in addition to presiding over the meetings of the District Authority, exercise and discharge such powers and functions of the District Authority as the District Authority may delegate to him.

The Chairperson of the District Authority shall, in the case of an emergency, have power to exercise all or any of the powers of the District Authority but the exercise of such powers shall be subject to ex post facto ratification of the District Authority.

The District Authority or the Chairperson of the District Authority may, by general or special order, in writing, delegate such of its or his powers and functions, under sub-section (1) or (2), as the case may be, to the Chief Executive Officer of the District Authority, subject to such conditions and limitations, if any, as it or he deems fit.

**Powers and functions of the District Authority:**

As per Section (30) of Disaster Management Act 2005, a District Authority shall have the responsibility for laying down policies and plans for disaster management in the District. The District Authority shall act as the district planning, coordinating and implementing body for disaster management and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the National Authority and the State Authority.

**The District Authority may:**

1. Prepare a disaster management plan including district response plan for the district;
2. Coordinate and monitor the implementation of the National Policy, State Policy, National Plan, State Plan and District Plan;
3. Ensure that the areas in the district vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are undertaken by the departments of the Government at the district level as well as by the local authorities;
4. Ensure that the guidelines for prevention of disasters, mitigation of its effects, preparedness and response measures as laid down by the National Authority and the State Authority are followed by all departments of the Government at the district level and the local authorities in the district;
5. Give directions to different authorities at the district level and local authorities to take such other measures for the prevention or mitigation of disasters as may be necessary;
6. Lay down guidelines for prevention of disaster management plans by the department of the Government at the districts level and local authorities in the district;
vii) Monitor the implementation of disaster management plans prepared by the Departments of the Government at the district level;

viii) Lay down guidelines to be followed by the Departments of the Government at the district level for purposes of integration of measures for prevention of disasters and mitigation in their

ix) Development plans and projects and provide necessary technical assistance there for;

x) Monitor the implementation of measures referred to in clause

xi) Review the state of capabilities for responding to any disaster or threatening disaster situation in the district and give directions to the relevant departments or authorities at the district level for their upgradation as may be necessary;

xii) Review the preparedness measures and give directions to the concerned departments at the district level or other concerned authorities where necessary for bringing the preparedness measures to the levels required for responding effectively to any disaster or threatening disaster situation;

xiii) Organize and coordinate specialized training programmes for different levels of officers, employees and voluntary rescue workers in the district;

xiv) Facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organizations;

xv) Set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public;

xvi) Prepare, review and update district level response plan and guidelines;

xvii) Coordinate response to any threatening disaster situation or disaster;

xviii) Ensure that the Departments of the Government at the district level and the local authorities prepare their response plans in accordance with the district response plan;

xix) Lay down guidelines for, or give direction to, the concerned Department of the Government at the district level or any other authorities within the local limits of the district to take measures to respond effectively to any threatening disaster situation or disaster;

xx) Advise, assist and coordinate the activities of the Departments of the Government at the district level, statutory bodies and other governmental and non-governmental organizations in the district engaged in the disaster management;

xxi) Coordinate with, and give guidelines to, local authorities in the district to ensure that measures for the prevention or mitigation of threatening disaster situation or disaster in the district are carried out promptly and effectively;

xxii) Provide necessary technical assistance or give advice to the local authorities in the district for carrying out their functions;

xxiii) Review development plans prepared by the Departments of the Government at the district level, statutory authorities or local authorities with a view to make necessary provisions therein for prevention of disaster or mitigation;

xxiv) Examine the construction in any area in the district and, if it is of the opinion that the standards for the prevention of disaster or mitigation laid down for such construction is not being or has not been followed, may direct the concerned authority to take such action as may be necessary to secure compliance of such standards;

xxv) Identify buildings and places which could, in the event of any threatening disaster situation or disaster, be used as relief centers or camps and make arrangements for water supply and sanitation in such buildings or places;

xxvi) Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice;
xxvii) Provide information to the State Authority relating to different aspects of disaster management;

xxviii) Encourage the involvement of non-governmental organizations and voluntary social-welfare institutions working at the grassroots level in the district for disaster management;

xxix) Ensure communication systems are in order, and disaster management drills are carried out periodically;

xxx) Perform such other functions as the State Government or State Authority may assign to it or as it deems necessary for disaster management in the District.

Meetings of the District Authority:

As per Section (27) of Disaster Management Act 2005, the District Authority shall meet as and when necessary and at such time and place as the Chairperson of the District Authority may think fit.

3.4 SUB-DIVISIONAL RESPONSE TEAM

There shall be a Sub- Divisional Response Team at each Sub- Division. Composition of the SRT and its functions will be similar to the District Disaster Management Committee to the extent feasible.

Composition of Sub- Divisional Response Team:

The Sub-Divisional Response Team shall consist of the following:

1. Sub-Divisional Magistrates (Gandhi Nagar, Preet Vihar and Mayur Vihar): Chairman
2. Representative from Deputy Commissioner of Police, East District: Member
3. Representative from Deputy Commissioner, Municipal Corporation of Delhi.
4. Representative from Public Works Department of the East District: Member
5. Representative from Irrigation & Flood Control Department of the East District: Member
6. Representative from Directorate of Education: Member
7. Representative from B.S.E.S. East District: Member
8. Representative from Delhi Health Services: Member
9. Representative from Delhi Development Authority (D.D.A.): Member
10. Representative from Delhi Fire Services: Member
11. Instructor Civil Defence/District Staff Officer: Member
12. Representative from Food and Civil Supply Department: Member
13. Representative from DTC: Member
14. Representative from Delhi Metro Rail Cooperation and Airport Line: Member
15. Representative from N.C.C, Nehru Yuva Kendra (N.Y.K), Rotary Clubs: Members
16. Indian Red Cross Society, St. John’s Ambulance Brigade, Centralized Accident and Trauma Services (CATS) : Members
17. District Project Officer, District Disaster Management Authority: Ex-Officio Member

- All concerned Heads of the Departments shall intimate the Sub-Divisional Magistrate of each Sub-Division the name and the designation of their authorized representative in the first week of every December and whenever there is any change of personnel. The Sub-Divisional Magistrate shall intimate the composition to the District Magistrate.

- The Sub- Divisional Response Team shall meet at least twice a year. The exact date and time of the meeting shall be communicated to every member by the SDM Office a week in advance.
Functions of Sub-Divisional Response Team

The following shall be the functions of SRTs:

1) Monitoring of rescue, Relief and rehabilitation Operations.
2) Review the Disaster preparedness and Sensitization of Disasters Management Machinery in the Sub-division twice a year.
3) Review the Rehabilitation Operations following the Disasters.
4) Review the implementation of long-term projects intended to reduce the impact of Disasters.
5) Recommend long-term projects/ Schemes to the District Disaster Management Committee, the implementation of which shall reduce the impact of Disasters and keep the people in preparedness.
6) Build up a Disaster Information Bank to collect all available information in print and audio – visual form and disseminate the same in the sub- Divisional.
7) Assess the Disaster Vulnerability in the sub division
8) Self-appraisal of Disaster Management following the visit of a Disaster.
9) Mobilization of Village Volunteers from other unaffected villages to manage the Disaster in the worst affected villages.
10) Monitoring the maintenance of essential services during disasters
11) Assess the scale of disasters.
12) Assisting the District Disaster Management Cell
13) Recognition of meritorious Service rendered by persons in Disaster Management.
14) Submission of Disaster Vulnerability report to District Disaster Management Cell once in a year.

The Rescue Operations shall be reviewed and report will be sent to the District Magistrate by the SRT within a week, if the Disaster Management culminated with closure of Rescue Operations. Such report shall be received by the District Magistrate within two weeks if the Rescue Operation is culminated with the Relief Operation.

The minutes of the meetings of the SRT shall be drawn and sent to each member and with a copy to District Disaster Management Authority. The action taken shall be reviewed in next following meeting of Sub-Divisional Response Team.

There shall be a Control Room functioning round the clock at the sub Divisional Headquarters. It shall be manned by trained Civil Defence Volunteers during regular days, but during disaster the Tehsildar of the respective Sub-Division along with other revenue personnel should take charge of the Control Room. The Sub-Divisional Magistrate shall assign the Control Room duties to team following the visit of a disaster.
Emergency Operation Centre

There is a District Disaster Control Room in the Office of the District Magistrate (East), L.M. Bund, Shastri Nagar, Delhi-110031 to provide Secretarial support to the District Disaster Management Authority and also facilitate the functioning of the Authority. The Emergency Operation Centre is operational 24 x 7 as it is manned by 2 trained Volunteers per shift. The EOC (East) functions under the control of District Project Officer who is further responsible ADM as CEO, DDMA (East).

This Control Room will receive the information from various sources. It shall be in constant contact with the Delhi Disaster Control Rooms, Police Control Rooms. The District Disaster Control Room will receive the information, record it properly and pass on to the Delhi Disaster Management Authority instantly. Similarly the instructions passed by the State Authority shall be conveyed to the District Disaster Management Authority and a record maintained to that effect.

Chief Executive Officer/ Additional District Magistrate will be the Key Officer to coordinate the functions of the District Control Room.
CHAPTER 4
PREVENTION AND MITIGATION MEASURES

4.1 Introduction

Disaster Mitigation contributes to lasting improvement in safety and is essential to integrate disaster management in mainstream planning. Broadly mitigation ways can be divided into two parts i.e. structural measure and non-structural measures. Structural measures undertake to strengthen buildings, lifelines and infrastructure to withstand any hazard. Non-structural measures emphasis on land-use planning, programmes for sustaining awareness, dissemination of information materials on do’s and don’ts at the time of disaster. Once the area has been identified as hazard prone, it becomes important that the government and the community should practice these above-said measures. Based on this ideology, mitigation plan may vary according to hazards. The East district is being considered prone to earthquake and fire related hazards, incidences of building collapse are also very frequent in District East, Delhi.

4.2 Disaster Management Prevention and Mitigation Measures

As it has been discussed in the previous chapters that district East lies in Zone IV. Risk gets compounded when hazard meets with Vulnerabilities as high dense population, weak physical structures and conventional construction technologies. Similarly, district is also vulnerable to high degree of fire and chemical explosions. Although, district has not faced any high intensity earthquake but studies envisages that Delhi can receive an earthquake of 6 to 7.5 Richter scale band.

Earthquakes can destroy buildings and infrastructure with secondary effects i.e. fires, embankments failures, release of poisonous gases, release of nuclear radiations, liquefaction etc. Therefore it is important to consider both primary and secondary effects into earthquake disaster mitigation planning.

So, an effective mitigation planning is necessary to reduce the risk involved in the district. For efficient disaster mitigation, the pre-disaster phase needs to be utilized for planning and implementing preventive measures on the one hand and working on preparedness activities on the other. Disaster is caused due to failure of manmade structures, lack of preparedness and awareness. So far, disaster mitigation efforts are mostly reactive. (HPC, 2001)

Mitigation Measures:

Over the years and especially after experiencing severe disasters, today there is a paradigm shift in the approach to disaster management; from a culture of relief and rehabilitation to that of preparedness and mitigation. Disaster management in the contemporary times focuses a lot on preparedness and mitigating measures- the idea being to reduce or lessen the vulnerabilities and therefore the impact of any calamity. The more we are prepared for disaster, the lesser we are prone to vulnerabilities. In the district there shall be two types of approaches in disaster mitigation viz. structural mitigation and non-structural mitigation.
Structural Mitigation Measures

a. Retrofitting of Buildings: Generally buildings of the district can be characterized in three parts i.e. Slums and JJ clusters, non-engineered and engineered buildings (Table 4.1).

Table 4.1: CATEGORIZATION OF HOUSING TYPOLOGY IN THE DISTRICT

<table>
<thead>
<tr>
<th>S. No</th>
<th>Categories</th>
<th>Construction description</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slums and JJ Clusters /unauthorized colonies etc</td>
<td>Weak constructions</td>
<td>May get damaged due to moderate intensity of earthquake</td>
</tr>
<tr>
<td>2</td>
<td>Non-engineered buildings</td>
<td>Brick construction Masonry buildings</td>
<td>May damage due to moderate to high intensity of earthquake</td>
</tr>
<tr>
<td>3</td>
<td>Engineered Buildings</td>
<td>R.C.C constructions with good designs but not necessarily earthquake resistant</td>
<td>May damage due to high intensity of earthquake.</td>
</tr>
</tbody>
</table>

*Note: Above table is based on reconnaissance survey and general observations*

The Bureau of Indian Standards (BIS) has developed its first code on a seismic design in 1962 (IS:1893-1962). However, till date there is lack of efficient legal framework to implement seismic code provisions in Delhi. As a result most of the building in Delhi does not meet codal requirements on seismic resistance. Even if new constructions may fulfill the requirement of seismic code provisions in their buildings, still a very large inventory of old buildings will remain deficient for seismic safety. Therefore we need to develop a rational seismic retrofitting plan for the government owned buildings and private constructions on priority bases. Generally public buildings are given first priority because they are lesser in number and at the time of disaster people can take shelter in these public buildings. Some of the important public buildings are schools, hospitals, government officers, community halls, fire and police stations, cultural buildings, communication buildings, cinema halls, meetings halls, historical monuments and important installations etc. The proposal for certification of such critical buildings from the point of view of disaster resilience is under consideration.

Earthquake Resistant Construction

Promotion of Earthquake resistant construction mainly includes construction safety, quality control and proper inspection. Previously there were no specific guidelines on earthquake resistant constructions and seismic strengthening. Due to this very fact, most of the buildings till 1990s were built without any safety measures. But in the present scenario, there are building byelaws and guidelines to construct earthquake resistant structures. Civic bodies like MCD, DDA and PWD in the district shall try to enforce these laws. In addition to these the following points have been found in the context of Delhi.

Pockets with high rise buildings or ill-designed high-risk areas exist without specific consideration of earthquake resistance. Similarly, unplanned settlements with sub standard structures are also prone to heavy damage even in moderate shaking.
So far as housing is concerned, vulnerability analysis has never been carried out and preliminary estimate of damages is not available for strengthening of structures under normal development improvement schemes.

All construction, except load bearing buildings up to 3 storeys, shall be carried out under the supervision of the Construction engineer on Record or Construction Management Agency on Record for various seismic zones. They shall be given a certificate based on the norms on completion of the construction. All the constructions for high-rise buildings, higher than seven storeys, public buildings, and the special structures shall be carried out under quality inspection programme prepared and implemented under the Quality Auditor on Record or Quality Auditor Agency on Record in Seismic Zones IV like Delhi.

Illegal construction, encroachments, unapproved additions, alternations etc of residential buildings and conversion of residential building to commercial purpose etc shall be checked by the District Administration with strict measures. These unauthorized activities may lead to disasters in that particular area.

b. Need of systematic study to evaluate construction typology in the district:

As per Vulnerability Atlas of India (2007), out of 33.8 Lakh buildings in Delhi, over 31 Lakh are at medium risk of being affected by an earthquake, while 1.46 Lakh are at high risk. Out of 5,23,703 houses in East district, only 32,381 are concrete (Census of India, 2011). Systematic studies are needed on vulnerability of different types of constructions in the area. This will require experimental studies to evaluate strength, stiffness and ductility of different types of constructions as well as analytical studies such as the Push Over Analysis. Experiences of past earthquakes both in India and abroad have clearly outlined the vulnerability of multistory reinforced concrete buildings if not designed and constructed correctly. Huge number of multistory reinforced concrete buildings in Delhi, particularly those with open ground storey to accommodate vehicle parking, could also pose a major challenge in the event of a strong earthquake.

c. Construction Control

The best mitigation measure is to build strong built-in environment in the district. The district must ensure the implementation of building codes. The quality of buildings measured by their seismic resistance has its fundamental importance. Minimum designs and construction standards for earthquake resistant structures legislated nationally are an important step in establishing future minimum level of protection for important structure. India has building codes and regulations for seismic resistant design which needs to be enforced by municipal bodies. Some of the policy measures taken at state level are: Municipality Corporation has been asked to bring a circular shortly to make submission of actual structural drawings, besides the structural safety certificates mandatory for all buildings while seeking building plan approval. The Urban Shelter Board, GNCTD has been asked to urgently carry out structural audit of buildings in Delhi with the assistance of experts from NDMA, using RVSA (Rapid Visual Screening Assessment) and DVA (Detailed Vulnerability Assessment) methods.

Non-Structural Measures
The entire Delhi state falls in earthquake Zone-IV, which indicates it is at high risk to earthquake. In addition to this fire is also a major concern for the district. The non structural mitigation is basically
framed in such a way that the whole population of the district will be sensitized on disaster management and their capacity shall be developed to cope up with hazardous situations.

**Preparedness Methodology**

In the disaster management cycle, preparedness shall be the first step, instead of waiting for a disaster to occur and then manage it. This plan contains a series of measures for preparedness in schools, colleges, hospitals and communities. People of every part of the district will be guided to prepare themselves or to prepare their own coping mechanism. In this regard, the DDMC shall suggest the proper methodology for preparedness on regular basis and the district shall plan various activities.

**a. Awareness Generation Programmes**

Disaster strikes everywhere and everyone irrespective of caste, creed or gender. It doesn’t differentiate the rich from the poor. The district administration has been trying to generate awareness at all levels in the district. A series of awareness programmes has been organized to reach out to the local residents and general public of the district and the programmes are continuing throughout the district. Awareness/sensitization programmes have been conducted at schools, colleges, communities etc. Basic information related to different kind of disasters is given in the form of Information, Education and Communication (IEC) materials. Different kinds of strategies are being evolved to address different audiences. Special efforts are being made to address the most vulnerable groups during disasters e.g. women, children, the disabled and the old. The total population of the district is 22 lakhs and the district administration intends to reach as many people as possible and different methods are being adopted to spread awareness i.e.

- Public meetings
- Distribution of reading materials/ pasting of posters
- Street plays
- Involvement of Electronic media
- Audio/video shows
- Banners and Public Hoardings
- Painting/ quiz competition especially in schools, rallies involving students
- Observing Disaster Management Week, Fortnight, Month etc.

The objectives of the programmes are –

- To create awareness about disasters among the inmates of all institutions and residents of all communities in the district.
- To pave way for strict enforcement of building rules in construction department and by contractors.
- Preparation of Building evacuation plans and training the general public to save their lives at the time of earthquake, fire accidents or any other major disaster.
- To sensitize the district administration, other line department officials and other associated agencies.
b. Land Use Planning

Damage of buildings depends primarily upon the soil conditions and topology of the area which are moderately favorable in the district. Anyhow, to analyze risk within district microzonation planning should take place. It will help to guide modify land use planning in the district accordingly.

Training and Capacity Building

A number of training programmes shall be and are already being organized for specialized groups like, district DMTs, sub division and community level office bearers, school teachers and principals, architects, engineers, doctors, masons, etc. The professionals from all departments and sections shall be trained.

All the volunteer based organizations (VBOs) like Civil Defence, NYKS, NSS, NCC, etc., in the district, which have thousands of volunteers working with them will also be sensitized and given training on disaster management. Besides, RWAs and NGOs (See Annexure XI) in the district will also be given training on disaster management. All the VBOs, RWAs and NGOs shall also be encouraged and supported to organize awareness campaigns in their areas. These have been identified as organizations which can help percolate the idea deeper into the society.

c. Insurance

Insurance brings quality consciousness in the infrastructure and a culture of safety by insisting to follow building codes, norms, guidelines, quality materials in construction. It would enforce safety standards by bringing accountability. Hazardous area should be announced, notified and publicly displayed so that people would be motivated not to settle in those areas and insurance be mandatory in insurance prone areas. Premiums can be changed on the basis of risk proneness. Urban Development Department, GNCTD has been asked to draft a scheme to incentivize house owners to take up retrofitting of their houses.

Table 4.2: Important Mitigation Measures

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Strategies</th>
<th>Actions involved</th>
<th>Suggested Institutions involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retrofitting of buildings</td>
<td>Prioritization of buildings according to their importance during emergency.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>First priority buildings are:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. District administration office building, all police and fire stations</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2. Nodal</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>3. All Schools (Government, SDMC and Public)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Residences of District Magistrate (Revenue), District Magistrate of Police</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Second priority buildings are:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Hospitals and clinics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Community centres</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Residences of other key officials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Office buildings of SDMC, PWD, CD &amp; HG and DDA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Third Priority buildings are</strong></td>
<td></td>
</tr>
</tbody>
</table>

South/North Delhi Municipal Corporation (SDMC)/PWD engineers
<table>
<thead>
<tr>
<th></th>
<th>Enforcement of Building codes</th>
<th>1. Remaining Government Buildings and colonies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Review and updation of building codes</td>
<td>BIS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementation of codes in new engineered and non-engineered constructions</td>
<td>SDMC</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Large-scale information dissemination about basics of new constructions and retrofitting of existing buildings and encouraging fire-fighting arrangements in the building</td>
<td>SDMC, PWD, District Administration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information dissemination about dos’ and don’ts at the time of earthquake event and fire-outbreak</td>
<td>District administration, Fire and police department, NGO’s</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Priority-wise training to the engineers, architects, and masons for disaster-resistance. These people may further utilized for providing assistance in retrofitting and reconstruction exercises.</td>
<td>District administration, SDMC, PWD and DDA</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Identification of hazardous areas in the district</td>
<td>DM Office, SDMC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provisions of insurance according to building bye laws, codes and hazard proneness</td>
<td>Insurance companies, SDMC</td>
<td></td>
</tr>
</tbody>
</table>

### 4.3 Conclusion

- **District consists of weak and illegal constructions which compounds its vulnerability to earthquake and fires.**
- **Buildings constructed through good design are not necessarily built with earthquake safe design.**
- **There is a need of an urgent mitigation planning under which new constructions should come up as per building-byelaws and standard codes.**
- **Retrofitting techniques are very much important to re-strengthen old and weak constructions which needs to be taken up by SDMC and district administration.**
- **Fire safety assessments and fire-fighting arrangements shall be promoted in multistoried buildings and residential communities.**
- **Insurance of buildings according to their hazard proneness is important to promote in the district under the supervision of local administration.**
- **Life-line buildings like Major hospitals, Deputy-commissioner office, residences of key officials, schools, community spaces, police and fire stations etc. shall be retrofit on priority basis.**
CHAPTER 5
PREPAREDNESS MEASURES

5.1 Introduction

Disaster causes sudden disruption to the normal life of society and causes damage to the properties and lives to such an extent that normal social and economic mechanism available to the society get disturbed. Those who are unaware and unprepared generally get affected more due to their lack of knowledge and physiological pressure. Hitherto, the approach towards coping the effects of disasters has been post-disaster management, involving many problems related to law and order, evacuation, communications, search and rescue, fire-fighting, medical and psychiatric assistance, provisions of relief and shelters etc. After initial trauma next phase starts with long-term reconstruction planning which takes about 5 to 6 years to normalize the life-style in a particular area.

In view of these problems the district administration, has prepared a comprehensive plan. The plan basically detailed out preparedness strategy under which communities and district authorities would be prepared so that level of destruction and unnecessarily delay in relief and response can be reduced. The preparedness measures include setting up disaster relief machinery, formulation of community preparedness plans, training to the specific groups and earmarking funds for relief operations (UNDRO, 2004).

5.2 Measuring Community Preparedness

Generally community preparedness depends upon following four major components (Cottrell et al- 2001):
- Population characteristics (number of children, squatter settlement etc)
- Building and critical infrastructure such as road, drinking water, communication network, health and sanitation
- Physical environment
- Social environment (social groups)

In view of these components, risk assessment study has been conducted and identified that East District is densely built and consists of a high number of urban population. Any major earthquake or fire/chemical explosion can affect district very badly. Although many steps have been taken by the district but still a high degree of awareness and training is required to lay down an organization system within communities.
5.3 Components of Preparedness Plan

Looking at the complexity of repose mechanism during disasters two sets of components have been studied to prepare this plan.

Components of Community Preparedness Plan

Several previous attempts have been made by researchers to measure community preparedness within various indicators. Some of the important components of measuring preparedness are given below. (refer fig. 5.1)

1. Physical Safety: i.e. how safe community members are in view of the physical danger from these hazards? The parameters essentially tries to measure how effective structural mitigation measures are e.g. resistance of building structures for earthquakes, availability of safe shelters and its capacity etc.

2. Hazard awareness i.e. awareness level about hazards which have a reasonably higher probability of occurrence

3. Organization preparedness i.e. how far the community is organized to face disaster i.e. existence of committee at community level, task forces, volunteers of civil defence and other local volunteers, trained disaster management teams and community disaster management plan etc

4. Infrastructure and services which tries to measure current state of these services and how well restoring critical services as and when disruptions occur

5. Recovery ability i.e. ability of the community members to recover from the impact of the hazard

6. Physical environment i.e. state of environment to face hazards e.g. Condition of subsurface aquifers and vegetation etc

7. Social capital i.e. degree to which social networking and cooperation exists among community members

8. Psychological preparedness i.e. how safe and prepared do community members feel in view of these hazards

9. Cultural capital i.e. cultural richness such as existence, recognition and use of traditional mechanism to cope with such disasters

10. Household preparedness i.e. preparedness at a house hold members
Components of Administrative Preparedness

Administrative preparedness is another very important issue which helps in reducing relief and response time in a disaster situation. Preparedness plan is based on below given components

1. Operation readiness of facilities, equipments and stores in advance
2. Maintaining response inventory of equipments and materials required for response
3. Assignment of responsibilities to agencies and organizations
4. Management training of crisis group members, desk officers and officers of respective departments likely to be assigned management duties
5. Specialized trainings of district disaster committee members, officials, community organizations through seminars and workshop
6. Training of taskforces
7. Raising community awareness
8. Improving response mechanism through conducting practice drills etc
9. Annual updating of District and community level plans

5.4 Preparedness Plan

Base on above-mentioned components following arrangements needs to be maintained at district level preparedness plan.
Establishment of Emergency Operation Centre (EOC):

To ensure coordination at district headquarter among community organizations, district level organizations and State government during preparedness and response phase, EOC has to play an important role. Directing the operations at the affected site, the need for coordination at the district headquarter and the need for interaction with the state government to meet the conflicting demand at the time of disaster is the responsibility of the District Magistrate and his team. District EOC helps District Commissioner and his team to meet these conflicting demands. Keeping this in view, District Magistrate has established an EOC at district level. The building of District Magistrate Office is a temporary one and will shift to another place in future; therefore a temporary EOC has been established in the office. The EOC is responsible to facilitate following activities.

(a) Activities of EOC

- To ensure that warning and communication systems are in working conditions
- Collection and compilation of district level information related to hazards, resources, trained manpower etc.
- Conducting district, sub-division and community level mock drills
- Networking and coordination with community, district and state level departments
- Monitoring and evaluation of community and inter-intra organization level disaster management plans
- Develop a status report of preparedness and mitigation activities under the plan
- Allocation of tasks to the different resource organizations and decisions making related to resource management
- Reviewing and updating response strategy
- Supply of information to the state government

(b) Facilities with EOC

Presently, the emergency operation centre is operating in 24/7 mode well-equipped with computer, wireless and telephone facilities. In future EOC would include a well-designed control room with workstation, hotlines and intercoms. Following other facilities shall be made
Available within the EOC:
- A databank of resources, action plans, district disaster management plan, community preparedness plan would be maintained at EOC
- Maps indicating vulnerable areas, identified shelters, communication link system with state government and inter and intra district departments would strengthened
- Inventory of manpower resources with address, telephone numbers of key contact persons has been maintained
- EOC have to identify desk arrangements during disaster situations
- Frequently required important phone numbers would be displayed on the walls so that they can be referred whole other phones and addresses would be kept under an easy-retrieval and cross-referring system
- Retrofitting of building shall be done so that it can be operational during disaster also.
- EOC shall be operational 24 hours with the help of police, fire and home guard department

(c) Transport Facility

A vehicle has been assigned to the EOC (W) during normal times. Additional vehicle can also be hired during the emergency.

(d) EOC Staffing

To make EOC operational during and post disaster situation there would be a need of keeping adequate staff. There is a need of regular staff, staff-on requirement and staff-on disaster duty. Therefore, trained Civil Defence volunteers are working 24 hours on shift basis for managing the communication and transportation of rescue equipments in EOC during any disaster. More volunteers are also hired for supporting in rescue and relief operation during emergencies. Staff on disaster duty can be appointed by District Magistrate. This staff can be drawn from the various government departments.

(e) Desk arrangement

In case of emergency, DC and other team members would be present round the clock in the EOC. Therefore senior officers have been appointed in the capacity of desk officers for the coordination of following emergency response functions:
# Identification of stakeholders involved in disaster response

## ESFs Activated at the Time of a Disaster

<table>
<thead>
<tr>
<th>ESF</th>
<th>Function</th>
<th>Nodal Agency/ Officer</th>
<th>Supporting Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESF1</td>
<td>Communication</td>
<td>MTNL</td>
<td>private telecom service operators, mobile phone services operators</td>
</tr>
<tr>
<td>ESF2</td>
<td>Evacuation</td>
<td>Department of Revenue</td>
<td>Delhi Police, Delhi fire Service, Directorate of Health Service and Civil Defence etc</td>
</tr>
<tr>
<td>ESF3</td>
<td>Search and Rescue</td>
<td>Delhi Fire Service</td>
<td>Department of Revenue, Delhi Police, Civil Defence and Directorate of Health Services..</td>
</tr>
<tr>
<td>ESF4</td>
<td>Law &amp; order</td>
<td>Delhi Police</td>
<td>Home guards, central paramilitary forces etc</td>
</tr>
<tr>
<td>ESF5</td>
<td>Medical Response and Trauma Counseling</td>
<td>State Health Department</td>
<td>CATS, MCD, DGHS (Central Govt), Indian Red Cross, Civil Defence, Delhi Fire Service</td>
</tr>
<tr>
<td>ESF6</td>
<td>Water Supply</td>
<td>Delhi Jal Board</td>
<td>MCD, NDMC, CGWC, CWC, Irrigation and Flood Control.</td>
</tr>
<tr>
<td>ESF7</td>
<td>Relief (Food and Shelter)</td>
<td>Department of Food and Civil Supplies</td>
<td>Department of Revenue, Urban Development, MCD, PWD/CPWD, MES, HUDCO, DDA</td>
</tr>
<tr>
<td>ESF8</td>
<td>Equipment support, debris and road clearance</td>
<td>MCD</td>
<td>NDMC, PWD, CPWD, Cant Board, Military Engineering Services</td>
</tr>
<tr>
<td>ESF9</td>
<td>Help lines, warning dissemination</td>
<td>Department of Revenue</td>
<td>Department of Information and Publicity, MTNL, AIR, Doordarshan, UNI, Press Information Bureau, Press Trust of India, PTI</td>
</tr>
<tr>
<td>ESF10</td>
<td>Electricity</td>
<td>Secy. Power</td>
<td>TRANSCO, BSES, NDPL, DERC</td>
</tr>
<tr>
<td>ESF11</td>
<td>Transport</td>
<td>Secy. Transport</td>
<td>DTC, DMRC, Northern Railways, Civil Aviation, PWD, MCD and Civil Defence etc.</td>
</tr>
</tbody>
</table>
Reliable Communication Systems

During emergency communication plays a very important role. Although Delhi being a capital city has already registered a phenomenal growth but yet in case of disaster like earthquakes witnessed collapse of general communication system which delays flow of information from the disaster site and consequently resulting delays in relief operations. Therefore a reliable communication is also one of a very important action. Till now TETRA wireless communication system has been found most suitable to rely upon. But this plan also seeks for installation of satellite phones and HAM equipments in the EOC for strengthened communication system in the district. Plan also advocates training some volunteers of home guards etc in HAM operations.

Preparation of a Response Plan

One of the important tasks during preparedness phase is formulation of a response plan. It basically helps in quick mobilization of manpower, resources and in performing various duties. The response plan explains a hierarchal system of emergency response functions in-term of tasks and assigned responsibilities to different agencies. It also lay down an Incident Response System under the directions of District Magistrate of the district. This whole exercise may help in prevent confusions during the response phase and result in prompt and coordinated response. Activation of trigger mechanism, functioning of EOC and Response of Emergency Support Functions can be tested every year to resolve perplexity occurring during actual scenario. Broad details of response plan has been included in the Chapter 7.
CHAPTER 6
CAPACITY BUILDING AND TRAINING MEASURES

6.1 Trainings and Capacity Building
To enhance organizational and capability skills to deal with emergency situations requires trainings and capacity building exercises of the various linked government and non-government officers. Since disaster management is a multi-organizations effort, it emphasizes on trainings in execution and coordination as well. Therefore wide ranges of trainings related to management skills are highly required for potential officers in order to equip them for specialized disaster-related tasks. They require orientation of various aspects of crises management such as
- Skill training,
- Planning,
- Trainings on Emergency Response Functions such as first-aid, search and rescue, emergency operation centre, emergency feeding and welfare, communication and damage assessment etc.
- Trainings for coordinated disaster management activities and response operations are highly required especially for the persons engaged in emergency services, government –line departments, non-government organizations and important private sector groups

Training requirements are likely to comprise of core activities of emergency management such as Incident Response System, Emergency Response Functions and basic management skills. Persons to be trained shall be:
- Government Officers at par with the rank requirement under Incident Response System
- Team leaders and members under Emergency Support functions
- Quick Response Teams at headquarter and field level
- Community level taskforces including Volunteers, NGOs and home guard volunteers, school and college students, NCC and NSS scouts and NYKS etc

District Administration can organize seminars and workshops with the help of State disaster management authority, Civil Defence and Home Guard, Fire fighting department, Health departments etc. A record of trained manpower shall be maintained by each department and their representation shall be noticed during mock-drill.

6.2 Community Awareness and Community Preparedness Planning
The hazard analysis of the district indicates that there is a high need of community awareness through public awareness programmes on the following themes of disaster:
- Types of disasters and basic do’s and don’ts related to those disasters
- Post disaster epidemic problems
- Construction and retrofitting techniques for disaster resistant buildings
- Communication of possible risk based vulnerable areas in the district
- Evacuation related schemes and community preparedness problems

Volunteers and social organizations also play a vital role in spreading mass scale community awareness. Media can also play an important role in raising awareness and educating people.
Different methods and techniques are utilized to spread awareness on disaster in the district. Some sample techniques and methods are listed below:

- Public meetings and loud speaker announcements
- Group meetings of RWAs and other logical units
- Wall painting in the communities
- Distribution of reading materials to the general public
- Distribution of posters and other Information Education and Communication (IEC) materials to children and community people
- Street plays, documentaries and films on the subject
- Use of electronic media, especially cable channels
- Quiz-painting competitions, special types of books, etc for students
- Any other means the DDMC feels apt and proper

Community Disaster Management Planning is one of the vital components of community preparedness. It involves all important parameters related to hazard awareness, evacuation planning, resource inventory, community level taskforces and committees etc which helps community members in organizing themselves to combat disaster in a pre-planned manner. Preparation of community plans encourages promotes preparedness planning at community level. District administration is also imparting trainings on regular basis to the volunteers of Civil Defence and Home Guards, Nehru Yuva Kendra Sangthan, Residential Welfare Associations, Market Trade Associations, Self Help Group, GRCs and NGOs etc to involve them to into community planning.

6.3 Capacity Building of Community Task forces

Community taskforces and community committees has been constituted and trained in all types of communities by government and non-government agencies. District administration, Medical officers, Trained volunteers, Delhi fire Services, Civil Defence and Home Guard volunteers, NYKS etc. are playing important role in building capacities of community task forces in building their capacities in search and rescue, fire-fighting, warning dissemination, first-aid and damage assessment etc.

Medical Officer has organized seminars to train taskforces and volunteers in basic first-aid. CD & Home Guard, St. John Ambulance and CATS are helping Medical Officer in providing trainings and lectures. Similarly Delhi Fire Service along with CD & HG gives trainings on search and rescue and fire fighting. Delhi Police provides trainings on warning dissemination, traffic norms, communication and damage assessment.

6.4 Simulation Exercises

To encourage participation in a coordinated manner simulation exercises on various disasters are very important. These exercises help in institutional building at various levels. Mock-exercises have been promoted at district and community level. These exercises help in improving response time and also test reliability. These mock-drill arranged by involving all required agencies. These drills also help in updating the response plans. District Disaster Management Authority is playing an important role in conducting mock-drills and to update plan. Details of various mock drills conducted in East District are given below.
## Mock Drills conducted in District East

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Scenario</th>
<th>Venue</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Serial Bomb Blast</td>
<td>Yamuna Bank Metro Station</td>
<td>28&lt;sup&gt;th&lt;/sup&gt; June, 2009</td>
</tr>
<tr>
<td>2.</td>
<td>Fire</td>
<td>Nehru Gali, Gandhi Nagar</td>
<td>20&lt;sup&gt;th&lt;/sup&gt; November, 2009</td>
</tr>
<tr>
<td>3.</td>
<td>Bomb Blast</td>
<td>ONGC, Scope Minar, Laxmi Nagar</td>
<td>16&lt;sup&gt;th&lt;/sup&gt; December, 2009</td>
</tr>
<tr>
<td>4.</td>
<td>Bomb Blast</td>
<td>V3S Mall, Laxmi Nagar</td>
<td>26&lt;sup&gt;th&lt;/sup&gt; March, 2010</td>
</tr>
<tr>
<td>5.</td>
<td>Structural Collapse</td>
<td>Games Village</td>
<td>25&lt;sup&gt;th&lt;/sup&gt; June, 2010</td>
</tr>
<tr>
<td>6.</td>
<td>Terriott Attack</td>
<td>Games Village</td>
<td>28&lt;sup&gt;th&lt;/sup&gt; June, 2010</td>
</tr>
<tr>
<td>7.</td>
<td>Structural Collapse</td>
<td>Yamuna Sports Complex</td>
<td>10&lt;sup&gt;th&lt;/sup&gt; August, 2010</td>
</tr>
<tr>
<td>8.</td>
<td>Terriott Attack &amp; Bomb Blast</td>
<td>Karkardooma Metro Station</td>
<td>19&lt;sup&gt;th&lt;/sup&gt; September, 2010</td>
</tr>
<tr>
<td>9.</td>
<td>Bomb Explosion</td>
<td>ONGC, Scope Minar, Laxmi Nagar</td>
<td>16&lt;sup&gt;th&lt;/sup&gt; December, 2010</td>
</tr>
</tbody>
</table>
| 10.    | Earthquake                       | 1. Akshardham Metro Station, Foot Over Bridge  
|        |                                  | 2. Lalita Park, Delhi Jal Board, Shakarpur  
|        |                                  | 3. Dalav Ghar near Ratan Devi School near Chhachi Building, Krishna Nagar  
|        |                                  | 4. ONGC, Scope Minar, Laxmi Nagar  
|        |                                  | 5. Ambedkar Polytechnic College, Gandhi Nagar, Geeta Colony  
|        |                                  | 6. VREC, AC 59, UTCS Building, Vishwas Nagar  
|        |                                  | 7. IOC Petrol Pump, Mayur Vihar, Phase-I  | 2<sup>nd</sup> February, 2012 |
| 11.    | Earthquake (Mega Mock Drill)     | 1. Scope Minar, Laxmi Nagar  
|        |                                  | 2. Fraser Suite Hotel, Plot No. 4, District Centre, Mayur Vihar Ph-I, Delhi-91  
|        |                                  | 3. Karkardooma Metro Station  
|        |                                  | 4. V3S Mall, Plot No 12, Laxmi Nagar, District Centre, Delhi-92  
|        |                                  | 5. Star City Mall, Mayur Vihar - I, Delhi East, Delhi - 110092  
|        |                                  | 6. CNG, Filling Pump, Mayur Vihar, Phase-I  
|        |                                  | 7. VREC, AC 58, B-Block, DC Office Complex  
|        |                                  | 8. Bhagidari Hall, DC Office  
|        |                                  | 9. RSKV, Kondli  
|        |                                  | 10. GBSSS, Vivek Vihar, Phase-II  
<p>|        |                                  | 11. Civil Defence Office, Gram Shiksha Kendra School, Gandhi Nagar near Jheel Chowk, Gandhi  | 15&lt;sup&gt;th&lt;/sup&gt; February, 2012 |</p>
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Tasks</th>
<th>Mode of conduct</th>
<th>Nodal Agencies</th>
<th>Supporting Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>❖ Priority-wise information dissemination of various hazards and their do's and don'ts. Also preparation of community based disaster management plans shall be promoted in these areas. ❖ First priority shall be given to the schools, industrial clusters, Market Trade Associations and Residential areas,</td>
<td>Through Nukaad Natak, Film Shows, Rallies, Media, Newspaper Media, Posters and Pamphlets, Group discussions and workshops etc</td>
<td>District Administration</td>
<td>✓ Civil Defence and Home guards volunteers(CD &amp; HG), ✓ Nehru Yuva Kendra Sangthan(NYKS), ✓ Residential Welfare Associations(RWAs ), ✓ Market trade Unions(MTAs), ✓ Rotary Clubs, ✓ Non Government organizations(NGOs), ✓ Schools and</td>
</tr>
</tbody>
</table>
slums and resettlement colonies etc located in
- Shakarpur Khas
- Shakarpur Bramad
- Khureji Khas
- Mandawali Fazalpur
- Gazipur
- Hasan Pur
- Gharauli
- Samesh Pur Jagir
- Kondli
- Dallupura
- Chilla Saroda Bangar
- Chilla Saroda Khadar
- Gharonda Neem ka Banagar
- Gharonda Neem ka Khadar
- Kotla Village
- Khichripur

Second Priority shall be given to the communities living in the outer part of the district especially villages.

2. Constitution of Community Based Disaster Management Committees and Taskforces

<table>
<thead>
<tr>
<th>Through community level meetings</th>
<th>District Administration</th>
<th>RWAs and MTAs Members, Local Volunteers etc.</th>
</tr>
</thead>
</table>

3. Capacity Building of Community Members

<table>
<thead>
<tr>
<th>Through mock-drills, preparation of community plans, trainings and workshops on disaster specific topics</th>
<th>District administration</th>
<th>CD &amp; HG, Local NGOs, NYKS, St. John Ambulance, C.A.T.S etc.</th>
</tr>
</thead>
</table>

4. Trainings to the taskforces and committee members

- First-Aid and Trauma Counseling
- Search and rescue and fire-fighting
- Warning Dissemination etc.

<table>
<thead>
<tr>
<th>Trainings and workshops</th>
<th>Revenue Department along with Health, Police and Fire Departments</th>
<th>CD &amp; HG, St. John Ambulance, CATS and NGOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Post disaster epidemic problems</td>
<td>Seminars and community meetings</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------</td>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
| ❖ Trainings for construction of seismic resistant buildings and retrofitting of the buildings.  
❖ Target groups are contractors, masons, engineers, architects and local communities (especially those who are taking loans for building constructions and provided assistance under Indira Awas Yojana and other developmental programmes) | Showing Films, videos, distributing posters and brochures, reading materials, etc in trainings and workshops or any other community gathering | • Local health departments,  
• NGOs |

| • SDMC,  
• PWD,  
• Private contractors and  
• NGOs etc |


CHAPTER 7
RESPONSE AND RELIEF MEASURES

7.1 Introduction

Rehabilitation relates to the work undertaken in the following weeks and months, for the restoration of basic services to enable the population to return to normalcy. Actions taken during the period following the emergency phase is often defined as the recovery phase, which encompasses both rehabilitation and reconstruction.

Rehabilitation refers to the actions taken in the aftermath of a disaster to enable basic services to resume functioning, assist victims’ self-help efforts to repair physical damage and community facilities, revive economic activities and provide support for the psychological and social well being of the survivors. It focuses on enabling the affected population to resume more-or-less normal (pre-disaster) patterns of life. It may be considered as transitional phase between immediate relief and more major, long-term development.

The need for an effective disaster management strategy is to lessen disaster impact which can be achieved through strengthening and reorienting existing organizational and administrative structure from district – state to national level. The emergency response plan is a first attempt to follow a multi-hazard approach to bring out all the disasters on a single platform and incorporates the ‘culture of quick response’. Under the plan, common elements responsible for quick response have been identified and a set of responsible activities has been articulated. It provides a framework to the primary and secondary agencies and departments, which can outline their own activities for disaster response. The plan will also include specific disaster action plans along with modal scenarios in detail to conduct practice drills at district administration level.

7.2 Methodology of Response Plan

- Identification of disasters in the district depending on:
  - Past records
  - Micro-zonation according to the geological settings
  - Vulnerability associated in context to the disaster
  - Risk assessment according to the socio-economic conditions

- Identification of emergency response functions in consultation to the guidelines provided by state nodal agency

- Identification of responsible government and non-government agencies according to the response functions

- Identification of responsible officers, manpower and resources according to the activities of the identified agencies

- Identification of primary and secondary agencies and demarcation of roles and responsibilities according to their functions

- Conducting regular trainings, meetings and mock drills

7.3 Various Response Levels
Most of the disasters are to be managed at the state and district level. The centre plays a supporting role in providing resources and assistance. It will mobilize support in terms of various emergency teams, support personnel, specialized equipments and operating facilities depending upon the scale of the disaster. Active assistance would be provided only after the declaration of national emergency level. (National Disaster Response Plan, 2001).

In case disaster may be managed at the district level, district emergency operation system would be activated where state and national level authorities would be on guard in case of assistance needed. Incident commander (IC) of the district would activate the emergency support functions and Incident Response System and similarly according to the guidance disaster management teams and quick response teams would respond.

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

**Fig 7.1 Various Response Levels for Disaster Management**

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### 7.4 Important Terminologies Used in the Plan

**State**

**Sub-Division**

**District**

**DDMA**

**DDMAs**

**QRT’s**

**State EOC**

**District EOC**

**Onsite IRS**

**STATE QRTs**

**DISTRICT ESFs**

**DISTRICT QRTs**

**FIELD QRTs**
**Response Plan**

The Response plan establishes an organized setup to conduct ESF operations for any of the Natural and Manmade Disasters. It outlines an implementing framework of sharing resources as per the requirement during an emergency situation. The Response Plan has structured the response of concerned department’s i.e. primary and supporting departments to be organized and function together with grouping capabilities, skills, resources, and authorities across the State and district Government with the ESF plan. The plan unifies the efforts of State Departments and supporting agencies to be involved in emergency management for a comprehensive effort to reduce the effects of any emergency or disaster within the state.

**Emergency Support Functions (ESFs)**

The ESF activates under the guidance of Incident Commander (Deputy Commissioner) who is also a head of Incident Response System (IRS). Under the IRS, a team of 11 ESFs nodal officers works together also called as Disaster Management Team (DMT). DMT would also be constituted at District level with district level nodal officers. The members of Disaster Management team would also heads primary agency and simultaneously coordinate with the secondary agencies. Each of the primary and secondary agencies would also comprise of quick response team trained to carry out their functions at the response site. The success of ESF will be of critical importance and would reflect in the lives saved in the first few hours.

**Primary and Secondary Agencies**

The designated primary agency action as a central agency would be assisted by one or more supporting agencies (secondary agencies) and will be responsible to manage activities of the ESFs and ensuring the mission accomplished. The primary and secondary agencies have the authority to execute response operations to directly support the state needs.

**Situation Reports**

Situation reports provide an update of relief operation at regular intervals. These reports are crucial for planning out response actions to be undertaken in affected areas. The situation reports provide information about the disaster status, casualties, status of flow of relief materials, arrival/departure of teams etc.

**Quick Response Teams (QRTs)**

The QRTs at district level should leave for the affected site within 3 to 6 hours of the event after the declaration of emergency. They have to be adequately briefed by their respective departments. Team should be self-sufficient in terms of resources, equipments, survival kits and response work.

**Emergency Operation Centre (EOC)**

EOC is a nodal point for the overall coordination and control of relief work in case of any disaster situation. In case of any disaster district level EOC has to be activated. The primary function of EOC is to facilitate smooth inflow and outflow of relief and other disaster related activities. These EOCs act as bridges between State and Centre government.

**7.5 Operational – Coordination Structure**

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

**Trigger Mechanism**

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

![Fig 7.2: Trigger Mechanism for District EOC](image)

**Activation of Incident Response System**

The emphasis in Disaster Management has shifted from relief centric approach to proactive regime, and as such a well coordinated response with clockwork precision becomes one of the most important goals. Incident Response System has been developed in this regard. In this system, the District Magistrate is the commanding officer in case of emergency pertaining to his own district.
During emergency period ADM (East) would be designated as Incident Commander (IC) and shall take up following immediate actions

1. IC will designate IRS members according to the rank requirement and assign responsibilities under three sections of Logistics, Finance and Administration, Planning, Operation

2. IC will also direct to the EOC in-charge to inform all the DDMA members about the incident and ICP (Incident Command Post).
3. IC will direct ADM-East to coordinate with the team leader of Emergency Support Functions (ESFs)
4. EOC/PCR will also pass the information to the DDMA members about the location of ICP.
5. Direct EOC in-charge to pass the information to the State apex body/Unified commander.

If the disaster is in more than one district, the D.M. of the district that has maximum loss will act as Incident commander. In case all the districts are more less equally affected, then the Divisional Commissioner of Delhi will act as Unified Incident Commander and the DM as Incident Commander in his/her own district.

It is mandatory that all line departments/Organizations/individuals should obey the command of the Incident Commander as condition demands. He can divert all mechanisms and resources in the district to fight against a scenario leading to disaster/calamity in the district. The entire Incident Response system is shown in the Tree Diagram 7.5, 7.6, 7.7, 7.8

TREE DIAGRAM
OPERATION SECTION IN IRS 7.5.
TREE DIAGRAM 7.6.
PLANNING SECTION IN IRS

PLANNING SECTION CHIEF
(DM-East/SDM-HQ)

- Resources Unit Leader (RESL)
- Situation Unit Leader (SITL)
- Documentation Unit Leader (DOCL)
- Demobilization Unit Leader (DMOB)
- Technical Specialists

- Check-in / Status recorder
- Display Processor
- Field Observers
- Fire (DFS)
- Chemical (DPCC)
- Structural Engineers (PWD – EE)

TREE DIAGRAM 7.7.
LOGISTIC SECTION IN IRS

LOGISTICS SECTION CHIEF

- Service Branch Director (Addl. DCP)
- Support Branch Director (SE-MCD)
  - Supply Unit Leader
  - Facilities Unit Leader (EE-MCD)
  - Ground Support (EE-I&FC)

- Comm. Unit Leader (ACP-Comm.)
- Medical Unit Leader (ACDMO)
- Food Unit Leader (AC-F&CS)
**Rank for District level Incident Response Team**

<table>
<thead>
<tr>
<th>S.No</th>
<th>IRS Position</th>
<th>Suggested rank and position for District level IRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Incident Commander</td>
<td>Additional District Magistrate (East)</td>
</tr>
<tr>
<td>2.</td>
<td>Liaison Officer</td>
<td>DDMA (East)</td>
</tr>
<tr>
<td>3.</td>
<td>Information and Media Officer</td>
<td>Additional District Magistrate (East) / SDM (HQ)</td>
</tr>
<tr>
<td>4.</td>
<td>Safety Officer</td>
<td>Specialist from DDMA/NDMA</td>
</tr>
<tr>
<td>5.</td>
<td>Operations Section Chief</td>
<td>Additional District Magistrate- East</td>
</tr>
<tr>
<td>6.</td>
<td>Staging Area Manager</td>
<td>Area SDMs</td>
</tr>
<tr>
<td>7.</td>
<td>Response Branch Director</td>
<td>Divisional Fire Officer</td>
</tr>
<tr>
<td>8.</td>
<td>Transportation Branch Director</td>
<td>Motor Licensing Officer (East)</td>
</tr>
<tr>
<td>9.</td>
<td>Planning Section Chief</td>
<td>District Magistrate (East)</td>
</tr>
<tr>
<td>10.</td>
<td>Situation Unit Leader</td>
<td>Respective Tehsildar and SHO of Police Station concerned</td>
</tr>
<tr>
<td>No.</td>
<td>Position</td>
<td>Officer</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>11.</td>
<td>Resource Unit Leader</td>
<td>Area Tehsildar</td>
</tr>
<tr>
<td>12.</td>
<td>Documentation Unit Leader</td>
<td>Area Tehsildar</td>
</tr>
<tr>
<td>13.</td>
<td>Demobilisation Unit Leader</td>
<td>Area Tehsildar</td>
</tr>
<tr>
<td>14.</td>
<td>Technical Specialist</td>
<td>Specialist from NDMA/DDMA</td>
</tr>
<tr>
<td>15.</td>
<td>Logistic Section Chief</td>
<td>DC (EDMC)</td>
</tr>
<tr>
<td>16.</td>
<td>Service Branch Director</td>
<td>SDM(HQ) / Area SDM</td>
</tr>
<tr>
<td>17.</td>
<td>Support Branch Director</td>
<td>SDM(HQ) / Area SDM</td>
</tr>
<tr>
<td>18.</td>
<td>Communication Unit Leader</td>
<td>SDM(HQ) / Area SDM</td>
</tr>
<tr>
<td>19.</td>
<td>Food Unit Leader</td>
<td>SDM(HQ) / Area SDM</td>
</tr>
<tr>
<td>20.</td>
<td>Facilities Unit Leader</td>
<td>Concerned Area Tehsildar</td>
</tr>
<tr>
<td>21.</td>
<td>Ground Support Unit Leader</td>
<td>Concerned Area Tehsildar</td>
</tr>
<tr>
<td>22.</td>
<td>Medical Unit Leader</td>
<td>CDMO, Distt. East</td>
</tr>
<tr>
<td>23.</td>
<td>Finance Branch Director</td>
<td>Accounts Officer (East)</td>
</tr>
<tr>
<td>24.</td>
<td>Cost Unit Leader</td>
<td>Accounts Officer, O/o District Magistrate(East)</td>
</tr>
</tbody>
</table>

**Responsibilities under Incident Response System**

(i) **Incident Commander: ADM (East)**

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

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

**Safety Officer:-**
1. Recommend measures for assuring safety of responders and to assess or anticipate hazardous and unsafe situations and review it regularly;
2. Ask for assistants and assign responsibilities as required;
3. Participate in planning meetings for preparation of IAP (Incident Action Plan);
4. Review the IAP for safety implications;
5. Obtain details of accidents that have occurred within the incident area if required or as directed by IC and inform the appropriate authorities;
6. Review and approve the Site Safety Plan, as and when required;

**Liaison Officer:**
1. Maintain a list of concerned line departments, agencies (CBOs, NGOs) and their representatives at various locations.
2. Carry liaison with all concerned agencies including NDRF and Armed forces and line department of Government.
4. Participate in planning meetings and provide information on response by participating agencies.
5. Ask for personnel support if required.
6. Keep IC informed about arrival of all Government and Non – government agencies and their resources.
7. Help in organizing briefing sessions of all Government and Non-governmental agencies with IC.

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

(ii) **Operation Chief (East)**

Most preferred rank for the operation chief. Following are the duties designated for Operation Chief:

- Responsible for the management of all operations directly applicable to the primary mission. He will activate the emergency support functions and will coordinate with the team leaders of ESFs.
- Activates and supervises organization elements in accordance with the Incident Action Plan (IAP) and directs its execution.
- Determine need and request additional resources.
- Review suggested list of resources to be rebased and initiate recommendation for release of resources.
- Make expedient changes to IAP as necessary.
- Report Information about special activities, events or occurrences to Incident Commander.
- Maintain Unit / Activity details.
Emergency Support Functions
ESFs shall be activated under Operation Chief. On the receipt of information Team Leaders (TLs) would take up following actions:

a. On the receipt of information about the off-site emergency Team Leaders (TLs) will activate their own Emergency Support Functions (ESFs)
b. TLs will join IC and Operation Chief in EOC to ensure coordination and to provide assistance
c. TLs would also move to the site for better operational control
d. TLs will call the nodal officers of supporting agencies and immediately deploy the quick response teams (QRTs) from the location of nearest to the incident site
e. They further reinforce their teams by deploying additional resources from surrounding areas so the effective first respond can be rendered at site
f. A high alert would be notified to move additional resources and manpower to the incident site
g. According to the feedback report additional TLs will take decision of movement of more team and manpower. In some of cases TLs may need to mobilize resources from nearby districts or states. In such cases chiefs will organize this through respective head quarters

Planning Section Chief
Planning section chief shall be responsible for performing following duties:

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

Resource Unit Leader
Responsible for maintaining the status of assigned resources (Primary and support) at an incident. This is achieved by overseeing the check-in of all resources, maintaining a status keeping system indicating current location and status of all resources and maintenance of a master list of all resources e.g. by key supervisory personnel, primary land support resources etc.

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

Check-in/Status Recorder:
Needed at each check-in location to ensure that all resources assigned to an incident are accounted for:
• Prepare check-in form, resource status boards and status display board.
• Establish communications with the communications Centre and Ground Support unit.
• Post signs so that arriving resources can easily find the check in locations
• Record check-in information on check-in lists
• Transmit check-in information to Resources Unit on regular pre-arranged schedule/ as per need.
• Receive, record and maintain status information for single resources, strike teams, task forces, overhead personnel
• Maintain file of check-in lists.

(e) Situation Unit Leader
• Begin collection and analysis of incident data as soon as possible.
• Prepare post or disseminate resource and situation status information as required, including special requests.
• Prepare incident status summary
• Provide photographic services and maps if required.

(d) Display Processor (Draftsman-Computer trained): Responsible for display of incident status information obtained for field observers, resource status reports, aerial photographs, etc.
• Determine:-
  1. Location of work assignment
  2. Numbers, types and locations of displays required
  3. Priorities
  4. Map requirements for incident
  5. Time limits for completion
  6. Field observer assignments & communication means
• Obtain necessary equipment and supplies
• Obtain copy of LIAP for each period
• Assist SITL in analyzing and evaluating field report
• Develop required displays in accordance with time limits for completion.

(e) Field Observers

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

• Determine:-
  o Location of assignment
  o Type of information required
  o Priorities
  o Time limit for completion
  o Method of communication
  o Method of transportation
• Obtain copy of IAP for the operation period
• Obtain necessary equipment & supplies for his use.
• Collect data like
  o Perimeter of location of hot spots etc.
  o Be prepared to identify all facilities location (e.g. division boundaries)
  o Report information to SITL
(f) **Demobilization Leader**
- Responsible for developing incident DMOB Plan
- Review incident resource records to determine the likely size and extent of DMOB effort ⇒ addl. Personnel, work space and supplies needed
- Coordination DMOB with agency representatives
- Monitor ongoing operation section resource needs
- Identify surplus resources and probable release time
- Develop incident check out for all units

(g) **Documentation Leader**: Dy. Chief Inspector of factories and Tehsildar
- Arranging for complete documentation of proceedings at the incident site
- Maintaining record of what happened and what actions were taken
  i. Recovering response costs and damages
  ii. Setting the record straight where there are charges of negligence or mismanagement resulting from the incident
  iii. Reviewing the efficiency and effectiveness of response actions
  iv. Preparing for future incident response
  v. Videotaping of the entire combat the rescue operations

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

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

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

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

b. **Identification of Hazard Zone**
Technical experts shall be able to determine real time contaminant concentrations at various distances downwind. They shall be responsible to estimate downwind concentrations and feeding the information to the Team leaders of various ESFs for further response. To estimate the hazard zone in a particular emergency scenario, the technical coordinator shall place the transparency of the vulnerability template with its x-axis along the prevalent wind direction and start point on the source of release on the scaled map.

c. **Establishment of Hazard Control Zones at Incident Site**
Technical expert should determine the zones varying according to the severity of hazard. For example Hot Zone, Warm Zone and Cold Zone. According to the zones local commandant post and rescue operations should take place.

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

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

(iv) Logistic Section Chief

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

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

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

(a) Communication Unit Leader:

- Prepare & implement incident wireless communication plan
- Ensure that incident communication centre & Message centre are established
- Establish appropriate communication distribution/ maintenance locations within base/ camps
- Ensure communication systems are installed and tested
- Ensure equipment accountability system is established
- Ensure personal portable wireless sets from cache is distributed as for incident wireless communication plan
- Provide technical information required on
  - Adequacy of communication system currently in operation
  - Geographic limitation on communication system
  - Equipment capabilities / limitations
  - Number and types of equipments available
  - Anticipated problems in the use of communication equipments
  - Ensure equipments are tested and repaired
• Recover equipments from released units.
• Responsible to receive and transmit wireless and telephone messages among to between personnel to provide dispatch services at the incident
• Set up message centre location as required
• Receive and transmit messages within and external to incident
• Maintain files of general messages
• Maintain a record of unusual incident occurrences.

(b) Medical Unit Leader:

Responsible for

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

(c) Food Unit Leader:

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

• Determine food & water requirements
• Determine method of feeding to best fit each facility or situation
• Obtain necessary equipment & supplies and establish working facilities
• Order sufficient food & potable water from the supply unit
• Maintain an inventory of food, water
• Maintain food service areas & ensure that all appropriate health & safety measures are being followed.
• Supervise caterers, cooks and other food unit personnel.

(d) Supply Unit Leader:

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

• Determine the type & amount of supplies en route
• Order, receive, distribute and store supplies & equipment
• Receive and respond to requests for personnel, supplies and equipment
• Maintain inventory of supplies & equipment.
• Service reusable equipment

(e) Ordering Manager:

• Obtain necessary order forms
• Establish ordering procedure
• Establish name and telephone number of personnel receiving orders
• Get names of incident personnel who leave ordering authority
• Check on what has been already ordered
• Orders when possible
• Place orders in a timely manner
• Keep time and location for delivery of supplies
• Keep receiving and distribution manager informed of orders placed

(f) **Receiving & Distribution Manager:**

• Organize physical layout of supply area
• Establish procedures for operating supply area
• Set up a system for receiving and distribution of supplies and equipment
• Develop security requirement of supply area

(g) **Facilities unit leader:**

• Primarily responsible for the layout and activation of incident facilities e.g. base, camps, ICP.
• Provides rest and sanitation facilities for incident personnel
• Manage base and camp operations (to provide security and general maintenance)

(h) **Ground support unit leader:**

• Support out of service resources.
• Transportation of personnel, supplies, food & equipment.
• Fueling, service, maintenance and repair of vehicles and other ground support equipment.
• Implementing traffic plan for the incident

(v) **Finance and Administration Section Chief**

Responsible to take decisions related to financial and cost related matters under given time frame. (Fig. 7.3)

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

(a) **Time Unit Leader:** Responsible for status recording and equipments time taken recording

(b) **Procurement Leader:** Responsible for administering all financial matters pertaining to vendor contracts

(c) **Cost Unit Leader:** Responsible for collecting all cost data, performing cost effectiveness analysis & providing cost estimates & cost saving recommendations for the incident

i. **Desk Arrangements**

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

**Emergency Support Functions**

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

(i) Organisation Setup of the ESF at District Level

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

Emergency Support Functions in Response Mechanism

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

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

**A detailed organizational setup of all ESFs and team leaders has been given below:**

In any case of any disaster Police, Fire, Medical and revenue department have been identified as first responder.

### Emergency Support Functions

A set of clearly defined responsibilities for all the ESFs have been mentioned below:

**Table 7.2 ESFs Teams**

<table>
<thead>
<tr>
<th>ESF</th>
<th>Function</th>
<th>Coordinator</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESF1</td>
<td>Communication</td>
<td>MTNL</td>
<td>NIC, Police, Revenue Wireless, Private Telecom</td>
</tr>
<tr>
<td>ESF2</td>
<td>Evacuation</td>
<td>Police Department</td>
<td>Army, Health Dept, Civil Defence, Delhi fire Service, NCC</td>
</tr>
<tr>
<td>ESF3</td>
<td>Search and Rescue</td>
<td>Secy. Home</td>
<td>Fire Deptt, Police, Civil Defence, Army</td>
</tr>
<tr>
<td>ESF4</td>
<td>Medical Health/Trauma</td>
<td>Secy. Health</td>
<td>Major Hospitals, CATS, St. John Ambulance, Civil Defence</td>
</tr>
<tr>
<td>ESF5</td>
<td>Equipment Support</td>
<td>Secy. Urban Development</td>
<td>EDMC, PWD, NDMC, Cantt. Board, DDA, JAL Board</td>
</tr>
<tr>
<td>ESF6</td>
<td>Hiplines, Warning Dissemination &amp; coordination Media coverage</td>
<td>Pr. Secretary (Revenue/Disaster Management)</td>
<td>All Emergency Support Functionaries (ESFs), Media Agencies</td>
</tr>
<tr>
<td>ESF7</td>
<td>Drinking Water</td>
<td>CEO, Jal Board</td>
<td>DJB</td>
</tr>
</tbody>
</table>
**Action plan for Emergency Support Function**

### 1. Communication

**Situation Assumption:**
Due to extreme fire explosions or a high intensity earthquake telephone wires might get damaged so communication from the site is not possible. There is a need to inform to various departments and to establish a temporary communication system.

**Primary Agencies:** Mahanagar Telephone Nigam Limited (MTNL)

**Supporting Agencies:** NIC, Private telecommunication and Mobile phone operators

**Immediate Actions:**
1. Team Leader (TL) will activate ESF immediately and intimate to his supporting officers.
2. He will establish a contact with district EOC for First Information Report.
3. He will decide upon the extent of damage to telecom services and network and will provide possible arrangements to establish reliable networks.
4. In such kind of large explosion, the communication systems of the affected installation may get severely damaged and be rendered useless. In such case communication coordinator would be responsible to provide emergency communication system to the incident site. It shall comprise through wireless (available within the Delhi Administration), mobile phones and land lines available with the industries.
5. Coordinator will establish an all call system on telephonic network for notification of emergency in the areas likely to be affected.
6. Prepare a standard message format (in Hindi and English) for use in radio/television broadcast or outdoor notification through megaphone to facilitate and reduce time necessary to alert the public of a problem and inform them of the protective actions to be taken.
7. Establish a warning system for different levels of emergency.
8. TL should send Quick Response Team (QRT) at the incident site with required equipments and resources.
9. TL will inform to IC about the restoration of telecom services and will communicate new phone numbers.
10. HAM radio operators would be informed about the current requirement and coordination mechanism.
11. TL monitors the situation and arranges staff required to operate established systems.

**Action to be undertaken by Quick Response Teams (QRTs):**
1. QRT members will reach to the incident site as soon as they get instructions.
2. QRT will take stock of the situation from the IC and also from the members of the other QRTs
3. QRT will assess the ground situation and send reports to state ESF agencies. The report would contain assessment of overall damage listing, overhead route damage (mts/kms), cable damaged (in yards/mts) and specific equipment damage
4. Establish a temporary communication facility for the use of public
5. Identify requirement of manpower, resources and equipments
6. Begin restoration by removing and salvaging wires and poles
7. Reporting to the head office

**Coordinating ESFs:** Help lines, Relief, Medical response, Law and order, Search and rescue, etc

2. Evacuation

**Situation Assumption:**

People who are residing in vulnerable location may get affected due to the chemical explosions/fire/earthquake. These areas may be nearby installation, industries, railways and other institutions. Under such circumstances TL should take up decision either to evacuate the places or not.

**Primary Agency** : Police department

**Supporting Agencies** : Police department, Fire department, NDMC-Rohini, Narela and Civil line Zone, Civil Defence and Home Guard department, NCC, NSS, NYKS, NGOs

**Task Involved** :

The Team Leader (TL) with the Help of QRTs shall perform following duties:

**A. Identification of people to be evacuated**

The decision of the area under dangerous location will largely depend upon the wind speed, direction and rate of explosion.

**B. Evacuation of general public**

- On the directions of Incident Commander (IC), the ESF Team Leader will perform evacuation. He will instruct the team to initiate evacuation of the areas expected to be exposed and threatened by the explosions
- The QRT shall move along with adequate material and resources to carry out evacuation. People will be directed to move towards safer areas identified by technical experts
- The team leader will designate in-charge of relief centers and keep in touch with them for regular head count and care of evacuees
- Police, Fire, Civil Defence & Home Guard (CD & HG) and other government employees may have to go door to door to ensure that residents have been alerted about the emergency

**C. Evacuation routes and assembly points**

1. In planning process routes shall be defined well in advance. These routes should be clearly spelt out in warning signals as also the location of the shelters to where people with automobiles should proceed and people without automobile should gather
2. Designated evacuation routes should be major roads preferably but according to the wind speed and directions
3. As evacuation would be declared police and fire should be prepared to control roads and traffic on evacuation route
4. Apart from above mentioned duties TL should also dispatch following notifications:-
5. The Team Leader will ensure that notification has been communicated to the nearby institutions such as schools, hospitals, residential colonies and similar facilities having large group of people
6. The team leader will also ensure that nearby water users (industries, farm irrigations, drinking supplies) and water treatment plants are informed to get water at the incident sites
7. On getting instructions from the Incident Commander(IC), the team leader of the ESF will ensure notification to the general population for evacuation immediately and rush to safer sites
8. It is important to note that next kin are promptly notified of fatalities or severe injuries carefully in a supportive fashion. This activity can be discussed with Police, Red Cross society, voluntary organizations and NGOs

Coordinating ESFs : Law and Order, Search and Rescue, Food and Shelter

3. Search and Rescue, Fire Fighting

Situation Assumption: There may be a massive destruction, aggressive fire explosions, there may be a need of repairing leakages to reduce fire explosions, situation can aggravate due to mishandling or carelessness

Primary Agency : Delhi Fire Service

Supporting Agencies :

Trained fire fighting/search and rescue team of incident site and nearby installations (IOCL, BPCL, HPCL), Civil Defence and Home Guard, Police department

Immediate Tasks :
1. TL will activate the ESF and give instructions to the QRTs to reach at incident site to person rescue operations
2. TL will coordinate with LCP and EOC to judge the situation
3. TL will coordinate in deputing rescue team to enter in hazardous areas
4. TL will coordinate with technical experts, safety coordinators and material coordinator for quick response in case of any requirement in conducting rescue operations

Immediate Tasks of QRTs:

Fire fighting teams will undertake these services in case of extreme fire explosions and chemical disaster

On-scene Assessment

1. First fire vehicle to reach at incident site will contact the site controller and collect the necessary information regarding chemical leak, action taken, current status and type of equipment required
2. Driver will park their vehicle in a manner to prevent exposure to air-borne chemical contaminants and fire explosions
3. Each crewmember will wear the necessary PPEs (Personnel Protective Equipments) before entering in the “hot zone”. They will work in pairs and coordination
4. The situation will be communicated to the FCR to provide the update of additional resource and manpower requirement

**Plugging/Stopping of Leaks**

Few crewmembers having good knowledge of basic tools and knowledge to limit the losses from punctured or leaking tanks will work for plugging holes. Plugs of varying sizes and shapes (conical, cylindrical, square or wedge shaped wood pieces, rubber or metal sheets) can be jammed in the wholes to reduce the leaking.

**Suppression of Hazardous Gas or Vapour Releases**

Based on the guidance of technical coordinators, the response team shall take rapid measures to reduce the rate of amount of hazardous vapors or gases entering in the atmosphere using one or combination of the following measures

- Physical restriction of liquid pool surface areas, transfer to an alternate or standby container if available.
- Use of fire-fighting or specialized hazardous material foams, dilute or coverage of liquid pools with water or other compatible liquids.
- Use of water sprays or fogs, neutralization of spilled liquids, cooling of spilled liquids or venting tanks

**Search and Rescue Operations**

1. According to the instructions of rescue coordinators QRTs should enter into the hazardous areas and rescue injured and trapped people
2. For common safety practice, QRTs should work in pairs
3. QRT should initiate search and rescue operations of trapped people under the guidance of technical experts
4. QRT of rescue operations should carry a self-contained breathing apparatus (SCBA) to carry out their mission without falling victim. They should also carry a spare SCBA unit which will help them to escape people trapped in the hazardous areas and also sometimes rescue workers require extra air supplies to accomplish prolonged rescue.

**Coordinating ESFs**

: Law and Order, Relief, Evacuation, Water Supply

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**4. Law and Order**

**Situation Assumption:**

There may be a chaos in the affected area. People may rush without proper following proper instructions which may increase the expected loss. Traffic may become out of control and lead to jams.
Primary Agency : Police Department (Police and Traffic Police)

Supporting Agencies : Civil Defence and Home Guard

Immediate Actions of Police:

1. Deploying quick response teams (QRTs) to maintain law and order at the incident site
2. QRTs deployed at the site will be equipped and will coordinate with following activities
3. Quick Assessment of law and order situation in affected areas
4. Cordon off the site to restrict movement of curious onlookers, vehicles and pedestrians
5. Control and monitor traffic movements
6. Support and coordinate with local administration
7. Prepare updates on the law and order situation in every 2 hours and brief the authorities
8. Ensure law and order at assembly points and evacuation points
9. Control situation of rioting and looting and cordon off affected areas
10. Provide traffic diversions so as to ease movement of response vehicles to incident site
11. Gather and disseminate information about the traffic flow on alternate routes for decongestion
12. Ensuring law and order in rehabilitation centers
13. Communicate with PCR on regular basis regarding field activities including deployment of manpower and resources
14. To advice home-guards and civil defence to remain alert for responding to call from Police
15. To contact nearby hospitals for making emergency arrangements for receiving injured persons

Immediate actions of Traffic Police:

1. To coordinate and communicate with concerned functionaries
2. To detail traffic staff to reach the place of occurrence
3. To give directions whenever necessary to ensure free passage for fire brigade ambulance, police vehicles and vehicles of other respondents
4. DCP (traffic) to coordinate with the DTC and other private transporters for additional vehicles

Coordinating ESFs

Communication, Search and Rescue, Transport, Help lines and Warning dissemination and Relief Supply etc.

5. Medical Response and Trauma Counseling

Situation Assumption:

Expect large number of casualties There may be a requirement of more trained professionals and specialists in various fields There may be a requirement to maintain a close contact with the other major hospitals in case of more severe conditions

Primary Agency : Directorate of Health Service

Secondary Agencies: CATS, BSA Hospital, Mahavir Hospital, NDMC-Health department (Narela, Rohini and civil line ),DHS , St. John Ambulance, Installations (IOCL, BPCL, HPCL), CD & HG, IMA representatives, NCC, NSS, NYKS and NGOs

Immediate Actions :

1. Ensure the adequate number of medical professional to reach at the site including specialist in chemical exposure handling
2. DDHS in consultation with the respective medical superintendents of major hospitals should also responsible to prepare a mass causality plan
3. Ensure high sanitation standards at resettlement site to reduce epidemic outbreak
4. Providing adequate treatments to the victims of explosions
5. Trained profession should be mobilized by psychological support
6. Ensure setting up of temporary information center at hospitals with the help of communication ESF
7. Send vehicle and additional equipments

**Immediate Actions of QRTs:**

*Establishment of Triage Station*

a. Mass casualty situation will require establishment of field hospitals to take care for the injured and to identify stabiles and transport more serious cases to the hospitals
b. Codes should be used to recognize serious and stable cases such as red –critical, yellow-stable and green-wounded
c. Treatment should be provided according to the casualty of the victims
d. Medical coordinators should propose rehabilitation centers as per the type of casualties
e. Field hospitals shall maintain a record of all the patients so as to enable accounting of personnel and their destinations after triage.

**Medical Support for Response Personnel**

Properly equipped medical personnel and ambulances should be made available to check and treat injured or contaminated response personnel

**Medical support at temporary shelters**

a. A team will take care of the people who become ill during evacuation or later.
b. Team should be aware of the signs and symptoms of exposure to toxic materials so that they can easily identify victims and provide them treatment and care
c. Contaminated individuals should be segregated from the unexposed people until they are adequately decontaminated
d. Special facility should be given for care of the handicapped and elderly

**Coordinating ESFs:** Search and Rescue, Evacuation, Communication

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6. **Water Supply**

**Situation Assumptions:**

There may be a need of supplying water for fighting operation there may be a need for drinking purpose rehabilitation site might be requiring temporary/mobile toilets, there may be need to ensure clean environment

**Primary Agency** : Delhi Jal Board (DJB)

**Supporting Agencies**: Irrigation and Flood Control Department, NDMC, Railways
Immediate Tasks:

a. The team leader will ensure that Quick Response Teams are on the site along with the required resources
b. He shall be ensuring uninterrupted supply of water for fire-fighting to all the brigades in operation.
c. He shall coordinate with the transport coordinator for replenishing the depleted stick of fire water at the incident site through water tanks
d. Carry out the task of repairing all damages to water supply system
e. Arranging alternate storage of potable water at temporary shelters
f. Ensure restoration of potable water as per standards and procedures laid down under ‘Standards for Potable Water’
g. Plan for emergency accommodation of water supply in or near temporary shelters
h. Establish temporary sanitation facilities at the shelters
i. Ensure cleanliness of sanitation facilities, relief shelters and local commandant post

Coordinating ESFs: Shelter, Relief, Evacuation, Medical, Search and Rescue

7. Relief (Food and Shelter) Supply

A. Food Supply Situation Assumption:

There may be a need to distribute food packets and drinking water to the victims

Action to be taken by: Food and Civil Supplies Department

Supporting Agencies:

NGOs, NCC, NSS and Education department

Immediate Tasks:

1. The team leader(TL) will activate ESF on receiving the information about the incident and will also inform to the supporting agencies
2. Food coordinator would gather information about the locations of shelters and number of persons housed in each of these shelters.
3. The TL will guide QRTs to reach at rehabilitation centers to provide food packages
4. The TL will keep on coordinating about the distribution of food items to the evacuees and will give appraisal to the IC
5. In case of shortage of food items the TL will arrange more food packages and will ensure continuous supply

Tasks for QRTs:

1. Management and distribution of relief items to affected victims
2. Report the progress on action them to the TL
3. Inform the TL about more requirements of staff members, additional materials and food packages.
4. Initiate procurement of food items available at nearby markets
5. Prepare take-home food packets for the families
6. Ensuring equal distribution of relief material including children, aged groups, women and poor people

Coordinating ESFs: Evacuation, Shelter, Water and Sanitation and Medical response
B. Shelter Arrangements

Situation Assumption:
There may be a situation of transferring victims to the safer temporary shelter, there may also be a need to establish triage station for medical treatments

Primary Agency : Revenue Department
Supporting Agencies : Nehru Yuva Kendra Sangthan, GRC’s, Education Dept, NSS, NCC, DUSIB.

a. Immediate Actions :
   b. The team leader (TL) would be the in-charge of rehabilitation centers who will ensure number of people evacuated, care of evacuees and availability of essential supplies
   c. Those who will reach to the relief centers would also like to know about their missing members. TL will response to their queries and also pass on the message to the evacuation and rescue related coordinators
   d. The Quick Response Team(QRT) will help them in arranging temporary shelters, food and sanitary facilities
   e. Medical facilities will also be provided to the victims and injured people

Coordinating ESFs: Search and Rescue, Evacuation, Medical Response, Law and Order, Relief Supply and Water and Sanitation

8. Equipment Support, Debris and Road Clearance, Sanitation

Situation Assumptions : There may be a requirement of arranging equipments to perform fire fighting and search and rescue Roads may get blocked due to debris

Primary Agency : NDMC (Narela Zone, Civil line Zone, Rohini Zone)
Supporting Agencies : PWD, DJB, DMRC, DDA, Installations (BPCL, IOCL, HPCL),

Task Involved
   a. The team leader (TL) will inform Quick Response Teams(QRTs) and Supporting agencies about the incident
   b. Coordinate with supporting agencies to mobilize equipment form warehouse
   c. Assessing road blockage and building damage through QRTs

In addition to the above, coordinator would also coordinate with following activities

a. Availability of respiratory protective devices
   In case of large scale explosion, sometimes there may be a shortage of protective devices. Therefore, coordinator would judge the requirement of personal protective equipments and clothing for members of emergency teams.

b. Availability of Special Protective Clothing
   In the crises situation sometimes there may be requirement of more complete protection of the body by clothing that is resistant to the damaging effects of the spilled substance. Such situation may require clothing such as boots, gloves and disposable suits, air-tight fully encapsulating ‘astronaut’ suits made of chemical resistant materials.
c. Ensuring availability of support services for response teams

Field response teams would be working day and night at incident site. These personnel will require rest areas, food and sanitation facilities etc. Therefore material coordinator along with the NGOs and coordinators of food and shelter will arrange rest areas, food, shelter and other facilities.

d. Maintenance of Apparatus and Equipments

There would be few equipments requiring refueling and minor maintenance for uninterrupted operation. Therefore on-scene services should be arranged so that operation can be continued without any problem.

Tasks for Quick Response Teams:

a. Conduct damage assessment including location, number of structure damaged and severity of damage
b. Enlisting type of equipments required for conducting debris clearance
c. Report the situation and progress report to EOC and TL
d. Undertake construction of temporary roads to serve as access to the site by other response agencies

Coordinating ESFs:
Search and Rescue, Medical, Evacuation, Help lines and warning dissemination, Food and Shelter

9. Help Lines

Situation Assumptions:
A large number of reporters are arriving at the scene to get the correct information. There is a need to spread cautions to the local people about their movement towards safer areas. There may be rumors about the information.

Primary Agency:
Revenue Department

Supporting Agencies:
NIC, MTNL, Publicity and Information department, Press trust of India, Important Media channels and newspapers, AIR, Doordarshan and Press Information Bureau

Tasks Involved:

a. Coordinator will transfer an adequate information to the large number of reporters arriving on scene and attempting to interview response teams and officers so that unwanted rumors can be reduced
b. Designate one specific individual and an alternate press officer to join the team of press officers
c. Coordinator should try to communicate the timely and right information so that confusions and rumors can be reduced
d. Compile the list of telephone numbers of local radio, televisions and other related personnel who can help in air announcements
e. Provide the desired support to the press officers with secretariat support, photocopy machines, and means of communications with overall command of the response operations
f. Establish a firm policy among all local officials and response personnel as to who should speak or should not speak to media personnel
g. Ensure that key emergency response personnel understand the need to relay up-to-date “status report” to press on a regular basis
Coordinating ESFs: Search and Rescue, Evacuation, Relief and Shelter, Transport, law and Order and Medical Response etc.

10. Electricity

Situation Assumptions: Expect electric short circuits in the affected area which may aggravate the fire explosions. Electric fitting of the affected areas may get damaged and may need to be repaired; there may be a requirement of temporary lightening arrangements in the relief shelters and local commandant post.

Primary Agency : TPDDL-Tata power Delhi distributor limited
Supporting Agencies: NDPL, NDMC (NZ, RZ, Civil line Z), TRANSCO

Task Involved : Team leader will activate the Emergency Support Function (ESF) by informing his headquarter team and field team

\[a.\] Notifying the Incident

b. Provisioning Backup Power during Emergency

In addition to the above, QRTs should also undertake following responsibilities:

a. Take stock of situation immediately on reaching the incident site
b. Coordinate with other team leaders and provide essential help expected from the electricity department
c. Conduct repairing work of dismantled connections
d. Provide temporary electricity supply to EOC, LCP and relief centers
e. Report to the team leader about the situation appraisal

Coordinating ESFs: Road and Debris Clearance, Incident Command Post, Relief and Shelter, Medical response etc

11. Transport

Situation Assumptions: There may be a need of diverting transport immediately or there may be a need to transport affected population to the safer places

Primary Agency : Department of Transport
Supporting Agencies : Delhi Transport Corporation, NDMC (NZ, RZ, Civil line Z)
Immediate Tasks:
1. Direct the local transport coordinator to direct the fleet (drivers) and coordinate the following transport activities during emergency.
2. Closely liaison with the communication and evacuation coordinators.
3. On the basis of instructions delivered by IC, he will effect the warning/Instructions/notification/operation.
4. Arrange for the fleet of vehicles at a pre-designated location so that they can transport the affected population of safer areas (relief centre).
5. Transporting people from vulnerable areas to safer areas.
6. Also transporting required equipments, materials and personnel etc.

Coordinating ESFs: Medical Response, Law and Order, Debris and Clearance, Evacuation,


Incident Command Post
In case of emergency IC should propose an incident command post as a complimentary unit to EOC, which will operate close to the disaster site and shall be linked directly with the District Emergency Operations Centre. Concerned SDM shall be the nodal officer from district administration responsible of coordinating with emergency response teams at field level. The Incident Commander shall also appoint an administrative officer to monitor and co-ordinate the activities of Incident Command Post. All information shall be conveyed to the Collector from the SDM and administrative officer appointed at SOC. The QRT unit of the respective vital departments would be responsible to execute activities at disaster site, however the tasks would be controlled and coordinated from EOC through nodal desk officers/ESF team leaders.

7.6 Overall Role of District Magistrate (East District)

The Dy. Commissioner/Magistrate (East) will be the focal point at the district level for directing, supervising and monitoring relief measures for disasters and for preparation of district level plans. He will exercise coordinating and supervisory powers over functionaries of all the departments at the district level. During actual operations for disaster mitigation or relief, the powers of all DCs/DM are considerably enhanced, generally, by standing instructions or orders on the subject, or by specific Governments order, if so required. Sometimes, the administrative culture of the concerned state permits, although informally, the DC to exercise higher powers in emergency situations and the decisions are later ratified by the competent authority.

The Dy. Commissioner/Magistrate (East) will maintain the close liaison with the central government authorities in the districts, namely army, air force and ministry of water resources etc, who supplement the effort of the district administration in the rescue and the relief operations. The Dy. Commissioner/Magistrate (East) will also coordinate all voluntary efforts by mobilizing the non-government organizations capable of working in such situations.

In the event of a serious disaster, the Dy. Commissioner/Magistrate (East) will have sole right to appoint senior officers of any State Government Department, posted in the district as ‘Field Relief Managers’ for monitoring and coordinating the relief operations in the affected area.

Duties at the time of disaster
- Maintenance of law and order; prevention of trespassing, looting, keeping roads clear from sightseeing persons so that free movement of rescue vehicles is assured, etc.
- Evacuation of people
- Recovery of dead bodies and their disposal
- Medical care for the injured
- Supply of food and water and restoration of water supply lines.
- Temporary shelters like tents, metal sheds
- Restoring lines of communications and information
- Restoring transport routes
- Quick assessment of damage and demarcation of damaged areas according to grade of damage
- Cordon off of severely damaged structures that are liable to collapse during aftershocks
- Temporary shoring of certain precariously standing building to avoid collapse and damage to other adjoining buildings.

**Duties at post-disaster scenario**

- Particular attention is paid to women’s views in the assessment stage.
- Women’s actual responsibility in domestic (in terms of household subsistence, health, and child care) and production and economic activity beyond the subsistence level are taken into account in determining the consultation process.
- Women representatives are included at all level of planning, decision-making, implementation, and evaluation.
- The particular constraints faced by households maintained by women are taken explicitly into account in designing and implementing relief programmes.
- Special attention is provided to unaccompanied women, lone parents and widows. Issue of legal, sexual and physical protection are properly identified and addressed.

7.7 **Relief Measures**

Once the rescue phase is over, the district administration shall provide immediate relief assistance either in cash or in kind to the victims of the disaster. The DDMA (EAST)/ESFs East shall enter into pre-contract well in advance and procure materials required for life saving. The office of Deputy Commissioner/Magistrate is responsible for providing relief to the victims of natural & manmade disasters like fire, flood, drought, earthquakes, riots, terrorist attacks, accidents etc. The scales for grant of ex-gratia relief in various eventualities after Cabinet decisions No. 1005 of 31.10.2005 and No. 912 of 11.09.2004 are as per details given below:
(i) **Fire & Other Accidents (caused by individual or natural calamities):**

- a) Death (Major) : Rs. 2,00,000/- in each case
- b) Death (Minor) : Rs. 1,00,000/- in each case
- c) Serious Injury : Rs. 50,000/- in each case
- d) Minor Injury : Rs. 10,000/- in each case
- e) Orphaned children : Rs. 1,00,000/- in each case

(ii) **Bomb Blasts, Communal Riots & Other Riots, Terrorist Attacks:**

- a) Death (Major) : Rs. 3,00,000/- in each case
- b) Death (Minor) : Rs. 1,50,000/- in each case
- c) Permanent Incapacitation : Rs. 1,50,000/- in each case
- d) Serious Injury : Rs. 1,00,000/- in each case
- e) Minor Injury : Rs. 10,000/- in each case
- f) Orphaned children : Rs. 1,00,000/- in each case

(iii) **Loss of Moveable Property (in riots):**

- a) Animals (Source of Income / livelihood) : Rs. 2,000/- each
- i) Farm Animals : Cows, Buffaloes, Sheeps
- ii) Cart Animals : Hoses, Oxen, Camel
- b) Rickshaw : Rs. 1,500/- each

(iv) **Damage to residential unit (In riots / fire / natural calamities [other than jhuggies]):**

- a) Total Damage : Rs. 50,000/-
- b) Substantial Damage : Rs. 25,000/-
- c) Minor Damage : Rs. 5,000/-

**Damage to uninsured commercial property / commercial articles (In riots / fire / natural calamities etc.):**

50% of the loss up to a maximum of Rs. 1,00,000/-.

(v) **Damage to Jhuggies (In case of fire / riots etc.):**

Total damage of Jhuggies : Rs. 5,000/- in each case.
(Rupees Five thousand only)

The Divisional Commissioner’s Office, Delhi and District Offices each have been allotted budget under their respective heads of Accounts - Major Head 2245 Relief on account of Natural Calamities to meet the expenditure on payments of gratuitous relief, Tentage, food etc. in cases of natural calamities like fire, bomb blasts, flood, earthquake, etc.

Further, powers to sanction of relief to the victims have already been delegated to all the Deputy Commissioner/Magistrate, being Head of Department in all cases, in accordance with the scale approved in the order dated 04.01.2012 to ensure timely disbursal of relief.
8.1 Reconstruction:

Refers to the full restoration of all services, and local infrastructure, replacement of damaged physical structures, the revitalization of economy and the restoration of social and cultural life. Reconstruction must be fully integrated into long-term development plans, taking into account future disaster risks and possibilities to reduce such risks by incorporating appropriate measures. Damaged structures and services may not necessarily be restored in their previous form or location. It may include the replacement of any temporary arrangements established as part of emergency response or rehabilitation.

The following sectors can be vulnerable to disaster impact, and which, therefore, will require rehabilitation and reconstruction inputs.

- Buildings
- Infrastructure
- Economic assets (including formal and formal commercial sectors, industrial and agricultural activities etc.)
- Administrative and political
- Psychological
- Cultural
- Social
- Environmental

“The disaster scenario offers a range of opportunities for affected communities to respond to the crisis, how community responds to a disaster and post disaster aid sets the tone for the transition from disaster to development”. After earthquake in Latur, people of that area started to monitor construction works, retrofitting of houses and behaved like “community construction watch dogs” (IDR, Oxford, 2000).

As discussed earlier 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. East district is sub-divided into 3 sub-division i.e. Gandhi Nagar, Preet Vihar and Mayur Vihar. The head of a subdivision is called the Sub-District magistrate (SDM) while the head of a Tehsil 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.

8.2 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.
- Owner Driven Reconstruction
- 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 & Outside 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. 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.

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 panchama of concerned localities.

**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.

**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.

8.3 **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 Persons**
- Aged persons given pensions.
- Old Age Homes established.

**Women**
- Pension sanctioned.

8.4 **Recovery**

The long-term response plans are related with Recovery and Reconstruction activities on one
side and institutionalizing disaster management in district administration on the other side. There are
Standard Operation Procedures (SOPs) for the Emergency Support Functions. In long term measures
the following actions shall be undertaken duly:

1. Constitution of Emergency Support Functions, Disaster Management Teams, Quick Response
   Teams, Field Response Teams
2. Refresher trainings for all such teams in a regular interval of time and exercise of Mock Drills
3. Continuous awareness/sensitization programmes for the stakeholders and the general Public.
4. Getting pre-contract with venders and merchant establishments to procure relief materials in
times of disaster
Most of the Line Departments in the District, Autonomous Bodies and Organizations are part of the Emergency Support Functions. The action plans for ESFs for disaster management are discussed in other chapter of the plan. The DDMA (EAST)/ESFs shall ensure that these actions plans are updated bi annually and practiced through mock drills and other activities in the district.

Recovery and rehabilitation is the final step. The incident Command System shall be deactivated as the rehabilitation phase is over. Thereafter the normal administration shall take up the remaining reconstruction works in the disaster-affected areas. These activities shall be performed by the Working Group for relief and rehabilitation under the direction of the DDMA (East)/ESFs.

**General Policy Guidelines adopted by DDMA (East)**

**Rescue Operations**

After disaster immediately, the Dy. Commissioner (East) would act as the focal point for control and co-ordination of all activities. His/her responsibilities have been identified as follow:

- Get in touch with the local Army/ Navy/ Air Force units for assistance in rescue, evacuation and relief;
- He/she will have the authority to requisition resources, materials and equipment from all the Departments/Organizations of the government and also from the private sector;
- He/she will have the power to direct the industry to activate their onsite and offsite disaster management plans;
- He/she will set up ‘Site Operations Centre’ (SOC) in the affected area with desk arrangements;
- He/she will authorize the establishment of transit and/or relief camps, feeding centers and cattle camps;
- He/she will send ‘Preliminary Information Report’ and ‘Action Taken Report’ to the State Relief Commissioner and Divisional Commissioner;
- He/she will authorize immediate evacuation, whenever necessary.

Traditionally, the concerned SDM office and local police station, both are the main government agencies below the district level, which initiate trigger mechanism for emergency operations in the event of major accidents / disaster threats. In view of limited availability of resources for disaster management, below the district level, the DDMP has not proposed any administrative structure for co-ordinated operation during emergency. In the event of less serious disaster threat/accident, the SDM office or police station would continue to initiate trigger mechanism and provide an emergency response with the help of locally available resources. The DDMA on receipt of information, from any of the two agencies, would take appropriate decision to augment local resources and give appropriate instructions to the concerned response agencies.

**Relief & Recovery Coordination:** (to and when be done by DDMA: District Magistrate (DM) to announce what kind of support required from other agencies & when)

After the rescue phase is over, the district administration shall provide immediate relief assistance either in cash or in kind to the victims of the disaster. The office of Dy. Commissioner is responsible for providing relief to the victims of either natural or human-made disasters like earthquake, fire, flood, riots, CBRN, terrorist attack etc in the district.

1. The amount of resource material required to be mobilized as relief may be based on the statistics of the intensity and spread of various disasters in the area in the past disaster records.
2. Certain areas are prone to disaster and each time relief is provided, a number of shortcomings come to light; these become lessons to serve as inputs for future planning of relief and rescue exercises.

3. Short-term plans should be based on the declared vulnerability of the area to particular types of disasters. Forecasts on future disasters should be usefully interpreted in action plans on exercises which would be most required.

4. Short-term plans should incorporate suggestions and capabilities of all departments concerned of the district/state, non-government organizations and community based organizations. Therefore plans may be prepared by setting up committees at appropriate level to incorporate their inputs.

**Rehabilitation:**

While rescue operations and relief measures take care of the immediate post disaster situation, rehabilitation is a long drawn out measure.

Rehabilitation involves:
- Physical and economic rehabilitation of the affected population.
- Restoration of community services- street lighting, water supply, scavenging, schools and medical services.
- Restoration of physical infrastructure-roads, public buildings, community centres etc.
- Restoration of private enterprises including farming activities.
- Restoration of private residential buildings.
- Helping organizing institutional finance in restoration work.
- Medical rehabilitation of people seriously affected by the disasters.
- Psychological rehabilitation of persons and families traumatized by the disaster.

**Recovery Programme:**

**Short-Term Plan**

In short term response rehabilitation is the final step. The incident command system shall be deactivated as the rehabilitation phase is over. Thereafter the normal administration shall take up the remaining reconstruction works in the disaster affected areas. These activities shall be performed by the working group for relief and rehabilitation under the direction of the DDMA.

**Long-Term Plan**

The situation may not always warrant long-term plans, but such plans should have the ability to build a culture of disaster mitigation and be aimed at reducing vulnerability of the area. As such any long-term plan should incorporate policy directives on preparedness as well as post disaster reconstruction and rehabilitation phases (the later as a follow up of the short-term contingency plans).

1. The foremost requirement for the preparation of a long-term plan is establishing its need in an area. Need may be established on the basis of the vulnerability of the area and the resource trade off between the cost of its implementation and other competing needs for overall development. In this context the long-term disaster mitigation plan or rehabilitation plan as part of overall development plan becomes significant.

2. In case of rehabilitation plan, the level of damage that has taken place in the community decides whether long-term intervention is required or not. The strategies of the rehabilitation would depend considerably on the damage assessment report.
3. A detailed survey of the community, which studies its needs and expectations in detail and seeks out their traditions and customs which they would like to preserve, has to be carried out. This would serve as an input in deciding an intervention strategy that is acceptable to the community.

4. The long-term plan should seek an objective of achieving overall development and satisfying basic needs—shelter, economic and social of the community. Reducing disaster vulnerability should be a means to achieve the objective and not an end in itself.

5. Long-term plans are resources intensive; many of the interventions decided therein should be based on resources available. In many cases, where the need for rehabilitation through relocation is established the same may not be implemented due to non-availability of land.

6. Long-term plans may be implemented successfully only through partnerships with NGOs and community participation. The involvement of these bodies should be solicited at the outset itself while deciding the interventions required.
CHAPTER 9
FINANCIAL RESOURCES FOR IMPLEMENTATION OF
DDMP

9.1 The Indian Context

In most countries where relief activity is primarily the responsibility of State/Provincial Governments, assistance from the Federal/Central Government to the lower levels of government is mostly in the form of case-specific grants/ reimbursement. These are more in the nature of the NCCF scheme of our country and, in that sense, the CRF scheme that provides for a structured fiscal transfer from the Central to State Governments for the purpose of financing relief expenditure is unique. Through the CRF scheme, successive Finance Commissions have built in the requirement of relief expenditure financing in the overall scheme of fiscal transfers. In the case of the NCT of Delhi, even calamity relief fund is not available. Fortunately, the concept is developing such a way that the Planning Commission has conceptually agreed to have an exclusive mechanism to fund and to monitor the financial arrangements of disaster management.

RECOMMENDATION BY 13TH FINANCE COMMISSION

The Thirteenth Finance Commission (2010-2015) has responded very positively to the long pending request for greater allocation of fund for disaster management. The finance commissioner suggested various recommendations to solve the issue in state and district level.

Every state has a State Calamity Relief Fund (CRF) for immediate action after math of a disaster. But in the case of the state of NCT of Delhi, there is no CRF. There is police modernization fund, which is utilized mostly to modernize the police department to fight against disaster.

An alternative mechanism is to be constituted in all the districts of Delhi to tackle the disasters. As the 13th Finance Commission recommends it, District North East shall set apart 10% of its development fund for disaster preparedness and mitigation measures. Every year, the annual allocation of 10 per cent will be a relief to the administration to organize various disaster preparedness activities in the district. Similarly each line department in the district shall allocate minimum 2 per cent to 10 per cent of its developmental fund with the same purpose. Disaster Management Act 2005 has created Disaster Mitigation and Disaster Response Funds at Centre, State and District Levels. The erstwhile CRF and NCCF have been merged together in Disaster Response Fund. A new Disaster Mitigation Fund has been created under Section 45 of DM Act, 2005.

DISTRICT CALAMITY RELIEF FUND

Besides, the DDMA (East)/ ESFs East Delhi shall constitute a District Calamity Relief Fund (DCRF). This amount shall be raised purely from the General Public through donations. There can be a committee under the leadership of the District Magistrate East, to operate the fund. Once the fund is created, every year the DDMA (EAST)/ ESFs shall prepare reports on the utilization of fund, disasters faced in the previous financial year as well as potential programme planning for utilization of this fund.

STATE ALLOCATIONS

As an alternative option, the DDMA (EAST)/ ESFs shall forward a request to the Government of NCT of Delhi to grant 50 per cent of the targeted DCRF as one time grant and a matching amount shall be collected from the general public through donations.
Section 46 to section 49 of Disaster Management Act, 2005 seeks to provide for the constitution of the following funds:

- Section 46, Constitution of National Disaster Response Fund
- Section 47, Constitution of National Disaster Mitigation Fund
- Section 48, Seeks to provide for the establishment of State & District Disaster Response Fund and Disaster Mitigation Funds.
- Section 49, Seeks to enjoin upon every ministry or department of Government of India to make provision of funds in its annual budget for the purposes of carrying out the activities or programmes set out in its Disaster Management Plan.

**DISTRICT ALLOCATIONS**

The district authority gets 100% financial assistance from Govt. of NCT of Delhi for carrying out various activities such as sensitization programmes, trainings, street plays, mock drills etc.

The budgetary details of DDMA (East) for the year 2013-14 are as under:

| BUDGET ALLOCATED | RS. 1,00,00,000/- |

However, as per Section 48 of the DM Act 2005 the financial provisions are as under:

**Establishment of funds by State Government**

(1) The State Government shall, immediately after notifications issued for constituting the State Authority and the District Authorities, establish for the purposes of this Act the following funds, namely:
(a) the fund to be called the State Disaster Response Fund;
(b) the fund to be called the District Disaster Response Fund;
(c) the fund to be called the State Disaster Mitigation Fund;
(d) the fund to be called the District Disaster Mitigation Fund.

(2) The State Government shall ensure that the funds established-
(i) under clause (a) of sub-section (1) is available to the State Executive Committee;
(ii) under sub-clause (c) of sub-section (1) is available to the State Authority;
(iii) under clauses (b) and (d) of sub-section (1) are available to the District Authority.

**Other financing options for restoration of infrastructure/livelihoods.**

**Allocation of funds by Ministries and Departments**

As per Section 49 of the DM Act 2005 the financial provisions are as under:

(1) Every Ministry or Department of the Government of India shall make provisions, in its annual budget, for funds for the purposes of carrying out the activities and programmes set out in its disaster management plan.

(2) The provisions of sub-section (1) shall, mutatis mutandis, apply to departments of the Government of the State.

**Emergency procurement and accounting.**

As per Section 50 of the DM Act 2005 the financial provisions are as under:

Where by reason of any threatening disaster situation or disaster, the National Authority or
the State Authority or the District Authority is satisfied that immediate procurement of provisions or materials or the immediate application of resources are necessary for rescue or relief,-

(a) it may authorise the concerned department or authority to make the emergency procurement and in such case, the standard procedure requiring inviting of tenders shall be deemed to be waived;

(b) A certificate about utilisation of provisions or materials by the controlling officer authorised by the National Authority, State Authority or District Authority, as the case may be, shall be deemed to be a valid document or voucher for the purpose of accounting of emergency, procurement of such provisions or materials.
CHAPTER 10
PROCEDURE AND METHODOLOGY FOR MONITORING, EVALUATION, UPDATION & MAINTENANCE OF DDMP

Authority for maintaining & reviewing the DDMP:

As per Section 31 of the DM Act 2005 there shall be a plan for disaster management for every district of the State. As per Clause (2) of Section 31 of the DM Act 2005, the District Plan shall be prepared by the District Authority, after consultation with the local authorities and having regard to the National Plan and the State Plan, to be approved by the State Authority.

As per Clause (4) of Section 31 of the DM Act 2005, the District Plan shall be reviewed and updated annually. The copies of the District Plan referred to in sub-sections (2) and (4) shall be made available to the Departments of the Government in the district. The District Authority shall send a copy of the District Plan to the State Authority which shall forward it to the State Government. The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

Proper monitoring & evaluation of the DDMP:

The organizational structure suggested in DDMP will be based on following three concepts:

- Plans will work only in the case when present organizational structure is responsible to its non-emergency duties i.e. if a job is done well everyday; it is best done by that organization during emergency.
- Crisis should be met at the lowest and most immediate level of government. Plans call for local response supplemented if necessary, by the next higher jurisdiction.
- Voluntary response and involvement of the private sector should be sought and emphasized. The emergency management partnership is important to all phases of natural and man-made disasters. District Disaster Management Plan of the district shall be a public document. The DDMP is the sum and substance of all the Horizontal and Vertical disaster management plans in the district. Horizontal plans include plans prepared by line departments such as Delhi Police, Delhi Fire Service, MCD, I & FC deptt, Civil Defence and other line departments and the Vertical plans include Sub divisional plans, Community plans, School plans, Hospital plans, etc., at the lower level and state disaster management plan and National disaster management plan at the higher level.
- Preparation of the District Disaster Management Plan is the responsibility of the District Disaster Management Authority of the district.
- The same procedure is to be followed in the updation of the plan document. The District Disaster Management Plan is to be updated biannually by the District Disaster Management Authority. In order to update the document, all vertical and horizontal plans shall be collected and incorporated to the District Disaster Management Plan (DDMP).
After each biannual updation of the District Disaster Management Plan (DDMP), a version number shall be given serially. Copy of the updated document shall be circulated to each stakeholder of disaster management in the district.

**Post-disaster evaluation mechanism for DDMP:**
Disasters are always unexpected. Each disaster causes huge loss of human lives and property. And every disaster repeats after a particular interval. Also lessons learnt from a particular disaster will help to plan for another potential hazard.

The DDMA Chairman shall make special arrangements to collect data on a particular disaster irrespective of size and vulnerability. This post disaster evaluation mechanism shall be set up with qualified professions, experts and researchers and the collected data shall be thoroughly crosschecked and documented in the EOC for further reference. This document shall be made with proper attention keeping in view the relief and rehabilitation measures.

**Schedule for updation of DDMP:**
Besides the above procedure of updation of the DDMP, a regular data collection system shall be set up at the district Emergency Operations Centre (EOC) and the data will be verified and uploaded by the EOC in-charge under the supervision of Chairperson, DDMA.

**Uploading of updated plans at DDMA/SDMA websites:**
District Disaster Management Plan of the district shall be a public document & should be uploaded at the DDMA/SDMA websites under the supervision of the District Information Officer.

**Conducting of Mock Drills:**
As per Section 30 (2) (x) of DM Act 2005, the District Authority shall review the state of capabilities for responding to any disaster or threatening disaster situation in the district & give directions to the relevant departments or authorities at the district level for their up gradation as may be necessary.

As per Section 30 (2) (xi) of DM Act 2005, the District Authority shall review the preparedness measures & give directions to the concerned departments at the district level or other concerned authorities where necessary for bringing the preparedness measures to the levels required for responding effectively to any disaster or threatening disaster situation.

Awareness Generation, prevention and mitigation measures, Training and Capacity Development, Conduction of Mock Drills are vital activities to be covered under Pre Disaster Phase of the Disaster Management Cycle. Mock-drills help in evaluating response and improving coordination within various government departments, non-government agencies and communities. They help in identifying the extent to which the SOPs and Plans are effective and also aid in revising these if required. These drills enhance the ability to respond faster, better and in an organized manner during the response and recovery phase.
Drills/Simulations/Exercises are based on a set of assumptions about the circumstances during a disaster:

- A high level of tension and anxiety under which the concerned personnel would operate both at the central and field levels
- Highly unreliable information which requires critical assessment
- Criticality of time where rapid decisions must be taken.
- Necessity for coordination among technical personnel and government officers, who do not usually interact
- Prominence of political and social factors in the aftermath of a disaster

The approach for conducting a mock-drill varies as per the complexity of scenario depending upon the potential hazards, response system of the institution and the target community. Therefore, to ensure proper implementation of a drill programme, roles and responsibilities (SOPs) of the concerned personnel, departments, corporate bodies, stakeholders, and mechanisms for conducting the drill should be delineated clearly. Regardless of the size, complexity and risk involved in the implementation of the drill, an effective drill/exercise programme should have the following essential elements as prerequisites:

- Emergency Response Plan: explaining institutional response structure, emergency response functions and standard operating procedures for various departments
- Team personnel at head quarter and field level trained on their standard operating procedures
- Trained quick response teams in various possible operations like search and rescue, law and order, fire-fighting, medical, water arrangements, relief and shelter and electricity restoration etc
- Updated database of resources, equipment and manpower available
- Updated Emergency Directory with important contact details of members of Incident Management Team and Emergency Response function
- Mock-drill Scenario and detailed action plan for Mock-drill
- Evaluation formats for concerned departments and definite criteria for evaluation
- Observers and Qualified evaluators

Lessons learnt from the actual drills and exercises would be useful to revise operational plans and serve as a basis for the training of various stakeholders across different sectors. The drills and exercises will help to:

- Identify planning gaps
- Revise SOPs to enhance coordinated emergency response
- Increase public awareness and community readiness
- Enhance capacities of professionals, departments and trained volunteers
- Test plans and systems in simulation exercises
Monitoring & gap evaluation:
The District Authority shall check whether all the personnel involved in execution of DDMP are trained & updated on the latest skills necessary in line with the updated plans. As per Section 30 (2) (xii) of DM Act 2005, the District Authority shall organize & coordinate specialized training programmes for different levels of officers, employees & voluntary rescue workers in the district.

Plans of Major Accidental Hazard Units:
India has traditionally been vulnerable to natural disasters on account of its unique geo climatic conditions and it has, of late, like all other countries in the world, become equally vulnerable to various man-made disasters. Nuclear, Chemical and radiological emergencies as one such facet of man-made disasters are of relevance and concern to us. Any radiation incident resulting in or having a potential to result in exposure and/or contamination of the workers or the public in excess of the respective permissible limits can lead to a nuclear/radiological/chemical emergency.
CHAPTER- 11
COORDINATION MECHANISM FOR IMPLEMENTAION OF DDMP

11.1 Introduction
There are a number of participants in a typical disaster relief operation. Participants may include; national government, local government, national and international humanitarian organizations, expert and volunteer rescue teams, third-party logistics providers, suppliers of goods used for disaster relief, and the affected people.

11.2 Department wise role of Primary and Secondary agencies

SDMC
SDMC will be involved in the following activities:
- Search and Rescue operations
- Providing Temporary Shelters
- Public Information
- Relief Distribution
- Construction materials
- Restoration of infrastructure

DDA
DDA will be involved in the following activities:
- Providing Temporary Shelters
- Construction materials
- Restoration of infrastructure

Fire Services
Fire will be involved in the following activities:
- Search and Rescue operations
- Evacuation
- Disposal of Dead (as per customs)
- Public Information
PWD
PWD will be involved in the following activities:
✓ Construction materials
✓ Restoration of infrastructure
✓ Providing temporary shelters

CIVIL DEFENCE
Civil Defence and Home Guards will be involved in the following activities:
✓ Cordonning of area
✓ Search and Rescue operations
✓ Evacuation
✓ First Aid operations

HOME GUARDS
✓ Providing Temporary Shelters
✓ Relief Distribution
✓ Reception/ Information Centres

DEPTT. OF HEALTH
Deptt. of Health will be involved in the following activities:
✓ Medical aid (Treatment of injuries and surgical operations)
✓ Health and sanitation
✓ Disposal of Dead (as per customs)

IRRIGATION AND FLOOD CONTROL
Irrigation and Flood Control Deptt. will be involved in the following activities:
✓ Construction materials
✓ Restoration of infrastructure

MTNL
MTNL will be involved in the following activities:
✓ Communication
✓ Reception/ Information Centres
✓ Restoration of infrastructure
DELHI JAL BOARD
Delhi Jal Board will be involved in the following activities:
- Drinking Water arrangements
- Restoration of infrastructure

DELHI TRANSPORT CORPORATION
Delhi Transport Corporation will be involved in the following activities:
- Provision of vehicles
- Transportation of materials, manpower etc

BSES/NDPL
BSES will be involved in the following activities:
- Restoration of infrastructure
- Provision of power

CATS
CATS will be involved in the following activities:
- Emergency ambulance services round the clock through trained paramedics who will be mainly performing following functions:
- Assessing the patients
- Resuscitation
- Stabilizing that includes clearing airway, control of bleeding and circulation, splintage etc
- Rushing the patient to the suitable hospital
- Paramedic services in case of disasters
- Training of the public, students and others in emergency first aid
- Maintaining round the clock control room, wireless connectivity with CATS control room numbers: 102/1099/23861102/23860160

RED CROSS
Red Cross will be involved in the following activities:
- Providing Temporary Shelters
- Medical aid (Treatment of injuries and surgical operations)
- Health and sanitation
Relief Distribution

**ST. JOHN AMBULANCE**

St. John Ambulance will be involved in the following activities:

- Providing first aid training
- Ambulance services
- Relief Distribution

**11.2.16 I & PR Deptt.**

I & PR will be involved in the following activities:

- Public Information
- Communication
- Reception/ Information Centres

**ARMY AND NCC**

Army will be involved in the following activities:

- Search and Rescue operations
- Evacuation
- Traffic Management and Security of properties
- Temporary Shelters
- Disposal of Dead
- Relief Distribution
- Relief Supplies

**AIR FORCE**

Air Force will be involved in the following activities:

- Search and Rescue operations
- Aerial Reconnaissance
- Evacuation
- Disposal of Dead
- Relief Distribution
- Relief Supplies
- Restoration of infrastructure
NGOs/ RWAs and NYKS

Emerging trends in managing natural disasters, have highlighted the role of non-governmental organizations (NGOs) as one of the most effective alternative means of achieving an efficient communications link between the disaster management agencies and the effected community. In typical disaster situation, they can be of help in preparedness, relief and rescue, rehabilitation and reconstruction and also in monitoring and feedback. The role of NGOs is a potential key element in disaster management. The NGOs operating at grassroots level can provide a suitable alternative as they have an edge over governmental agencies for invoking community involvement. This is chiefly because, the NGO sector has strong linkages with the community base and can exhibit great flexibility in procedural matters vis-a`-vis the government.

EDMC DISASTER MANAGEMENT CENTRE:

It is located at Road No.-29, Baba Ramdev Marg near EDMC Cement Godown, Raghuvir Nagar, New Delhi-58 and Gazipur, Shadara South. For details please refer Annexures.
CHAPTER 12
STANDARD OPERATING PROCEDURES (SOPS) & CHECKLIST

Introduction
Disasters lead to loss of human lives on a large scale. If a formalized and timely response does not take place, the death toll can increase immensely. Therefore each district in coordination with the State formulates a District Response Plan consisting of 11 Emergency Support Functions (ESFs) related to Communication, Search and Rescue, evacuation, law and order, medical response and Trauma Counseling, water supply, electricity, warning and transport etc. All of these emergency functions consist of emergency plans that would be activated at the time of emergency.

The ESFs document outlines the purpose, scope, organization setup and Standard Operating Procedures (SOPs) for each function of operation that is to be followed by the respective ESF agencies when the Incident commander activates the response plan. Standard Operation Procedures (SOPs) provides a basic concept of the operations and responsibilities of Disaster Management Team, Nodal and Secondary agencies.

ESF Response Actions, Organisational Setup and Inter-relationships
The Response plan establishes an organised setup to conduct ESF operations for any of the Natural and Manmade Disasters. It outlines an implementing framework of sharing resources as per the requirement within National and State level department will be engaged to support during an emergency situation. The Response Plan has structured the response of all line department i.e. primary and supporting departments to be organized and function together with grouping capabilities, skills, resources, and authorities across the State and district Government with the ESF plan. The plan unifies the efforts of State Departments and supporting agencies to be involved in emergency management for a comprehensive effort to reduce the effects of any emergency or disaster within the state.

The ESF activates under the guidance of Incident Commander (Additional District Magistrate) who is also a head of Incident Response System (IRS). Under the IRS a team of 11 ESFs nodal officers works together also called as Disaster Management Team (DMT). DMT would also be constituted at District level with district level nodal officers. The members of Disaster Management team would also heads primary agency and simultaneously coordinate with the secondary agencies. Each of the primary and secondary agencies would also comprise of quick response team trained to carry out their functions at the response site. The success of ESF will be of critical importance and would reflect in the lives saved in the golden hour. Below a list of ESFs has been given which will activate at district level during emergency situation.
Table 1: ESFs Activated at the Time of a Disaster

<table>
<thead>
<tr>
<th>ESF</th>
<th>Function</th>
<th>Nodal Agency/ Officer</th>
<th>Supporting Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESF1</td>
<td>Communication</td>
<td>MTNL</td>
<td>private telecom service operators, mobile phone services operators</td>
</tr>
<tr>
<td>ESF2</td>
<td>Evacuation</td>
<td>Department of Revenue</td>
<td>Delhi Police, Delhi fire Service, Directorate of Health Service and Civil Defence etc</td>
</tr>
<tr>
<td>ESF3</td>
<td>Search and Rescue</td>
<td>Delhi Fire Service</td>
<td>Department of Revenue, Delhi Police, Civil Defence and Directorate of Health Services..</td>
</tr>
<tr>
<td>ESF4</td>
<td>Law &amp; order</td>
<td>Delhi Police</td>
<td>Home guards, central paramilitary forces etc</td>
</tr>
<tr>
<td>ESF5</td>
<td>Medical Response and Trauma Counseling</td>
<td>State Health Department</td>
<td>CATS, MCD, DGHS (Central Govt), Indian Red Cross, Civil Defence, Delhi Fire Service</td>
</tr>
<tr>
<td>ESF6</td>
<td>Water Supply</td>
<td>Delhi Jal Board</td>
<td>MCD, NDMC, CGWC, CWC, Irrigation and Flood Control.</td>
</tr>
<tr>
<td>ESF7</td>
<td>Relief (Food and Shelter)</td>
<td>Department of Food and Civil Supplies</td>
<td>Department of Revenue, Urban Development, EDMC, PWD/CPWD, MES, HUDCO, DDA</td>
</tr>
<tr>
<td>ESF8</td>
<td>Equipment support, debris and road clearance</td>
<td>EDMC</td>
<td>NDMC, PWD, CPWD, Cant Board, Military Engineering Services</td>
</tr>
<tr>
<td>ESF9</td>
<td>Help lines, warning dissemination</td>
<td>Department of Revenue</td>
<td>Department of Information and Publicity, MTNL, AIR, Doordarshan, UNI, Press Information Bureau, Press Trust of India, PTI</td>
</tr>
<tr>
<td>ESF10</td>
<td>Electricity</td>
<td>Secy. Power</td>
<td>TRANSCO, BSES, NDPL, DERC</td>
</tr>
<tr>
<td>ESF11</td>
<td>Transport</td>
<td>Secy. Transport</td>
<td>DTC, DMRC, Northern Railways, Civil Aviation, PWD, MCD and Civil Defence etc.</td>
</tr>
</tbody>
</table>

All ESFs have to assist the Incident Commander i.e. Additional District Magistrate State level as per their assigned duties described in the SOP’s. A detailed organisational setup of all ESFs and team leaders has been given below.
ESF - 1 Communications

Background:
The communication ESF is primarily responsible for restoration of communication facilities. The ESF on Communication should ensure the smooth flow of information that can cater to the outreach in a time-sensitive manner at state level in response efforts.

Situation Assumptions
- There would be a congestion in the network because of increased calls to control rooms due to panic created in the community.
- The initial reports on damage may not give a clear picture of the extent of damage to communication network.
- The affected site may cut off from the state control rooms and the officials on site and find difficulty in communicating to the District/State EOC.

Nodal agency at state level: Mahanagar Telephone Nigam Ltd. (MTNL)
Suggested supporting agencies: NIC, Revenue wireless, Ham Operators, Private tele-communication service operators and mobile phone services operators

SOPs for Nodal Agency:
- Team leader (TL) of Communication ESF will activate the ESF on receiving the intimation of occurrence of the disaster from the State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL would establishes contact with the district EOC for First Information Report
- TL requests for reports from local ESF contact persons (this would be the local office of ESF Nodal Agency) to understand the current situation and action taken
- Based on information given by the supporting agencies, TL decides on the need to launch an assessment mission to estimate the extent of damage to telecom services and network as well as to come up with possible arrangements to establishing reliable and appropriate network.
- TL communicates situation to supporting agencies and also requests to provide details on the status of equipment and infrastructure in the affected area(s).
- TL informs the Incident Commander on the status of telecom services.
- TL works out a plan of action for private telecom companies and convenes a meeting of all ESF members to discuss and finalise the modalities.
- TL issues orders to establish systems and reports to State and District EOCs on the action taken. New phone numbers and details of contact persons would also be communicated. If required mobile exchanges would be deployed.
- TL gets the temporary telephone facilities established for the public. Prior information on this would be announced through media
- HAM radio operators would be informed about the current requirements and coordination mechanisms shared.
- TL monitors the situation and arranges emergency staff required to operate established systems.
- TL sends the District Quick Response (SQR) team at the affected site with the required equipments and other resources.

SOPs for Quick Response Team on Communication
- The QRT (Quick Response Team) members will reach to the nodal office as soon as they will get instructions from the TL.
- Once the QRTs receive any intimation from the nodal officer to reach at the site they would rush to the site.
- At the emergency site QRT members will take stock of the situation from the IC and would also know about their counter parts.
QRTs would assess the ground situation and would send sectoral report to the State ESF agency. A sectoral report would contain following contents:

- An assessment of overall damage, listing specifically:
  - Overhead route damage (in miles/kilometres).
  - Cable damage (in yards/meters).
  - Specific equipment damaged.

- Establish a temporary communication facility for use by the public

- Identify requirements of manpower, vehicles and other materials and equipments
  - Give priority and concentrate on repairs and normalization of communication system at disaster affected areas.
  - Begin restoration by removing and salvaging wires and poles from the roadways with the help of casual labourers.
  - Carry out temporary building repairs to establish a secured storage area for the equipments and salvaged materials.
  - Report all activities to head office

- Begin restoration by removing and salvaging wires and poles from the roadways through recruited casual labourers.

- Establish a secure storage area for incoming equipments and salvaged materials.

**ESF - 2 Evacuations**

**Background:**
The ESF on evacuation is primarily responsible for establishing evacuation plans, identification of fastest evacuation routes and alternate routes and coordinating evacuation logistics during field operations.

**Situation Assumptions**

- Most of the buildings would be damaged and would not remain serviceable.
- Many structures would be damaged and there would be an urgent need to evacuate.

**Nodal agency at state level:** Department of Revenue

**Suggested supporting agencies:** Delhi Police, Delhi fire Service, Directorate of Health Service and Civil Defence, NCC, Army etc

**SOPs for Nodal Agency:**

- Team leader (TL) of Evacuation ESF would activate the ESF on receiving the warning of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of supporting agencies about the event and ESF activation.
- TL will direct the QRTs to be deployed at the affected site.
- TL will gather information on availability of predefined evacuation routes.

Where the predefined evacuation routes are not available, the nodal officer would coordinate through State EOC with other ESFs nodal officers and the support agencies about clearing of routes and identifying alternate routes.

**SOPs for Quick Response Team on Evacuation**
The QRT members will reach the nodal office as soon as they get instructions to do so from the TL.

Once the quick response teams receive an order from the nodal officer for reaching the site they would rush to the site.

On reaching at the site the QRT members will take stock of the situation from the Incident Management Team at the site and their counterparts.

The quick response teams with the help of local task forces will start evacuating peoples to safe shelters or open areas.

The QRT members should concentrate more on evacuation in areas that have been worst affected by the disasters.

Reporting about all the activities to head office

**ESF - 3 Search and Rescue**

**Background:** Search and Rescue operations are one of the primary activities taken up in a post disaster situation. The promptness in these operations can make a remarkable difference in the amount of loss of life and property.

**Situation Assumptions**
- Local community task forces will initiate search and rescue at residential level
- Spontaneous volunteers will require coordination
- Access to affected areas will be limited.
- Some sites may be accessible only through air routes only

**Suggested Nodal Agency:** Delhi Fire Service

**Support agency:** Department of Revenue, Delhi Police, Army, Civil Defence and Directorate of Health Services.

**SOPs for Nodal Agency**
- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick Response Team.
- Quick Assessment of the S&R operations through Aerial surveys
- Assessments of the specific skill sets and the other equipments required.
- Using IDRN network to check and map the availability of resources in and round the disaster site.

**SOP for Quick Response Team on Search & Rescue**
- Assessment of damage (locations, number. of structures damaged, severity of damage)
- The QRTs will be deployed at the affected site.
- Enlisting the types of equipment required for conducting the S&R
- QRTs will report the situation and the progress in response activities to the respective EOCs.
ESF - 4 Law and Order

**Background:**
The ESF on Law and Order maintains the law and protects the property and valuable commodities. It is mainly responsible to control crowd and avoid riots situations.

**Situation Assumptions**
- There would be panic and people will gather at a place.
- The crowds may go out of control.
- Riots may also take place.

**State Nodal Agency:** Delhi Police Service

**Suggested Support Agencies:** Civil Defence and Home guards, Central Paramilitary Forces, Army etc

**SOPs for Nodal Agency**
- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick Response Team.
- The QRTs will be deployed at the affected site.
- Cordonning of area to restrict movement of onlookers, vehicular and pedestrian traffic should be done.
- Any additional requirements at site to be taken care of.

**SOP for Quick Response Team on Law and order**
- Quick assessment of law and order situation in affected areas
- Support and coordinate with Local Administration
- Prepare updates on the law and order situation every 4-6 hours and brief the authorities
- Controlling situations like rioting and looting, and cordon off sensitive areas
- QRTs will guide property and valuables in affected areas.
- Control and monitor traffic movement.
- QRTs will provide diversion of traffic on alternate routes as and when it is necessary.
- The QRTs will also provide information about traffic flow along various corridors, especially heavy traffic or congested roads.
- QRTs will communicate to police control rooms, details on the field activities including deployment and reinforcement of staff and resources and communicate nature of additional requirements.

ESF - 5 Medical Responses and Trauma Counseling

**Background:**
The ESF on Medical Response and Trauma Counseling will look after emergency treatment for the injured people immediate after the disaster take place.

**Situation Assumptions**
- Emergency Medical services will be required by affected population
- Likely outbreaks of epidemic diseases after the disaster.
- Hospital services would be affected
**Suggested Nodal Agency:** State Health Department  
**Suggested Support Agencies:** CATS, MCD, DGHS (Central Govt), Indian Red Cross, Civil Defence, Delhi Fire Service

**SOPs for Nodal Agency**
- IC will call the TL of Primary Agency and get the ESF activated.  
- Team leader (TL) of primary agency will call nodal officers of supporting agencies.  
- In coordination with the transportation ESF, it will ensure a critical number of medical professionals to be reached at the site including specialists from other states.  
- If temporary housing arrangements are being made for the affected population, the ESF must ensure high standards of sanitation in settlements in order to reduce epidemic outbreak.  
- Ensuring the provision and continuous supply of medical facilities (medicines, equipments, ambulances, doctors and manpower etc) required at the disaster affected site and the hospital health centers catering to disaster victims.  
- In case of orthopedic care required in disasters like earthquakes the immediate response would have to be complimented by a follow up treatment schedule for a majority of the patients in/ near their place of residence.  
- Trained professionals should be mobilized by psychosocial support.  
- Ensuring setting up of temporary information centers at hospitals with the help of ESF through help lines and warning dissemination system.  
- TL will coordinate, direct, and integrate state level response to provide medical and sanitation health assistances.  
- On the recommendations of the EOC, the TL also responsible to:  
  - Send required medicines, vaccines, drugs, plasters, syringes, etc.  
  - Arrange for additional blood supply. Send additional medical personnel equipped with food, bedding and tents etc.  
  - Send vehicles and any additional medical equipment.

**SOP for Quick Response Team (QRT) on Medical Response and Trauma Counselling**
- QRTs will provide situation and progress reports on the action taken by the team to the respective EOCs  
- QRT’s will assess type of injuries, number of people affected and possible medical assistance needs  
- QRTs will ensure timely response to the needs of the affected victims such as:  
  - Establishing health facility and treatment centers at disaster sites.  
  - Providing medical services as reported by the District Civil Surgeon with District Control Room.  
  - Procedures should be clarified in between:  
    - Peripheral hospitals  
    - Private hospitals  
    - Blood banks  
    - General hospitals and  
    - Health services established at transit camps, relief camps and affected villages.  
- QRTs should maintain check posts and surveillance at each railway junction, ST (full form) depots and all entry and exit points from the affected area, especially during the threat or existence of an epidemic.

**ESF- 6 Water Supply**
**Background**
The ESF on drinking water and water supply will ensure provision of basic quantity of clean drinking water and water for other purposes in a manner that does not allow the spread of diseases through the contamination of water.

**Situation Assumptions**
- Existing water storage bodies will be damaged and unusable.
- There would be an urgent need of water to assist victims in rescue operation.
- Break down of sanitation system.
- Contamination of water due to outflow from sewers or due to breakage of water pipelines.

**State Nodal agency:** Delhi Jal Board

**Support Agency:** MCD, Irrigation and Flood Control

**SOPs for Nodal Agency**
- Team leader (TL) of ESF on Water Supply will activate the ESF on receiving the intimation of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will ensure special care for women with infants and pregnant women.
- Provide for sending additional support along with food, bedding, tents
- Send vehicles and any additional tools and equipments needed.

**SOP for Quick Response Team (QRT) on Water Supply**
- QRTs will ensure that supply of drinking water is made available at the affected site and relief camps
- QRT’s will ensure the temporary sewerage lines and drainage lines are kept separate.
- QRTs will report the situation and the progress on action taken by the team to the EOC.
- QRTs will intimate their TL of the additional resources needed.
- Carry out emergency repairs of all damages to water supply systems.
- Assist health authorities to identify appropriate sources of potable water.
- 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.
- Arrange for alternate water supply and storage in all transit camps, feeding centres, relief camps, cattle camps, and also the affected areas, till normal water supply is restored.
- Ensure that potable water supply is restored as per the standards and procedures laid down in “Standards for Potable Water”.
- Plan for emergency accommodations for staff from outside the area.
- QRTs will ensure timely response to the needs of the affected victims.
- QRTs will set up temporary sanitation facilities at the relief camps.

**ESF – 7 Reliefs (Food and Shelter)**

**Background**
In the event of a disaster there would be a need of disbursing relief materials due to massive destruction of life and property taken place. The ESF on Relief should ensure coordination of activities involving with the emergency provisions of temporary shelters, emergency mass feeding
and bulk distribution of relief supplies to the disaster victims as also the disaster managers and relief workers.

**Situation Assumptions**
- Probability of shortage of a critical resources
- Immediate assistance to the community at the time of resource shortage particularly when affected area is larger.

**State Nodal Agency:** Department of Food and Civil Supplies  
**Support Agency:** Department of Revenue, Urban Development, Municipal Corporation of Delhi, PWD, Delhi Development Authority,

**SOPs for nodal agency**
- TL will activate the ESF on receiving the information of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will coordinate with all state and district level suppliers as identified with under IDRN.
- TL with coordinate with other ESFs related to transportation, debris and road clearance to ensure quality supply chain management of relief materials.
- Ensuring composite relief with availability of complimentary relief material.

**SOP for Quick Response Team (QRT) on Relief**
- QRTs will report to site of the relief camps  
- QRTs will be responsible to manage and distribute relief items to the affected victims  
- QRT’s will be responsible for reporting the progress on action taken by the team to the EOC.  
- QRTs will provide information to their TL about the need of additional resources.
- Clearing of the areas to establish relief camps
- Setting up relief camps and tents using innovative methods that can save time
- Assist local authorities to set up important telecom and other service related facilities
- Initiate, direct and market procurement of food available from different inventories and reassuring food supplies to the affected population
- Preparing take-home food packets for the families
- Ensuring distribution of relief material to the all the people including vulnerable groups of the target area such as women with infants, pregnant women, children, aged people and handicapped.
- Ensuring support to Local Administration
- Locating adequate relief camps based on damage survey
- Develop alternative arrangements for population living in structures that might be affected even after the disaster

**ESF- 8 Equipment support, Debris and Road clearance**

**Background:**
The importance of this ESF emanates from the fact that most large scale hazards such as earthquakes, cyclones, floods primarily affect the building structures.

**Situation Assumptions**
- Access to disaster-affected area would depend upon the re-establishment of ground and water routes.
- Early damage assessment may be incomplete, inaccurate and general. A rapid assessment may be required to determine response time.
- Engineers and masons may be required in large scale for the inspection of present buildings.
State nodal agency: Municipal Corporation of Delhi
Support Agencies: PWD, DDA, DMRC, DTC,

SOPs for Nodal Agency:
- Team leader (TL) will activate the ESF on receiving the information of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will coordinate with the supporting agency to mobilize equipments from the warehouse through IDR database.
- The respective supporting agencies will contact their respective personal to move the equipments to central warehouse.
- The equipments like JCB, concrete cutters identified as per the need will be transported to the site.
- As per the information the nodal officer of Debris road clearance will make an assessment of the damages of roads and built structures at the site and surrounding areas.
- The nodal officers of Supporting Agencies will immediately start debris clearance operation to enable movement to the affected site.
- Review of the current situation is taken up by the nodal agency to update the support agencies and to delegate their respective personnel to take precautionary measure to plan de-routes for the transportation ESF’s to be operational.
- All supporting agencies will inspect the road and rail network and structures within the disaster site and surrounding.
- TL will also ensure proper corpse disposal and post mortem by coordinating with ESF on medical response.

ESF – 10 Electricity

Background:
The ESF on electricity will facilitate restoration of electricity distribution systems after a disaster. In the event of a disaster there would be major electricity failure and many power stations damaged.

Situation assumptions:
- Prolonged electricity failure.
- The affected victims may be panicked.
- Halt of all activities specially jamming communication networking systems in the affected site.

State nodal agency: State Department of Power
Support Agencies: BSES, NDPL

SOPs for Nodal Agency:
- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick response Team.
- The QRTs will be deployed at the affected site.
- TL will dispatch emergency repair teams equipped with tools, tents and food.

SOP for Quick Response Team on Electricity
The QRT members will reach the nodal office as soon as they get instructions to do so from the TL.

QRT members would reach to the site immediately after receiving instructions from the nodal officer.

On the site QRT members will take stock of the situation from the IC at the site and their counter parts.

The QRTs will coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations.

Begin repairing and reconstruction work

Assisting hospitals in establishing an emergency supply by assembling generators and other emergency equipments, if necessary.

The members of QRTs will establish temporary electricity supplies for other key public and private water systems

The members of QRTs will establish temporary electricity supplies for transit camps, feeding centres, relief camps and SOC, District Control Room and on access roads to the same.

The members of QRTs will establish temporary electricity supplies for relief material godowns.

Compile an itemized assessment of damage, from reports made by various electrical receiving centers and sub-centers.

Report about all the activities to the head office.

**ESF -11 Transport**

*Background:*

The ESF on Transport should ensure smooth transportation links at state and district level. Within the disaster context, quick and safe movement of material and humans are a priority. It should coordinate the use of transportation resources to support the needs of emergency support forces requiring transport capacity to perform their emergency response, recovery and assistance missions.

*Situation assumptions*

- The state civil transportation infrastructure will sustain damage, limiting access to the disaster area.
- Access will improve as routes are cleared and repaired.
- The movement of relief supplies will create congestion in the transportation services.

*State nodal agency:* State Department of Transport

*Support Agencies:* DTC, DMRC, Northern Railways, Civil Aviation, PWD, MCD and Civil Defence etc.

*SOPs for Nodal Agency:*

- TL of Transportation ESF will activate the ESF on receiving the intimation of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL establishes contact with the district EOC for FIR
- TL requests for reports from local Transportation ESF contact person
- TL communicates situation to support agencies and requests for detailed information on the status of transportation infrastructure in the affected area(s).
SOP for Quick Response Team on Transport

- The QRT members will reach to the nodal office as soon as they will get instructions to do so from the TL.
- As quick response teams will receive instructions from the nodal officer they would reach to the site immediately.
- QRTs would report the situation and the progress on action taken by the team to the respective EOCs.
- QRT will send a requirement schedule for the different modes of transportation eg. trucks, boats, helicopters to be put on stand-by.
- QRTs will ensure timely re-establishment of the critical transportation links.
- The members of QRTs will establish temporary electricity supplies for relief material go-downs.
- Compile an itemized assessment of damage, from reports made by various electrical receiving centres and sub-centres.
- Reporting about all activities to the head office.

SOPs for Community Task Forces

<table>
<thead>
<tr>
<th>Task Force Group</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search and Rescue</td>
<td>To trace and locate people who are physically trapped and distressed, people in the buildings and houses etc.</td>
<td>Administering primary health care to rescued victims</td>
</tr>
<tr>
<td></td>
<td>To move out these people to the safe locations identified in advance and to organize further care</td>
<td>Assisting the sanitation group in carcass disposal and the cremation of dead bodies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coordination with the evacuation team to shift rescued persons to safe shelters in case of recurring heavy rains</td>
</tr>
<tr>
<td>First Aid and Health</td>
<td>To provide primary health care to the ill or injured until more advanced care is provided and the patient is transported to a hospital</td>
<td>Assisting the sanitation team to inoculate against water borne and other diseases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assisting the communication team to disseminate precautionary information on post-disaster health hazards and remedies</td>
</tr>
<tr>
<td>Sanitation</td>
<td>To ensure that the minimum basic facilities such as temporary toilets and common bathing units are constructed near the relief camp, that these facilities and the surroundings are kept clean, garbage disposed, dead bodies cremated and that normal drainage systems function smoothly</td>
<td>Assisting the shelter group to ensure that there is sufficient water stored in the water tank in the safe shelter Assisting the shelter team to ensure that water spouts and water harvesting tanks at the safe shelter are clean and functional Assisting the relief group to ensure that containers for storing water are clean, narrow necked and covered</td>
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<tr>
<td>Relief Coordination</td>
<td>To establishing contact with the District Control Room and organising the distribution of assistance in terms of food, water, medicines and so on, in a fair and equitable manner</td>
<td>Co-ordinating with the shelter group in the distribution of material for the construction of temporary shelters Assisting the shelter group to ensure that the safe shelter is well stocked in terms of dry food, water and so on in order to cater for the needs of evacuees after a cyclone or flood warning has been issued</td>
</tr>
<tr>
<td>Warning and communication</td>
<td>To ensure that: (a) the warning of the impending disaster reaches every single household, thereby allowing people to take timely action to protect their lives and property (b) accurate information is provided regularly as events unfold (c) information flows quickly and reliably upwards to District level and downwards from District level to Community/Neighbourhood/Village level.</td>
<td>Assisting the relief group in disseminating information about the quantity and type of ration to be distributed for each distribution cycle Assisting the sanitation group in raising awareness about water borne diseases and vaccination programs</td>
</tr>
</tbody>
</table>
| Evacuation and Temporary Shelter Management | To construct/identify maintain and make repairs to the flood shelter, to evacuate people on receipt of a warning and to make all the necessary arrangements to accommodate evacuees during a flood. | Assisting the communities in accessing compensation  
Assisting the relief group in stocking up dry food, medicines, water and temporary shelter materials  
Assisting the sanitation group in the construction of latrines, soak pits and drainage channels |

And simultaneously coordinate with the secondary agencies. Each of the primary and secondary agencies would also comprise of quick response team trained to carry out their functions at the response site. The success of ESF will be of critical importance and would reflect in the lives saved in the golden hour. Below a list of ESFs has been given which will activate at district level during emergency situation.